

Cost of primary health care services in the emergency department and the family physician's office

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Summary: An attempt has been made to determine the true cost of providing primary health care for nontraumatic conditions in the emergency departments of two hospitals in Ontario and in the offices of family physicians. A total of 1117 patients presenting with 1 of 10 common symptom/sign complexes at the emergency departments or the offices of 15 participating family physicians were studied with regard to number of visits made, type of assessment by the physician, investigations undertaken, management, therapy and outcome of the illness. Costs were calculated from the charges that would be made against the provincial health services insurance plan and from the system of hospital financing in effect in the province. The average true cost per illness episode of this type of care was \$14.63 in hospital A, \$14.20 in hospital B and \$15.90 in the family physician's office.

Résumé: Le coût des soins de santé primaires dans les salles d'urgence et chez le médecin de famille

On a tenté de déterminer le montant réel des frais occasionnés par les soins de santé primaires dans les cas où le patient n'est pas traumatisé dans les salles d'urgence de deux hôpitaux de l'Ontario et chez les médecins de famille.

On a étudié le cas de 1117 patients, présentant l'un des dix ensembles de symptômes ou signes communs, qui ont été soignés dans les salles d'urgence ou chez les 15 médecins de famille participants, et ce, du point de vue du nombre de visites effectuées, du type d'estimation faite par le médecin, des examens entrepris, de la gestion, de la thérapeutique et de ce qu'il advient de la maladie.

Les frais ont été calculés à partir de la prise en charge par le plan d'assurance-santé de la province et à partir du système de financement hospitalier en vigueur dans la province. Le coût moyen réel (à chaque apparition

d'une maladie) de ce genre de soin était de \$14.63 à l'hôpital A, \$14.20 à l'hôpital B et \$15.90 chez le médecin de famille.

The increasing use of hospital emergency departments by patients seeking primary care is well recognized in this country and elsewhere. Several studies that were descriptive rather than analytic have attempted to document the characteristics of this process.¹⁻⁴ There has been a tendency to deplore this trend^{5,6} as representing an unsatisfactory method of providing care because of the allegedly fragmented or discontinuous service provided, which tends to be equated with a less than optimum quality of care.^{7,8} Also, the cost involved in providing care in the emergency department as compared with the family physician's office is reported to be higher. In view of what is considered to be the lack of hard supporting evidence for these assertions, a comparative study of primary health care in the two settings was undertaken.

The literature contains few references to the subject areas we wished to study and none specifically to comparisons of the process of providing care, the assessment of quality of care or the associated costs of primary medical care in the emergency department and the family physician's office.

The specific objectives of the study were:

1. To evaluate the process of providing primary medical care in the family physician's office and the emergency department.
2. To compare the quality of care provided in the two settings.
3. To estimate and compare the costs of services rendered.

Certain findings regarding costs are presented in this paper.

Methods

A pilot study of the symptom/sign complexes of several hundred patients who attended the emergency departments of the two general hospitals ("A" and "B") in Kingston showed that, after all conditions due to trauma had been excluded, 87% of complaints were included in one or other of the following categories: (a) dyspnea; (b) pain (nontraumatic in origin, of any body system); (c) abnormal vaginal bleeding; (d) urinary tract complaints (pain, frequency, incontinence, urgen-

cy, hematuria, retention); (e) anxiety and/or depression; (f) urethral or vaginal discharge; (g) nausea, vomiting, diarrhea; (h) fever; (i) earache; (j) upper respiratory tract infection.

Over two separate 2-week periods, consecutive patients presenting with these clinical complexes at the emergency departments of the two hospitals and at the offices of 15 family physicians in and around the city were studied. The two observation periods were separated by 6 months to minimize the chance of seasonal weighting toward any disease category. Both hospitals participating in this study are staffed by full-time emergency room physicians who are fee-earning. The family physicians were drawn principally from the preceptors in the university's family medicine program.

The presenting symptoms had to be nontraumatic in origin because, in our experience, derived from studies undertaken in family physicians' offices in our urban setting, few patients present with other than minor trauma. Patients who have sustained more severe trauma tend to proceed directly to the emergency department of a hospital or are referred there by a family physician. Also, the reason for seeking medical help had to be a new illness episode or a recurrence of a long-standing complaint. Other than by their agreement to participate in the study there was no further selection of patients; refusals were rare.

Data were collected from the patients' charts by a research assistant trained in the study methods. Data collection forms were devised on which all relevant information concerning the care of each individual patient was recorded. The data relevant to the contents of this paper included the number of visits made to each location, the date and time of day, the type of medical assessment made (local or general), details of all diagnostic investigations and therapeutic procedures employed — all aspects of care that would contribute to the cost levied by physicians or hospitals against the provincial government.

Patients included in the study were followed up by record review for 1 month from the time of initial contact.

Definitions

Total cost: The sum of various fees charged to provincial health insurance

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agencies in respect of care provided at the locations studied — the sum of "total physician fees" (fees charged for service by emergency department physicians or family physicians) and "total service fees".

Total physician fees: Includes fees for initial and subsequent contacts for the same illness.

Total service fees: In the case of the hospitals, these include investigation fees and an "across-the-board" charge of \$13.65, which is made to the health insurance plan for every patient treated in the emergency department; only the investigation fees apply to patients seen by the family physician. (The rate quoted in this paper is no longer in effect. It has been used in the calculations because it was applicable in the period during which the study was undertaken).

Results

A total of 1117 patients seeking primary medical care for the various clinical complexes were included in the study. Of these, 505 presented at the offices of family physicians, 296 at the emergency department of hospital A and 316 at hospital B. The distributions of complaints between the three locations were similar (Table I).

The average total cost (TC) for a patient seen at hospital A was \$23.80, at hospital B \$23.93 and at the family physician's office \$15.90 (Fig. 1).

Physician fees

The average physician fee (PF) for the first encounter of those seen ini-

tially at hospitals A and B was \$5.73 and \$6.67, respectively, compared with \$7.54 for the first visit to the family physician. For visits in family physicians' offices the average PF constitutes 69% of the total physician fee (TPF), compared with over 80% at the two hospitals. The average TPF at emergency departments and the physicians' offices is shown in Table II.

Part of this difference is accounted for by the higher fee rate of family physicians and the lower proportion of general physical assessments carried out in hospital A. The balance is due to the greater number of visits per illness made to the family physician (40% of patients made subsequent visits to the family physician versus 10% to the hospital). The average number of visits per illness made to hospital A was 1.3, to hospital B, 1.2, and to family physicians' offices, 1.5.

Service fees

The average total service fee (TSF) was \$16.34 and \$15.97 for patients seen at the emergency departments of hospitals A and B and \$4.94 for patients seen in physicians' offices. Most patients (approximately 60%) in all locations did not undergo any investigations, but an across-the-board charge of \$13.65 was being applied against all patients presenting at the emergency department.

Discussion

As the analysis of costs proceeds it becomes evident that the across-the-board charge to the government of

\$13.65 per patient is the major cause of the imbalance between the average hospital and office TCs, as it is between the average hospital and office TSFs.

Emergency departments must exist and must be staffed 24 hours a day to be available for traumatic and non-traumatic emergency situations. The cost of providing these facilities must be borne by the government (under the existing system of hospital and health service financing in Ontario and most of Canada), whether nonemergency primary care is provided at emergency departments or at family physicians' offices. Hence, when a patient requiring nonemergency primary care presents at an emergency department instead of his family physician's office, this may, to the extent that excess capacity or scale economies exist, reduce the overhead cost per patient through the emergency department and also the cost to the health service if the fee for his care in the emergency department is less than that in the physician's office. Where emergency room physicians staff the emergency department, the rate of fees charged for each service is lower than that of the family physician and it has been shown that the initial and total physician fees are indeed less in the case of the hospitals.

Investigation charges are less under the Ontario fee schedule when carried out from the emergency department. The fee charged against the Ontario Health Insurance Plan (OHIP) consists of a technical component and a pro-

Table I—Percentage distribution of complaints by place of encounter

Complaint	Place		
	Hospital A	Hospital B	Family physician's office
Dyspnea	5.7	3.2	3.4
Pain	51.7	57.6	48.1
Abnormal vaginal bleeding	4.7	1.3	4.0
Urinary symptoms	1.4	2.8	3.4
Anxiety and/or depression	8.8	5.7	10.5
Urethral or vaginal discharge	1.4	1.6	3.4
Nausea, vomiting, diarrhea	9.1	5.1	2.2
Fever	3.4	3.8	4.8
Earache	7.1	4.4	5.7
Upper respiratory tract infection	6.8	14.6	14.7
Total no.	100 (296)	100 (316)	100 (505)

Table II—Physician fees by place of encounter

Place of initial contact	Fee (\$)			
	Total physician, at initial contact	Average physician, at initial contact	Total physician (initial + subsequent contacts)	Average total physician (initial + subsequent contacts)
Hospital A	1695.00	5.73	2207.00	7.45
Hospital B	2107.00	6.67	2516.00	7.96
Both hospitals	3802.00	6.21	4723.00	7.71
Family physicians' offices	3805.00	7.54	5537.00	10.96

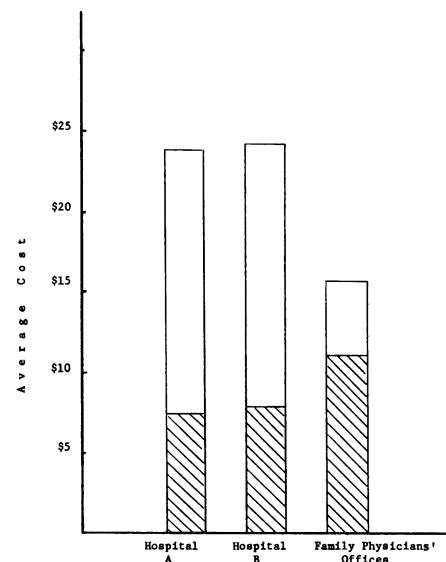


FIG. 1—Average cost of primary care by place of encounter, using estimated "across-the-board" rate of \$13.65 per visit. (Hatched portion of bar = total physician fees; white portion of bar = total service fees).

professional component (e.g. the radiologist's fee for reading a radiograph). Both are charged when a patient is referred from outside hospital for investigations, but when tests are conducted for a patient in hospital, only the professional component is applied against OHIP. The across-the-board charge of \$13.65 is designed to cover technical services as well as nursing and other staff services. However, the cost of treating nontraumatic, primary care conditions might be much less than the cost of treating traumatic cases. Does the patient requiring primary care represent an asset to the hospital by providing a subsidy (or profit) to the emergency department? Is \$13.65 a realistic cost for providing primary care to a patient? Indeed, because all financing comes eventually from the provincial treasury, albeit through one of many channels, does the \$13.65 really matter? What is the true as opposed to the apparent cost of primary care dispensed through the emergency departments of hospitals?

It appears that the \$13.65 fee is applied against total hospital operating expenses, which are budgeted annually and submitted to the Ministry of Health. Thus, the \$13.65 is considered offsetting revenue and the health service bears the burden only of the total allowable operating expenses and not, as appears at first sight, allowable emergency department expenses plus across-the-board fees charged to OHIP. The true average TSF borne by government should be computed from the investigation fee plus whatever portion of the allowable operating expenses of the emergency department is due to nontraumatic primary care patients seen there.

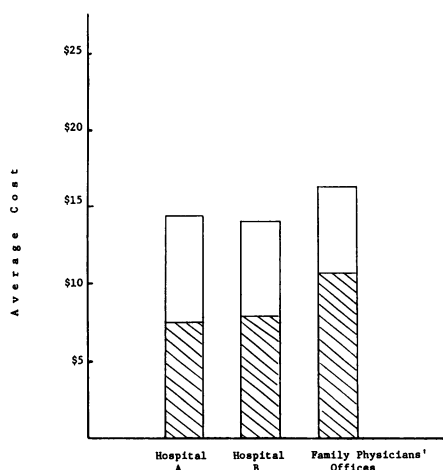


FIG. 2—True average costs of primary care by place of encounter: estimated by prorating costs between traumatic and nontraumatic cases in the emergency department. (Hatched portion of bar = total physician fees; white portion of bar = total service fees).

From figures obtained directly from the hospitals' financial records, the operating expenses (direct and indirect costs) of the emergency departments were estimated at approximately \$241 000 and \$163 506 for hospitals A and B, respectively. However, these figures not only exclude the cost of ancillary services (radiology, laboratory, electrocardiography [ECG] and electroencephalography [EEG]) but also include all patients passing through the emergency department during the year. Consequently, a method had to be devised to abstract from these figures that amount that was attributable directly to care provided in nontraumatic cases only. In the absence of data that would enable this amount to be assessed directly, we have devised a method based on the assumption that a relation exists between the cost of care received by a patient in the emergency department and the cost of diagnostic services provided to him. This was done by computing an index or ratio of the cost of nontraumatic and traumatic cases, weighted according to the estimated volume and costs of diagnostic services provided to each group. In order to obtain this weighting the records of a sample of traumatic cases (equalling the number of cases reviewed in the study at the two hospitals) were reviewed and the unit cost of investigative services calculated. The index or ratio so obtained was 0.59/1.0 for hospital A and 0.87/1.0 for hospital B. These ratios were then applied to the total operating expenses of \$241 000 and \$163 506 to obtain the amount due to nontraumatic cases only. The results so obtained were \$89 427 and \$76 069 for hospital A and hospital B, respectively.

Account had to be taken of ancillary services as well. No realistic estimate of the operating expenses of an emergency department can ignore their cost. The costs of these services, obtained from hospital financial records, were prorated according to the number of services provided by these departments in nontraumatic cases through the emergency department for the year. The prorated costs were \$37 381 for hospital A, where the total number of nontraumatic cases was 20 300, and \$46 639 for hospital B, where the total number of nontraumatic cases was 23 382. These amounts were then added to \$89 427 for hospital A and \$76 069 for hospital B to arrive at \$126 808 and \$122 708 as the total operating costs for each emergency department.

The total operating expenses of \$126 808 and \$122 708 are not the

only service costs that the government bears for care provided in nontraumatic cases at the hospitals. It also pays an investigation fee (the professional component). The estimated total investigation fees for the 20 300 nontraumatic cases at hospital A were \$19 134 and for the 23 382 cases at hospital B \$23 148. These figures were then added to the total operating expenses to obtain total service costs of \$145 942 and \$145 856 for hospitals A and B, respectively; these are the "effective costs" (exclusive of physician fees) that the government bears.

From the total service costs are computed the "true" or "effective" average TSF for hospitals A and B. The "true" average TSF for hospital A was $\$145\,942 \div 20\,300 = \7.18 and for hospital B it was $\$145\,856 \div 23\,382 = \6.24 . This should be compared with a figure of \$4.94 for the average TSF for family physicians' offices.

The true average total costs of treating nontraumatic, primary care cases, calculated from the above reasoning (TSF + TPF = TC), indicate that the figure at the emergency department of hospital A is \$14.63, at hospital B \$14.20 and at family physicians' offices \$15.90 per illness episode (Fig. 2).

Conclusions

It is apparent from the foregoing description of the estimation of costs in the emergency department and family physicians' offices that the subject, especially in relation to primary care provided in a hospital, is complex and difficult to unravel. Nevertheless, we believe that studies of this type, concerned with the economics of health care in different elements of the system, are important. Using the methods described to determine in concrete terms the true costs of providing primary health care for similar conditions in two locations, we conclude that the available evidence does not support the generally held assertion that the costs are substantially greater for care provided for nontraumatic conditions in emergency departments compared with family physicians' offices. Further work continues on this and related aspects of the subject.

However, even if in time it is firmly established that the cost of providing primary health care is less in one location than in another, further questions must be asked. We have not discussed such aspects as the quality of care, the process of providing care, or the comparability of presenting complaints between the different locations in which patients are seen. Clearly these are also of major importance. It may well

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absence of positive physical findings in people with physical complaints should not be interpreted in an "either-or" fashion.¹ If a patient is told "There is nothing wrong with you" or "It is only your imagination" he may lose confidence in the physician, who does not seem to be taking the patient's complaints seriously. The other extreme, to consider that all symptoms are due to somatic factors, is equally dangerous because, for example, patients with psychogenic abdominal pain may have unnecessary surgical operations or severely depressed patients may be treated exclusively for their somatic symptoms. A patient who is helped to feel at ease because the physician understands him will be easily encouraged to talk about his life situation and emotional reactions. An interview with the whole family may sometimes help to put into perspective the patient's symptoms (hypochondriacal preoccupations and hysterical behaviour are often encouraged by the family; psychotic or neurotic symptoms in a child or adolescent may protect the rest of the family from facing serious interpersonal conflicts).

For these reasons it is necessary that the complexity of etiologic factors be emphasized in undergraduate and graduate medical education. Rotation in a consultation service of a general hospital and a minimum of training in neurology should be compulsory for psychiatric residents. Medical students not only should be exposed to "classic" psychiatric clinical pictures but also in lectures and clinical presentations they should learn in more detail how patients with psychiatric disorders will present themselves with somatic complaints to nonpsychiatric physicians. They should also receive adequate instruction about the psychologic manifestations encountered in diseases of

the different systems and organs. They should be made aware of the pitfalls found in daily practice when the busy practitioner or the intern at the emergency department is tempted to dismiss obscure symptoms as "psychogenic" or treat them as purely "organic" without paying attention to the entire situation. Anecdotes from the teacher's experience regarding examples of missed diagnoses of brain tumours, encephalitis, endocrine disorders and endogenous depressions may be very useful to stimulate the student's interest in careful differential diagnosis. The same emphasis on misleading clinical pictures will be of great help to physicians in general practice taking postgraduate courses in psychiatry.

Lipowski^{2,17,18} has emphasized the role of the psychiatric consultant in teaching. More frequent contacts between psychiatrists and nonpsychiatric physicians will contribute to the progress of medical science and to the care of patients.

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be that, though "the price is right" for primary health care provided in either location, the appropriateness or quality of care is unacceptable. These issues will be studied further.

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