
Net economic costs of dementia in Canada

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Objective: To estimate the net economic costs of dementia in Canada in 1991 by comparing costs related to elderly patients with dementia with those related to elderly people without dementia.

Design: Cost-of-illness study.

Data sources: Most of the data analysed in this study were from the Canadian Study of Health and Aging (CSHA), in which 10 263 Canadians aged 65 years and over were randomly selected, surveyed and, when appropriate, given clinical examinations. Data on patients with dementia and on people without cognitive impairment (control subjects) were used for this analysis. Data on activities of daily living (ADLs) were taken from a separate study under the CSHA, in which the principal caregivers of the subjects in the prevalence study were interviewed.

Setting: Community and institutional settings in Canada, excluding those in the territories.

Patients: All patients with dementia 65 years and older as determined from the CSHA. Patients with dementia under 65 were also considered.

Outcome measures: Costs of paid and unpaid services in the community, care in long-term care institutions, drugs, hospitalization, diagnosis and research.

Results: The total annual net cost of dementia was estimated to be over \$3.9 billion. Costs associated with elderly patients in the community were estimated to be \$1.25 billion (\$615 million for paid services, \$636 million for unpaid services), whereas costs for patients in long-term care institutions were \$2.18 billion. Costs were about \$74 million for drugs, hospitalization and diagnosis, \$10 million for research and \$389 million related to patients under age 65.

Conclusion: The annual net economic cost of dementia in Canada is at least \$3.9 billion. The most significant component of the total cost was for care in long-term care institutions and for assistance with ADLs by professionals, family and friends in the community. The economic burden of dementia is significant not only for patients, their families and friends, but also for society.

Objectif : Estimer les coûts économiques nets de la démence au Canada en 1991 en comparant les coûts liés aux patients âgés atteints de démence à ceux liés aux personnes âgées qui n'en sont pas atteintes.

Conception : Étude des coûts de la maladie.

Sources de données : La plupart des données analysées au cours de cette étude proviennent de l'Étude canadienne sur la santé et le vieillissement (ECSV), au cours de laquelle 10 263 Canadiens de 65 ans et plus ont été choisis au hasard, ont été interrogés et ont subi au besoin des examens cliniques. On a utilisé aux fins de cette analyse des données sur les patients atteints de démence et sur les sujets sans déficience de la cognition (sujets témoins). Les données sur les activités quotidiennes provenaient d'une étude distincte coiffée par l'ECSV, au cours de laquelle on a interviewé les principaux soignants des sujets de l'étude de prévalence.

Contexte : Contextes communautaires et institutionnels au Canada, à l'exclusion des territoires.

Patients : Tous les patients atteints de démence, âgés de 65 ans et plus, selon l'ECSV. On a tenu compte aussi des patients de moins de 65 ans atteints de démence.

Mesures des résultats : Coûts des services rémunérés et non rémunérés dans la commu-

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nauté, des soins dans les établissements de soins de longue durée, des médicaments, de l'hospitalisation, du diagnostic et de la recherche.

Résultats : Le coût annuel net total de la démence a été estimé à plus de 3,9 milliards de dollars. Les coûts liés aux patients âgés dans la communauté ont été estimés à 1,25 milliard de dollars (615 millions de dollars pour les services rémunérés, 636 millions de dollars pour les services non rémunérés), tandis que les coûts liés aux patients dans des établissements de soins de longue durée ont été établis à 2,18 milliards de dollars. Les coûts ont été d'environ 74 millions de dollars pour les médicaments et les services d'hospitalisation et de diagnostic, de 10 millions de dollars pour la recherche; les coûts liés aux patients de moins de 65 ans ont été d'environ 389 millions de dollars.

Conclusion : Le coût économique net annuel de la démence au Canada s'établit à au moins 3,9 milliards de dollars. L'élément le plus important du coût total est celui des soins donnés dans des établissements de soins de longue durée et de l'aide aux activités quotidiennes fournie par les professionnels, des membres de la famille et des amis dans la communauté. Le fardeau économique de la démence est important non seulement pour les patients, les membres de leur famille et leurs amis, mais aussi pour la société.

Dementia refers to a group of diseases characterized by a progressive and irreversible decline of mental functions. The symptoms are memory loss, disorientation, cognitive decline and inappropriate social behaviour.¹ As the disease progresses, the patient usually becomes dependent on others to manage even the simplest of physical activities. Of the estimated 252 600 Canadians with dementia² about 67% have Alzheimer's disease, 20% have vascular dementia, and the rest have rarer or unclassified forms of dementia.² The causes are not well understood, and there are no known cures. Given that the prevalence of dementia increases rapidly after age 65 and that our elderly population is growing, the number of Canadians with dementia is bound to escalate over the next decade.

The purpose of this study was to estimate the net economic costs of dementia in Canada. This information can be useful for determining research priorities and has implications for social, health and economic policies for people with dementia and their families.

Methods

We calculated the net economic costs of dementia — costs beyond what would be incurred if dementia did not exist. They were calculated by subtracting the costs relevant to subjects without dementia from those relevant to patients with dementia. The analytic perspective in this study was societal,³ whereby costs were considered regardless of who incurred them. The direct economic costs were those that could be assessed directly from the market value of the services used to diagnose, treat, care for and rehabilitate a patient and included the cost of drugs, hospital care, institutional care and research. The indirect economic costs in this study were those related to unpaid services provided by informal caregivers (family and friends). Less tangible indirect costs, such as the decline in quality of life for the patient and the opportunity costs and emotional impact on caregivers, family members and friends, are extremely difficult to value and were not included. We

calculated costs per annum, primarily using 1991 data. The SAS software package (version 6.07; SAS Institute Inc., Cary, NC) was used for data management and analysis.

Most of the data used in this analysis were collected through the Canadian Study of Health and Aging (CSHA), a multicentre epidemiologic study of dementia in elderly people.² To estimate the prevalence of dementia, the CSHA surveyed randomly selected samples of people aged 65 years and over across Canada (excluding the Northwest and Yukon territories). Of the 10 263 people surveyed, 9008 lived in the community and 1255 in long-term care institutions. An extensive neurologic and neuropsychologic examination was performed on all subjects in the long-term care institutions, those in the community who screened positive for cognitive impairment (according to the Modified Mini-Mental State Examination⁴) and a subsample of those in the community who screened negative. For our study, data on the patients with Alzheimer's disease or some other form of dementia and on those without cognitive impairment (control subjects) were used. Elderly people with life-threatening illnesses (e.g., those necessitating life support, terminal cancer) were not eligible for the study.

Data used in the cost analyses involving the community residents were obtained from a separate study under the CSHA, in which the principal caregivers of the subjects in the prevalence study were interviewed.⁵

Costs specific to subjects living in the community

Direct costs: Direct costs specific to subjects living in the community included paid services provided by professional caregivers.² The cost categories are listed in Table 1. We determined the average cost per service for each subject by first multiplying the average cost for subjects who reported that they paid the full cost of the service by the number of subjects in the community who used the service and then dividing this product by the total number of community subjects (regardless of whether they used the service). The net average cost of

services per patient was calculated by subtracting the sum of the average costs per service per control subject from the sum of the average costs per service per patient. The total net cost for patients in the community was obtained by multiplying the net average cost per patient by the number of noninstitutionalized patients in Canada.²

Indirect costs: Indirect costs specific to subjects living in the community included those representing unpaid time spent by informal caregivers in assisting subjects with activities of daily living (ADLs). Information regarding the subjects' ability to perform ADLs was based on responses by the informal caregivers to a series of questions adapted from the Duke Older Americans Resources and Services questionnaire.⁶ Time spent helping a patient with each activity was determined as the number of times help was needed multiplied by the average amount of time spent helping with the activity. To minimize reporting errors, a maximum amount of time based on what would seem feasible was assigned to each activity: 90 hours per subject per month for assistance with eating, using the toilet and preparing meals, and 30 hours for each of the remaining activities. To avoid double counting, the time spent by professional caregivers (included in the direct costs above) was subtracted. Calculation of the total net cost of unpaid services was similar to that of the paid services described above, with the following exception: we calculated the net average cost per patient by multiplying the net average hours per pa-

tient by \$10, a low estimate of the cost per hour that would have been paid to a professional caregiver.⁷

The costs for both paid and unpaid services were calculated by severity of dementia (mild, moderate or severe), as defined in the CSHA,² and then by sex and age group (65 to 74 years, 75 to 84 and 85 or more). The costs for control subjects were calculated by age group.

Costs specific to subjects in long-term care institutions

In this study "long-term care institutions" referred to homes for the aged, nursing homes, chronic care facilities and collective dwellings such as convents.² To calculate the total net cost of dementia for patients in long-term care institutions we multiplied the net cost of dementia per patient in these institutions by the estimated number of patients in long-term care institutions "because of" dementia — that is, people who would not otherwise be in such institutions.

We chose to calculate the annual net cost of dementia per patient in long-term care institutions (\$19 100) by subtracting the average cost incurred by a person living at home (\$9000) from the estimated cost of nursing-home care per patient (\$28 100). The annual cost of nursing-home care per patient was calculated using the daily cost of such care in Ontario (\$77), as set by the Ontario ministries of Health and of Community and Social Services.⁸ The total of the average costs of food,

Table 1: Net annual costs of paid services (direct costs) for elderly patients with dementia and those without dementia (control subjects) living in the community*

Service	Average annual cost per subject, \$			
	Control subjects	Patients; degree of dementia		
		Mild	Moderate	Severe
Homemaker	629	1 805	2 629	1 978
Home-delivered meals	59	86	174	113
In-home personal care	180	847	1 714	2 413
In-home nursing care	716	1 621	3 457	2 906
Physiotherapy, occupational therapy, podiatry or chiropractic treatments	89	69	66	47
Day-centre/day-hospital care	5	8	23	30
Respite care	96	62	518	548
Counselling (e.g., with social worker)	14	8	37	71
Support group	2	0	7	3
Subtotal	1 790	4 506	8 625	8 109
Net mean cost per patient, \$ (patient cost minus cost for control subject)		2 716	6 835	6 319
Estimated no. of patients with dementia in Canada ²		54 800	57 600	11 500
Net annual cost, × \$1 000 000		148.8	93.7	72.7

*Costs are based on 1991 data.

shelter, household operation and transportation reported by Statistics Canada for people aged 65 years and over living in the community was used as the average cost of living at home.⁹

Drug costs

We estimated the net average cost of prescription drugs per patient by multiplying the difference between patients and control subjects in the average number of "active prescriptions" (i.e., prescription drugs currently used) per subject by \$200 (the estimated average annual cost per prescription drug). The \$200 estimate was calculated from the estimated costs incurred by the Ontario Drug Benefit Plan for 1992¹⁰ and the estimated number of prescriptions for all people over 65 with and without dementia in Ontario (data collected through the CSHA).²

Hospitalization costs

The net average cost of hospitalization per patient was estimated by multiplying the difference between patients and control subjects in the average number of days in hospital per year by \$507 (the daily cost of hospitalization per patient in Canada in 1991¹¹). The average number of days in hospital was based on information ascertained from one of the CSHA participating centres, in which subjects were followed up 1 year after undergoing the diagnostic work-up, to determine if and for how long they had been in hospital during the previous year.

Diagnostic costs

To calculate the total cost of diagnosing dementia we multiplied the cost per patient (\$250) by the sum of the estimated number of new (incident) cases of dementia in 1991 plus an estimated 50% of these cases later found to be false positive. We estimated the number of incident cases by dividing the estimated number of prevalent cases (252 600), obtained from the CSHA prevalence study, by the average duration of disease (7 years).¹ The costs associated with standard diagnostic procedures recommended in Canada could easily exceed \$500.^{1,12} However, a more conservative estimate of \$250 was used, because diagnostic procedures for very old subjects in whom dementia gradually develops are likely to be much less extensive and therefore less costly.

Research costs

A list of funding sources and amounts for dementia-related research in Canada for 1991 was ascertained from reports of the various federal and provincial agencies that fund health research and the Alzheimer's Society of Canada.^{13,14} The total cost for research was estimated from the total amount of funding from the above sources plus 50% of that total to account for research

funded through other sources, such as pharmaceutical and other companies.

Costs of dementia in younger patients

Reliable estimates of cost and prevalence of dementia in people under 65 years of age are not available. Hay and Ernst¹⁵ estimated that 9% to 25% of all patients with Alzheimer's disease are less than 65. From this estimate, we assumed a conservative value of 10% as the proportion of dementia patients under 65. The cost per patient in this age group was assumed to be the same as that for elderly patients with dementia.

Results

The net economic cost of dementia for the community residents with respect to paid services is presented in Table 1. For the average costs of services for which the number of subjects who paid in full was insufficient in either the control or patient group, we combined the amounts for the patients and the control subjects. The net economic cost of unpaid services is presented in Table 2. For both paid and unpaid services, the costs for patients by age group in each severity group were based on numbers too small to produce stable results and therefore were not reported. In addition, data were presented for both sexes combined because there was no substantial sex differential for the various cost categories. The net economic cost of dementia for residents in long-term care institutions is presented by sex and age in Table 3.

Research costs are reported in Table 4. The net cost of drugs is presented in Table 5 and reflects a net average increase of 1.2 "active prescriptions" per year per patient (4.9 for the patients, 3.7 for the control subjects).² The net cost of hospitalization was zero since the average number of days in hospital each year did not differ significantly between the patient and the control groups (0.7 days for each group).² Other direct costs, such as diagnostic costs, as well as an estimate of the net costs of dementia in people less than 65 years of age, are reported in Table 5, which presents a summary and estimate of the net costs of dementia overall (\$3 901 500 000) and per patient (\$13 900).

Discussion

The few studies that have been published on the economic burden of dementia or Alzheimer's disease are from the United States, which renders direct cost comparisons with these Canadian data difficult because of differences in pricing of services and in cost categories. Nevertheless, the annual net economic cost of dementia of \$13 900 per elderly patient in Canada was generally lower than that reported for the United States, which ranged from about \$18 000¹⁵ to \$47 000.¹⁶ The total costs for each of the various cost categories in our study likely

underestimate the true costs, since conservative values were used when the costs could not be measured directly or with sufficient precision.

Although the costs for drugs, hospitalization, diagnosis and research combined were substantial, they were minor compared with those for ADL services. The importance of these latter costs is evident when one compares our results with those of a Department of National Health and Welfare (DNHW) study on the economic burden of illness in Canada for 1986.¹⁷ Unlike our study, the DNHW study included costs for loss of productivity because of death and disability, evaluated the "gross" costs and calculated estimates for mental disorders as a group rather than individually. Because we excluded such substantial costs and used a more specific disease category, our estimate of \$3.9 billion for the net cost of dementia is much higher than one would expect given the DNHW estimate of \$4.0 billion for all mental disorders. This finding must be attributed to the fact that unlike the DNHW study, our study included costs related to long-term care institutions and those associated with assisting patients with ADLs in the community.

Since many services provided to elderly people in the community are subsidized for those who cannot afford to pay in full, the average cost of these services had to be calculated from costs reported only by elderly who

paid in full. The average cost of paid services could have been underestimated if the elderly people who paid in full were healthier and therefore required less costly help during the study year than did the others. The average net cost of paid services for community patients varied by severity of illness, moderate dementia incurring costs 2.5 times that of mild dementia. This is consistent with cost differences estimated between patients with severe and those with mild to moderate cognitive impairment.¹⁸

The cost of time spent by informal caregivers to help patients with ADLs (unpaid services) was likely underestimated in our study. Although an estimation of the value of leisure time and wages forfeited by individual caregivers may be a more accurate valuation of these services, it is very difficult to assess. The value of \$10 per hour for these services is relatively low and was based on fees that would have otherwise been paid to private agencies for home health care services.⁷ The annual average net hours of help provided to patients by informal caregivers of 513 hours per patient was about 25% of the time reported in two US studies.^{16,18} The number of hours of help increased with the severity of dementia, but not to the extent reported by Hu and colleagues,¹⁸ where patients with severe dementia required 8.06 hours of care per day, and those with mild and moderate dementia 3.2 hours per day.

Table 2: Net annual costs of unpaid services and activities (indirect costs) for elderly patients with dementia and control subjects living in the community

Service/activity	Mean no. of hours of help per subject			
	Control subjects	Patients; degree of dementia		
		Mild	Moderate	Severe
Eating	2.9	12.3	23.8	140.1
Dressing	2.3	13.6	41.9	100.6
Personal care	0.6	2.9	23.3	66.4
Walking	3.8	9.0	20.9	39.8
Getting out of bed	0.6	4.3	9.6	53.3
Bathing	2.0	10.4	28.6	66.4
Using toilet	0.8	11.8	19.1	97.3
Getting to distant places	0.4	1.9	4.0	5.0
Using phone	21.8	50.3	66.0	62.4
Going shopping	28.0	48.6	62.7	62.2
Preparing own meals	104.1	269.2	338.6	296.6
Doing housework	54.8	103.6	102.3	129.1
Taking medicine	2.9	20.9	37.6	31.8
Managing own money	2.2	22.7	26.1	23.8
All	227.2	581.5	804.5	1 174.8
Net mean hours of help per patient (mean hours per patient minus mean hours per control subject)		354.3	577.3	947.6
Net mean cost per patient, \$ (@ \$10 per hour)		3 543	5 773	9 476
Estimated no. of patients with dementia in Canada ²		54 800	57 600	11 500
Net annual cost, × \$1 000 000		194.2	332.5	109.0

Like the costs for patients in the community, those for patients in long-term care institutions were probably underestimated in our study. This is important since the overall cost of dementia in our study was most sensitive to fluctuations in the cost per patient in long-term care institutions. Nursing-home costs were used because these facilities represent most of the long-term care beds in Ontario. Furthermore, nursing homes are less costly than municipal homes for the aged and chronic care hospitals (which can cost as much as \$224 per day¹⁹).

The manner in which the costs were calculated does not permit highly valid cost comparisons between patients in the community and those in long-term care institutions. First, hospital and drug costs were not assessed separately for these two groups, and second, patients in long-term care institutions have on average more severe dementia than those in the community. To enhance comparability, patients in long-term care institutions should be compared with those in the community with severe dementia. The average annual cost of dementia in our study was about \$19 000 for patients in long-term care institutions and about \$16 000 for those in the community with severe dementia. Rice¹⁶ estimated that total costs for patients in the community were only

slightly lower than those for nursing-home patients. Hay and colleagues,¹⁵ who accounted for savings in food and shelter for nursing-home patients in their study, as did we, found that the total cost for nursing-home patients (\$5326) was lower than that for their community counterparts (\$8939). Two studies that did not account for savings for nursing-home patients showed that nursing-home costs were 1.5¹⁸ to 3.8²⁰ times that of costs for community patients. The terms "nursing home" and "long-term care institution" appear to have been used inconsistently across these studies.

We based the drug costs on Ontario data; therefore, the validity of this estimate depends to a certain extent on the generalizability of the data to the rest of Canada. The difference in drug costs between elderly patients with and those without dementia of about \$240 (1.2 × \$200) were consistent with the finding of Huang, Cartwright and Hu²¹ that patients with dementia incurred an additional drug cost of \$210 per year.

Our finding of no significant difference between the patients and the control subjects with respect to the average number of days in hospital may be an underestimate. Some researchers have cited an excess in hospital stay for elderly patients with dementia of 1.1 and 1.3 days per

Table 3: Net annual cost of dementia in elderly patients in long-term care institutions, by sex and age group

Variable	Age group, yr; sex						All
	Male			Female			
	65-74	75-84	≥ 85	65-74	75-84	≥ 85	
A. No. of elderly people ²³	850 480	392 295	86 220	1 042 815	598 550	196 915	3 167 275
B. No. of elderly people with dementia ²	15 800	40 600	24 800	28 900	69 600	72 900	252 600
C. No. of elderly people in long-term care institutions ²³	16 420	27 570	22 010	21 340	62 430	76 180	225 950
D. No. of elderly people with dementia in long-term care institutions ²	7 200	14 800	13 600	8 700	33 200	51 200	128 700
E. Elderly people without dementia in long-term care institutions (C-D)/(A-B) × 100	1.1	3.6	13.7	1.2	5.5	20.1	3.3
F. Correction factor (D × E)*	79	533	1 863	104	1 826	10 291	14 696
G. No. of elderly people in long-term care institutions "because of dementia" (D-F)†	7 121	14 267	11 737	8 596	31 374	40 909	114 004
H. Annual cost of institutional care "because of dementia" (G × \$19 100‡), × \$1 000 000	136.0	272.5	224.2	164.2	599.2	781.4	2 177.5

*Number of patients with dementia who would have been in long-term care institutions (because of health problems other than dementia) even if they did not have dementia.

†All patients with dementia in long-term care institutions minus those with dementia who would have been in an institution even if they did not have dementia.

‡Average annual net cost per resident in long-term care institution (estimated as cost of nursing-home care per patient minus average cost incurred by elderly person living at home).

year.²¹ Others, however, have observed that the costs of inpatient care for patients with Alzheimer's disease are comparable to those of inpatient care for a randomly selected Medicare cohort.²² Similarly, the cost of acute care has been reported to be not strongly related to the cognitive status of elderly patients.²⁰ Since the estimates for the average days in hospital per year were based on data collected in only one of the CSHA study centres, the validity of these estimates depends on their generalizability to the

rest of Canada. Further investigations of provincial hospitalization data for the CSHA cohort are planned, particularly of whether acute care beds are being occupied by patients waiting for placement in chronic care facilities.

The cost of training research personnel could not be easily estimated and was therefore not included in the total research costs. Nevertheless, even if the true total research costs were twice our estimate, they would still constitute a small proportion of the total net cost of de-

Table 4: Costs of dementia-related research* in Canada during 1991-1992^{13,14}

Funding agency	Award, \$
Alberta Heritage Foundation for Medical Research	10 884
Alzheimer Society of Canada	671 941
Fonds de la recherche en santé du Québec	355 421
Department of National Health and Welfare National Health Research and Development Program	3 189 275
Seniors Independence Research Program - National Welfare Grants	273 454
Health Services Utilization and Research Commission	30 000
Medical Research Council of Canada	1 155 415
Ontario Mental Health Foundation	292 896
Ontario Ministry of Health	407 360
Physicians' Services Incorporated Foundation	23 800
Saskatchewan Health Research Board	30 000
Vancouver Foundation / BC Medical Services Foundation	90 000
Subtotal	6 532 000
Other research†	3 266 000
Total	9 798 000

*Includes research into Alzheimer's disease specifically and other forms of dementia as well as dementia-related basic science projects.
†Estimated as 50% of "subtotal" for funding from pharmaceutical and other companies.

Table 5: Net annual costs of dementia in Canada

Source of costs	Net cost per patient, \$	No. of patients	Total annual net cost, \$
People ≥ 65 yr			
Community	10 100	123 900*	1 250 900 000
Paid services	4 970	123 900*	615 200 000
Unpaid services	5 130	123 900*	635 700 000
Long-term care institution	19 100	114 000†	2 177 500 000
Drugs	240	252 600§	60 600 000
Hospital	0‡	252 600§	0
Diagnosis	250	54 100	13 500 000
Subtotal	13 900	252 600§	3 502 500 000
People < 65 yr¶		28 100	389 200 000
Research			9 800 000
Total			3 901 500 000

*Number of elderly patients with dementia living in the community.
†Number of elderly patients in long-term care institutions "because of dementia" only.
‡The average number of days in hospital per year did not differ significantly between the patients with dementia and the control subjects.
§Total number of elderly patients with dementia in the community and in institutions.
||Number of incident cases of dementia.
¶The cost for people in this age group was calculated as $0.10 \times 1.0/0.9 \times \$3 502 500 000$ (the total cost for elderly people with dementia); see the Methods section for further details.

mentia. In addition, the cost of educating families and professional caregivers was not included because of the difficulties in estimating these costs.

The cost of dementia for patients under 65 years of age may also be underestimated. First, the cost was calculated on the basis of a low estimated prevalence in this younger group. Second, we assumed that the cost per patient was the same as that for an elderly person with dementia. Younger patients with dementia would generally be expected to have a milder condition than their older counterparts, and thus incur fewer costs. This lower cost, however, would likely be more than offset by the much higher diagnostic costs resulting from a more extensive investigation in younger patients and by the costs of lost earnings and welfare for this preretirement group.

Less tangible indirect costs could be significant contributors. For example, lost earnings due to premature death and disability were estimated to be equivalent to about half of the total direct costs of mental illness in Canada for 1986.¹⁷ Since we assumed, however, that about 90% of patients with dementia are over 65 and hence mainly retired, these costs were not valued. The costs associated solely with the surveillance of patients with dementia, who tend to wander, should also be considered, since this task can be a major preoccupation of caregivers. Other less tangible indirect costs that could not be included, such as the decline in quality of life for the patient and the sacrifices, stresses and possible illnesses of family members and friends, may well be the most important costs of dementia. This further underscores the point that the total costs are likely underestimated.

Conclusion

Our findings indicate that the annual net economic cost of dementia in Canada is at least \$3.9 billion. This estimate is low since it is based on several conservative values and does not account for the significant costs of the patients' reduced quality of life and the emotional stress on family and friends. The most significant component of the total cost was for assistance with ADLs by professionals, family and friends in the community and for care in long-term care institutions. Relative to the cost of the illness, funding for research appears modest.

Given that the number of patients with dementia is projected to increase in the near future and that most of the costs are partially subsidized by the government, the economic burden of dementia is significant not only for the patients, their families and friends, but also for society.

The main source of data for this study was the Canadian Study of Health and Aging (CSHA), which was funded by the Seniors Independence Research Program and administered by the National Health Research and Development Program (project 6606-3954-MC[S]). The CSHA was coordinated through the University of Ottawa and the Laboratory Centre for Disease Control, Health Canada. The data analysis was supported in part by a grant from Glaxo Canada.

We thank Dr. Warren Chin, clinical projects manager, pharmacoeconomics, Innovus Inc., Hamilton, Ont., for his helpful advice.

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