

## Dementia and serious coexisting medical conditions: a double whammy

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Many people with Alzheimer's disease and other dementias also have other serious medical conditions. These other medical conditions and the medications and other treatments used for them can worsen cognitive status and exacerbate other symptoms of dementia. Likewise, dementia can complicate treatment of other medical conditions.

Nurses and other health care professionals often describe difficult care situations caused by the complex interactions between dementia and other serious medical conditions in individual patients, but they may not realize how frequently dementia and other medical conditions coexist in elderly people. This article provides information about the prevalence of serious coexisting conditions in people with dementia and the impact of these conditions on their use of health care services and the cost of those services. It also discusses the implications of coexisting medical conditions for clinical care of people with dementia and for the information and support needs of their family caregivers.

### **Prevalence of coexisting medical conditions in people with dementia**

Until recently, little research-based information was available about the prevalence of coexisting medical conditions in people with dementia. The nursing literature includes many articles that discuss nursing care for individuals with dementia who have coexisting medical conditions [1–13]. In some of these articles, the presence of coexisting conditions is implied by the care setting for the study (eg, an oncology or surgery unit in an acute care hospital), but the articles do not mention any specific coexisting conditions [1,2,8,11]. Some articles use case examples in which each person's coexisting

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medical conditions are noted [3,7,9,12]. Still others list common coexisting conditions or specific conditions that were found in a particular study sample [4–6,13], and some articles recommend nursing care procedures that clearly indicate the presence of types of coexisting conditions (eg, nursing procedures for pre- and postoperative care) [4,10]. The primary emphasis in all these articles is on patients' dementia-related symptoms and care needs, however, not on their coexisting medical conditions.

Accurate information about the prevalence of coexisting medical conditions in people with dementia is difficult to obtain for several reasons. Many people with Alzheimer's disease and other dementias have not been diagnosed, and even if they have been diagnosed, their diagnosis may not be noted in their medical record or reported on medical claims [2,4,14–16]. A study of 1992 Medicare claims for a large, nationally representative sample of beneficiaries aged 65 and older found, for example, that only 0.76% (less than 1%) of the beneficiaries had a diagnosis of Alzheimer's disease reported on two or more claim forms in that year [17]. In contrast, estimates of the prevalence of Alzheimer's disease in people aged 65 and older range from 7% to 13% [18,19].

Because diagnoses of Alzheimer's disease and dementia frequently are not noted in medical records or reported on Medicare claims, studies using data from these sources to identify people with dementia miss many individuals who actually have a dementia diagnosis. Studies that use interviews with health care professionals to identify people with dementia are likely to successfully identify those who have a diagnosis, but even these studies miss some people who have not been diagnosed (although health care professionals are sometimes aware of and can report undiagnosed dementia in their patients). Because each of these methods of identification misses some people with dementia, information about the prevalence of coexisting medical conditions in samples of people identified in these ways does not necessarily provide accurate information about the prevalence of coexisting medical conditions in all people with dementia.

In addition to problems with identification, three types of bias can limit the accuracy of information about the prevalence of coexisting medical conditions in people with dementia. These include:

- Bias created by the sample setting: people with dementia who are seen at Alzheimer's- or dementia-specific diagnostic and treatment centers probably do not represent all people with dementia
- Bias created by sample exclusions: people with dementia who have coexisting medical conditions often are excluded from studies, because the effects of their coexisting conditions are difficult to disentangle from the effects of their dementia, which are the main focus of the studies
- Bias created by underreporting of coexisting medical conditions: in a study of 154 people with Alzheimer's disease and 221 nondemented controls, McCormick et al found, for example, that the subjects with

Alzheimer's disease complained of symptoms unrelated to their cognitive impairment much less often than the nondemented controls, even though both groups had similar rates of coexisting medical conditions, such as congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), and diabetes [20].

Biases created by sample setting, sample exclusions, and under-reporting of symptoms result in study findings about the prevalence of coexisting conditions that are not necessarily accurate for all people with dementia. Moreover, each of these three types of bias is probably more likely to result in underestimation of the prevalence of the coexisting conditions.

Given the difficulty of obtaining accurate information about the prevalence of coexisting conditions in people with dementia and the likelihood of underestimates because of biases, some researchers may have assumed that the prevalence of coexisting conditions is low, that care issues related to coexisting conditions are not as important as care issues related to other characteristics of people with dementia, or both. For these and other reasons, many researchers have chosen not to even collect information about coexisting medical conditions in their subjects with dementia, thus contributing to the difficulty of obtaining accurate information about prevalence of these conditions.

The first study to report the prevalence of coexisting medical conditions in a large sample of people with dementia was the Medicare Alzheimer's Disease Demonstration (MADD), a congressionally mandated study that was conducted at eight sites across the country from 1989 to 1994. Data on coexisting medical conditions were obtained for 5379 people with Alzheimer's disease and other dementias.<sup>1</sup> The resulting figures show that in addition to their dementia, substantial proportions of the study subjects had other chronic conditions, including hypertension (47%), coronary artery disease (33%), CHF (28%), COPD (27%), osteoarthritis (26%), stroke (25%), diabetes (22%), cancer (20%), and chronic renal problems (12%) [16]. Likewise, substantial proportions of the subjects had acute medical conditions, including pneumonia (32%), skin ulcers (20%), hip fracture (14%), and septicemia (14%) (R. Newcomer, unpublished data, 1999). Many of the subjects had multiple coexisting conditions; for example, 41% of those with CHF and 36% of those with cancer also had COPD (R. Newcomer, unpublished data, 1999).

The MADD sample was not nationally representative. Moreover, the subjects' coexisting medical conditions include some that can cause dementia (eg, stroke and other cardiovascular conditions) and others that can be caused, at least in part, by dementia (eg, late-life pneumonia and hip

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<sup>1</sup> MADD data on coexisting medical conditions came from Medicare claims forms. The figures presented represent conditions that were noted on any Medicare claim submitted while a subject was enrolled in the study (up to 3 years) or in the year before enrollment [16].

fractures). Substantial prevalence of these causally related conditions might be expected in a sample of people with dementia, but the high proportions found in the study were nevertheless surprising. The high proportions of subjects who had other conditions that are unlikely to be causally related to dementia (eg, COPD and cancer) were more surprising, especially since MADD subjects were selected because of their dementia.

As awareness of Alzheimer's disease and other dementias has increased in recent years, more people are receiving a diagnosis, and these diagnoses are noted more frequently in medical records and reported on medical claims. An analysis of 1999 Medicare claims data for a large, nationally representative sample of Medicare fee-for-service beneficiaries aged 65 and older found that 8.4% of the beneficiaries had a diagnosis of Alzheimer's disease or another dementia on at least one Medicare claim in that year (Alzheimer's Association, unpublished data, 2002). Table 1 shows the proportions of these people who had each of the most commonly occurring conditions. Clearly, many people had more than one of the listed conditions.

As noted earlier, estimates of the prevalence of Alzheimer's disease range from 7% to 13% in people aged 65 and older [18,19], and these figures do not include people with other dementias. Thus, the 8.4% of beneficiaries identified with dementia in the 1999 Medicare claims data probably do not include all beneficiaries with dementia in that sample, and in turn, the

Table 1  
Prevalence of coexisting medical conditions in elderly Medicare beneficiaries with reported Alzheimer's disease and other dementias, 1999

Coexisting condition	Percent with condition
Hypertension	52%
Coronary heart disease	30%
Congestive heart failure	28%
Cardiac dysrhythmias	25%
Diabetes	22%
Osteoarthritis	20%
Peripheral and visceral atherosclerosis	19%
Affective disorders, including depression	18%
Chronic obstructive pulmonary disease	17%
Thyroid disorders	16%
Disorders of lipid metabolism	13%
Cancer	11%
Osteoporosis	10%
Late effects of cerebrovascular disease	10%

*From* FY 1999 Medicare claims for a 5% national random sample of Medicare beneficiaries. The data set was created by the US Centers for Medicare and Medicaid (CMS). Data for this analysis were provided to the Alzheimer's Association by the Partnership for Solutions, a Johns Hopkins University project directed by Gerard Anderson, PhD. The sample includes fee-for-service Medicare beneficiaries aged 65 and older who were enrolled in Medicare for the full year (or while they were alive, 1,238,895 individuals). Sample members with no Medicare claims in FY 1999 are included.

coexisting conditions listed in Table 1 may not represent the prevalence of these conditions accurately in all people with dementia. Coexisting medical conditions could have been more or less common in the beneficiaries with dementia who were not identified, so the true prevalence of these conditions could be higher or lower. The relatively large proportion of people with dementia in the sample (8.4%) and the similarity between the prevalence of various coexisting conditions in this sample and the MADD sample suggest, however, that the figures in Table 1 probably give a good starting point for determining the true prevalence of coexisting medical conditions in people with dementia.

Medicare claims data for 2000 from the same survey of a nationally representative sample of fee-for-service beneficiaries aged 65 and older show that 9% of the beneficiaries had a diagnosis of Alzheimer's disease or another dementia on at least one Medicare claim in that year (Alzheimer's Association, unpublished data, 2003). The figures for coexisting medical conditions for these beneficiaries are similar to the 1999 figures. In 2000, 29% of those identified with dementia also had coronary heart disease (CHD); 28% also had CHF; 17% also had COPD, and 23% also had diabetes (Alzheimer's Association, unpublished data, 2003).

Several recently published studies using large samples of people with dementia have findings similar to the figures from the 1999 and 2000 Medicare claims data. One study of elderly people enrolled in a large Medicare health maintenance organization (HMO) found that 4.4% of the enrollees had dementia, and substantial proportions of those enrollees also had CHF (29%), COPD (24%), diabetes (22%), or cancer (12%) [21]. Similarly, a study of elderly people enrolled in the Program of All-Inclusive Care for the Elderly (PACE), a coordinated care program for people who are eligible for nursing home care, found that substantial proportions of those with dementia also had CHF (31%), diabetes (26%), or cancer (15%) [22].

The prevalence of particular coexisting conditions may differ in people who have Alzheimer's disease versus other dementias. One study conducted in a large health care system in Wisconsin found, for example, that the prevalence of COPD, diabetes, osteoarthritis, and cancer was similar in both groups, but the prevalence of stroke and other cardiovascular conditions was much higher in subjects with non-Alzheimer's dementia than in those with Alzheimer's disease [23]. The prevalence of coexisting conditions also may be higher for people in later versus earlier stages of their dementing illness [24].

Despite these differences, the important, common finding from all these studies is the large proportion of people with dementia who have serious coexisting medical conditions. In hindsight, this finding probably should have been obvious. Most people with dementia are very old. Table 2 shows the proportion of all people with Alzheimer's disease who were 65 to 74, 75 to 84, or 85 years old or older in 2000, as calculated by combining estimates of age-specific prevalence of Alzheimer's disease from a recently published study and

Table 2

Estimated number and proportion of people with Alzheimer's disease in the United States by age group, 2000, based on age-specific prevalence from Hebert et al [19]

Age	Total population	Estimated percentage with Alzheimer's disease	Estimated number with Alzheimer's disease	Estimated percentage of all people with Alzheimer's disease
65–74	18,390,986	2%	300,000	7%
75–84	12,361,180	19%	2,400,000	53%
85 +	4,239,587	42%	1,800,000	40%
Totals	34,991,753	13%	4,500,000	100%

population figures from the 2000 census. This calculation indicates that 93% of people with Alzheimer's disease would have been at least 75 years old in 2000, including 40% who would have been at least 85 years old.<sup>2</sup> Like Alzheimer's disease, prevalence of many other dementing diseases increases with age, and most people with these other dementias are also very old and, therefore, at risk for all the serious medical conditions that are common in very old people. Thus, it makes sense that many people with dementia have coexisting medical conditions, even though research-based information about the prevalence of these other conditions has only become available recently.

As the number and proportion of Americans 75 years old and older and 85 years old and older grow in coming decades, the number and proportion of people with dementia will increase. Without new approaches for prevention and treatment of other medical conditions, the number and proportion of people with dementia who also have one or more other serious medical conditions also will increase.

### **Impact of coexisting medical conditions on the use and cost of health care services by people with dementia**

Most studies of the use and cost of care for people with dementia have focused on the use and cost of nursing home and unpaid family care, but some studies also have looked at hospital and other health care services. Most but not all of the latter studies have found that, on average, people with dementia use more hospital and other health care services and therefore, have higher costs for these services than other elderly people (Alzheimer's Association, unpublished data, 2002, 2003) [15,17,21,25–29]. Medicare claims data for

<sup>2</sup> The same calculation can be done using estimated age-specific prevalence of Alzheimer's disease from other studies. Using age-specific prevalence of Alzheimer's disease from a widely cited article by Brookmeyer et al [18], results in slightly lower but still very high estimates of the proportion of people with Alzheimer's disease who would have been age 75 years old or older in 2000 (86%), including 47% who would have been at least 85 years old.

2000 from the nationally representative sample of fee-for-service beneficiaries described earlier show, for example, that total average Medicare costs were three times higher for beneficiaries with dementia (those who had a diagnosis of Alzheimer's disease or another dementia on at least one Medicare claim in that year) than for other beneficiaries (\$13,207 versus \$4454 per person) (Alzheimer's Association, unpublished data, 2003).

The high average Medicare costs for people with dementia include costs for people with and without various coexisting medical conditions. Further analysis of these data shows that adding other serious medical conditions greatly increases the use and cost of health care services for people with dementia. Many studies using other samples have similar findings (Alzheimer's Association, unpublished data, 2002, 2003) [16,17,21,23,28].<sup>3</sup> The Medicare claims data for 2000 show that total average Medicare costs were \$22,939 for beneficiaries with dementia plus CHF compared with total average costs of \$13,207 for all beneficiaries with dementia (Alzheimer's Association, unpublished data, 2003). Likewise, total average Medicare costs were much higher for beneficiaries with dementia plus COPD than for all beneficiaries with dementia (\$23,693 versus \$13,207 per person) (Alzheimer's Association, unpublished data, 2003). Similar figures for dementia plus CHD and dementia plus diabetes support the conclusion that adding other serious medical conditions increases total Medicare costs for people with dementia. An analysis of the components of total Medicare costs (eg, costs for hospital, skilled nursing facility [SNF], and home health care) for dementia plus CHF, COPD, CHD, or diabetes shows substantially higher costs for each component in people with dementia plus the coexisting condition versus people with dementia but not the coexisting condition. Fig. 1 illustrates these relationships for dementia and diabetes.

The figures discussed thus far in this section look at the impact of coexisting medical conditions on the use and cost of health care services for people with dementia. It is interesting to look at these figures from a different perspective, that is, to look at the impact of dementia on the use and cost of health care services for people with particular coexisting medical conditions. Such an analysis shows that adding dementia greatly increases the use and cost of health care services for people with coexisting medical conditions. Thus, for example, total average Medicare costs for beneficiaries with CHF plus dementia were \$22,939 per person in 2000, compared with \$15,441 per person with CHF and no dementia (Alzheimer's Association, unpublished data, 2003). Likewise, total average Medicare costs for beneficiaries with COPD plus dementia were \$23,693 per person in 2000, compared with \$12,450 per person for beneficiaries with COPD and no dementia (Alzheimer's Association, unpublished data, 2003). This same relationship holds true for total average Medicare costs for people CHD and people with

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<sup>3</sup> Not all studies have found higher use and costs of health care services for people with dementia [20,30,31].

**Average Medicare Costs for People with Reported Dementia,  
Diabetes/No Dementia, or Both, 2000**

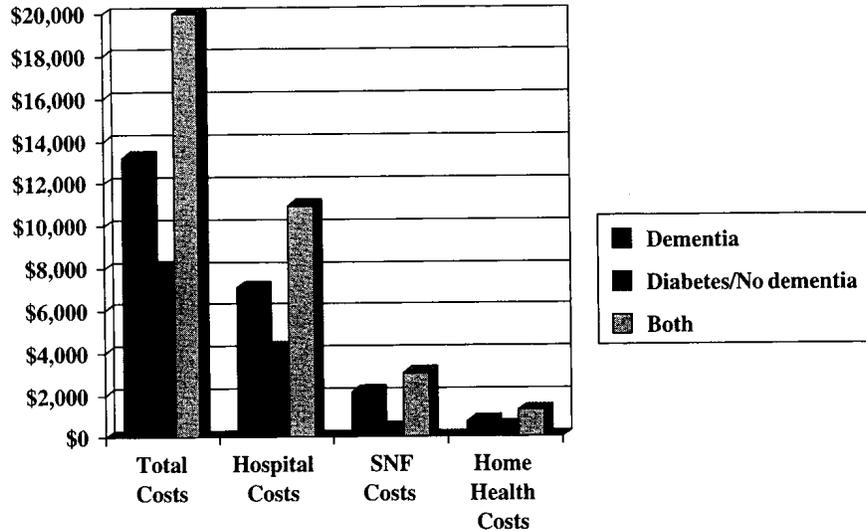


Fig. 1. Average Medicare costs for people with reported dementia, diabetes/no dementia, or both, 2000. From FY 2000 Medicare claims for a 5% national random sample of Medicare beneficiaries. The data set was created by the US Centers for Medicare and Medicaid (CMS). Data for this analysis were provided to the Alzheimer's Association by the Partnership for Solutions, a Johns Hopkins University project directed by Gerard Anderson, PhD. The sample includes fee-for-service Medicare beneficiaries aged 65 and older who were enrolled in Medicare for the full year (or while they were alive) (1,238,895 individuals). Sample members with no Medicare claims in FY 2000 are included.

diabetes who do and do not have dementia. Inspection of the bars for diabetes/no dementia and both in Fig. 1 reveals the higher total average Medicare costs and average Medicare costs for hospital, SNF, and home health care for beneficiaries with diabetes plus dementia versus those with diabetes and no dementia.

Thus, the presence of coexisting medical conditions increases the use and cost of health care services for people with dementia, and conversely, the presence of dementia increases the use and cost of health care services for people with particular coexisting conditions.

Some readers might wonder whether these relationships can be explained by age, that is, whether people who have dementia plus CHD, CHF, COPD, or diabetes are just older and therefore use more health care services and have higher costs. The Medicare claims data suggest this explanation is not correct. Fig. 2A shows the relationship between total average Medicare costs for people with dementia, people with CHF and no dementia, and people with CHF plus dementia for beneficiaries aged 65 to 74, 75 to 84, and 85 years and older. In all three age groups, beneficiaries with both dementia and CHF

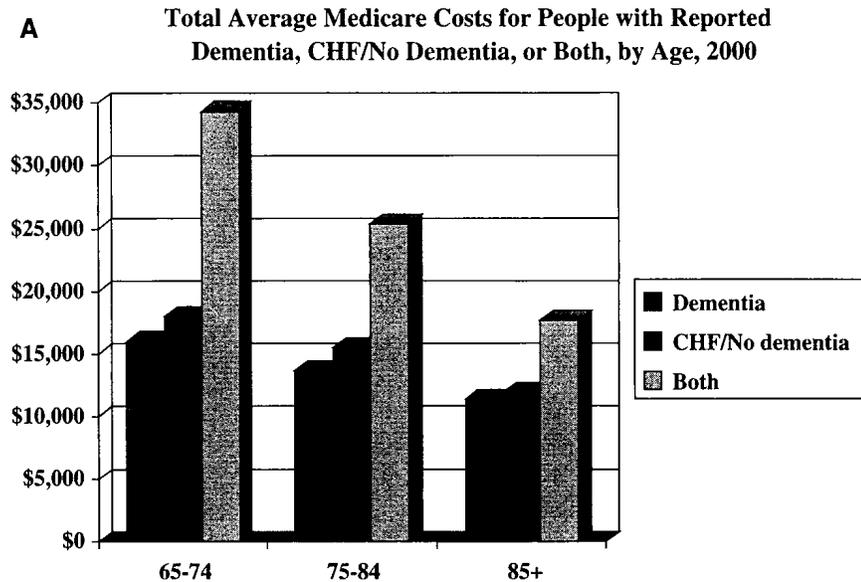


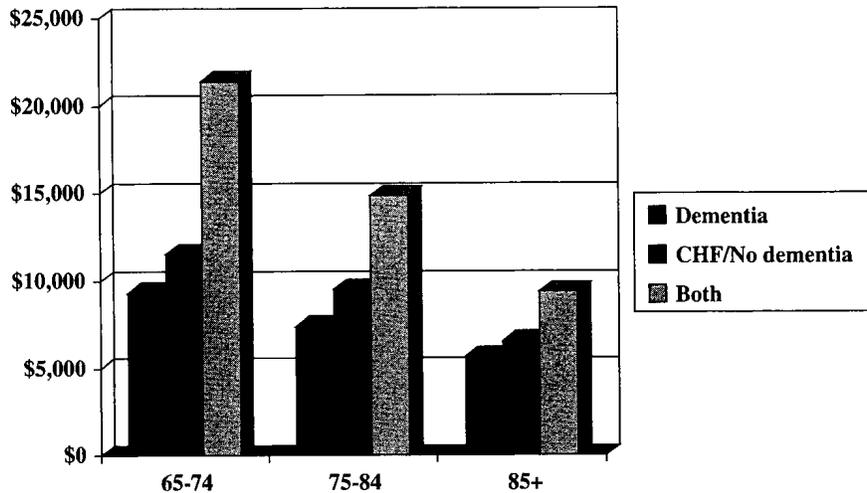
Fig. 2. (A) Total average Medicare costs for people with reported dementia, congestive heart failure/no dementia, or both, by age, 2000. (B) Average Medicare costs for hospital care for people with reported dementia, congestive heart failure/no dementia, or both, by age, 2000. (C) Average Medicare costs for skilled nursing facility care for people with reported dementia, congestive heart failure/no dementia, or both, by age, 2000. (D) Average Medicare costs for home health care for people with reported dementia, congestive heart failure/no dementia, or both, by age, 2000. These figures are based on data from FY 2000 Medicare claims for a 5% national random sample of Medicare beneficiaries. The data set was created by the US Centers for Medicare and Medicaid (CMS). Data for this analysis were provided to the Alzheimer's Association by the Partnership for Solutions, a Johns Hopkins University project directed by Gerard Anderson, PhD. The sample includes fee-for-service Medicare beneficiaries aged 65 and older who were enrolled in Medicare for the full year (or while they were alive) (1,238,895 individuals). Sample members with no Medicare claims in FY 2000 are included.

have higher costs. In fact, the differences are greater for the young-old group (aged 65 to 74) than for the older groups (75 to 84 and 85 years old and older). Figs. 2 B–D show the same relationships for average Medicare hospital, SNF, and home health costs. The same relationships also exist for beneficiaries in the three age groups who have dementia with and without CHD, COPD, or diabetes.

#### Implications for nurses and other health care professionals

The substantial prevalence of coexisting medical conditions in people with dementia has important implications for nurses and other health care professionals. Coexisting medical conditions affect when and where and how frequently people with dementia enter the health care system. Coexisting medical conditions can exacerbate cognitive and other symptoms in people

**B** Average Medicare Costs for Hospital Care for People with Reported Dementia, CHF/No Dementia, or Both, by Age, 2000



**C** Average Medicare Costs for Skilled Nursing Facility (SNF) Care for People with Reported Dementia, CHF/No Dementia, or Both, by Age, 2000

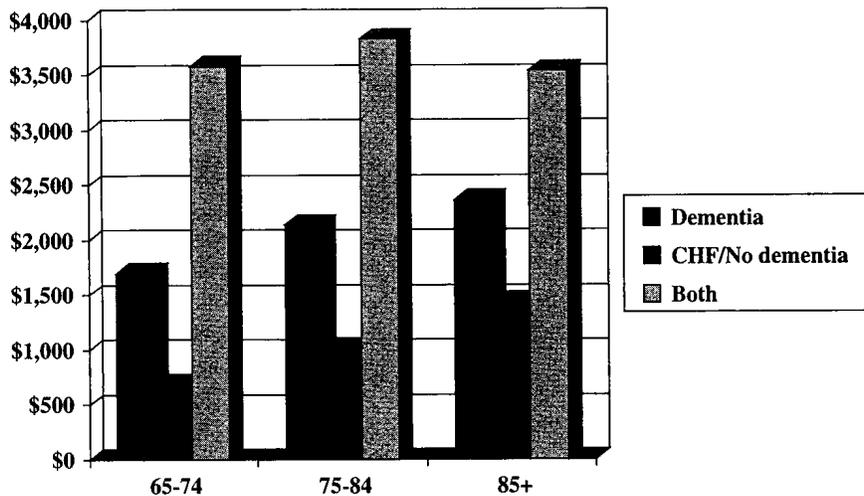


Fig. 2 (continued)

with dementia, and conversely, dementia can complicate the care of coexisting conditions. Lastly, coexisting medical conditions in people with dementia increase the difficulty and burden of care for their families. Greater understanding of and attention to these issues could help health care professionals provide better care for people with dementia.

**D** Average Medicare Costs for Home Health Care for People with Reported Dementia, CHF/No Dementia, or Both, by Age, 2000

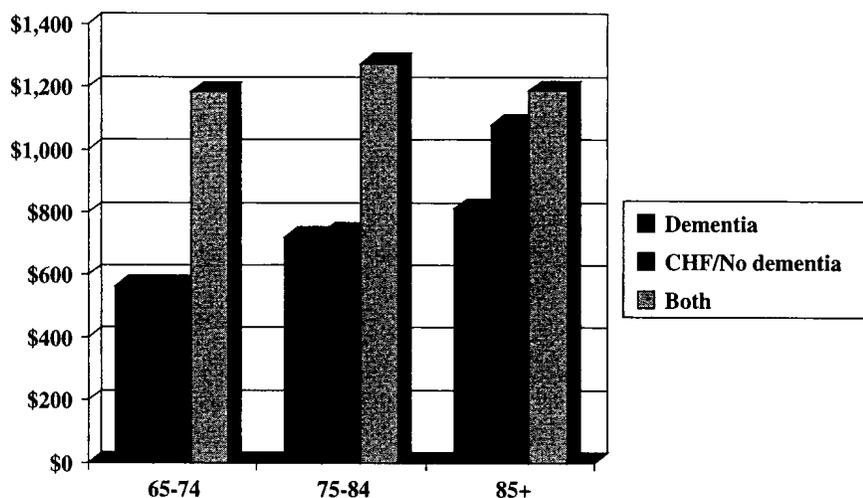


Fig. 2 (continued)

*Coexisting medical conditions affect when and where and how frequently people come into acute medical care settings*

Most people with Alzheimer's disease or another dementing illness have a primary care physician and receive ongoing medical care from that physician. If they do not have other serious medical conditions, they may not be hospitalized until the later stages of their dementing illness, when problems associated with their dementia (eg, falls, pneumonia, urinary tract infections, septicemia, malnutrition, and dehydration) can result in hospitalization. Until the later stages of their dementia, they are probably more likely to use home and community-based long-term care services and residential care than acute medical care.

In contrast, people with dementia and other serious medical conditions are likely to use acute medical care often and in all stages of their dementing illness. They come into the emergency room or are admitted to a hospital or intensive care unit for treatment of the coexisting condition. They also may receive inpatient medical rehabilitation or skilled, postacute care at home after discharge.

Studies of elderly patients in various acute care settings have found that substantial proportions of these patients have dementia, even though most of them have been admitted for treatment of other medical conditions. Such studies include:

- A study of 2557 patients at least 70 years of age who were admitted to University Hospitals of Cleveland or Akron City Hospital in Ohio from

1993 to 1997; 28% of the patients had moderate-to-severe cognitive impairment consistent with dementia [32]

- A study of 28,437 patients at least 65 years of age who were screened in four hospital emergency rooms in Ohio in 1998/1999; 12% of the patients had cognitive impairment consistent with dementia [33]
- A study of 118 consecutive patients at least 65 years old admitted to an intensive care unit at the Yale-New Haven Hospital in 2000/2001; 30% of the patients had dementia [34]
- A study of 100 patients at least 65 years old who were admitted for skilled home health care by the Cleveland Visiting Nurses Association; 61% of the patients had moderate-to-severe cognitive impairment consistent with dementia [35]

As discussed earlier, many people with dementia have not received a formal diagnosis, and even if they have been diagnosed, their diagnosis may not be noted in their medical record. Moreover, when they are admitted to a hospital or other acute care setting for treatment of a coexisting medical condition, even a formal dementia diagnosis may not be noted in their admission or transfer records. Given the findings described previously, nurses and other health care professionals should expect that some and perhaps many of their elderly patients have dementia, regardless of whether the patients' records indicate a dementia diagnosis. Health care professionals should know how to recognize possible dementia in their patients, and they should be capable of assessing (or obtaining an assessment of) cognitive status in these patients.

#### *Coexisting medical conditions can exacerbate cognitive and other symptoms in people with dementia*

Many serious medical conditions are accompanied by infection, fever, pain, and fluid, electrolyte, and metabolic disturbances, all of which can cause acute confusion, agitation, and related symptoms, especially in elderly people, and those with dementia are particularly at risk [4,9,36–38]. Other factors associated with the treatment of serious medical conditions (eg, medications, medical and surgical treatments, and the unfamiliar setting and routine of a hospital or other acute care setting) also can result in temporary worsening of cognitive and related symptoms in people with dementia [4,9,36,37,39]. All these factors can cause excess disability, making the person appear to be more cognitively and behaviorally impaired than can be explained by the underlying disease or condition that is causing his or her dementia.

Nurses and other health care professionals should be aware that serious medical conditions and medications and other treatments for the conditions can exacerbate cognitive and related symptoms in people with dementia. To the extent possible, they should try to avoid these problems by, for example,

treating the medical conditions, reducing the use of medications that increase acute confusion, and adapting the care setting and routine to decrease unnecessary stimuli. The nursing literature contains many articles with valuable recommendations for achieving the latter objective [1,4,8–10,12,13,37]. Sometimes, it may be impossible to avoid the exacerbation of cognitive and related symptoms, at least during acute flare-ups of chronic conditions or when medications and other treatments that cause the symptoms must be used to treat the conditions. During these times, health care professionals should be aware that the person's cognitive and related symptoms are probably worse than they were previously and worse than they will be once the acute flare-up or treatment is over, and he or she is back in a familiar environment. This awareness is particularly important for counseling patients' families who may be shocked by the worsening of their relative's cognitive symptoms and related symptoms and anxious about how they will manage these symptoms when the person returns home.

In contrast to the factors discussed previously that usually cause only temporary exacerbation of cognitive and related symptoms, some coexisting medical conditions actually cause dementia. The best example is cardiovascular conditions (eg, stroke, hypertension, and cardiorespiratory diseases) that can cause vascular dementia [40–42]. Recent research indicates that cardiovascular conditions also can hasten the development, expression, and progression of Alzheimer's disease [43,44]. Nurses and other health care professionals should be aware of these relationships and strongly urge their patients to seek medical treatment and make life style changes to reduce their risk for cardiovascular and other medical conditions that can cause dementia.

*Coexisting medical conditions are more difficult to treat effectively in people with dementia*

Effective treatment of many medical conditions requires the active involvement and cooperation of the patient, but capacity for involvement and cooperation often is compromised in people with dementia. Cognitive deficits caused by dementing diseases and conditions can interfere with a person's ability to provide an accurate medical history, recognize and report symptoms, and comply with treatment recommendations (eg, for medications, diet, exercise, and follow-up medical appointments).

Health care professionals generally rely on family members to perform medically related functions that the person with dementia cannot perform and to support and monitor compliance with treatment recommendations. Clearly, families can perform some of these functions, but others, such as reporting symptoms, are more problematic. If the person with dementia has no family, or his/her family is unable or unwilling to perform the functions, effective treatment of coexisting medical conditions can be very difficult. Moreover, even if family members are available, they may not be able to

ensure that the person complies with treatment recommendations. A recent article in the *Journal of the American Medical Association* describes such a situation. A woman in her 80s who had mild dementia and osteoporosis was prescribed a new medication for osteoporosis. She and her family, with whom she lived, were instructed that she should take the medication with water and stay upright after taking it. Four weeks later, she came into the local emergency room with symptoms of esophageal rupture secondary to ulceration, which likely was caused by her failure to take the medication properly. Despite treatment, she died when the ulcer eroded into a major blood vessel [45].

The proportion of people with particular medical conditions who also have dementia is not known, but data from the previously cited survey of a nationally representative sample of elderly fee-for-service Medicare beneficiaries indicate that many do, and that the proportion increases dramatically with age (Alzheimer's Association, unpublished data, 2003). The survey data for 2000 show, for example, that:

- Twenty-one percent of beneficiaries age 65 and older who had CHF also had dementia, with the proportion increasing from 10% of those age 65 to 74 to 34% of those age 85 and older
- Fifteen percent of beneficiaries age 65 and older who had COPD also had dementia, with the proportion increasing from 7% of those ages 65 to 74 to 33% of those age 85 and older
- Twelve percent of beneficiaries age 65 and older who had diabetes also had dementia, with the proportion increasing from 5% of those ages 65 to 74 to 31% of those age 85 and older (Alzheimer's Association, unpublished data, 2003)

Because some people with dementia have not received a diagnosis and even when a diagnosis is given, it may not be reported on Medicare claim forms, the figures from the Medicare survey data probably underestimate the true proportion of people with CHF, COPD, and diabetes who also have dementia. On the other hand, they provide a useful starting point for determining the true proportion.

Available treatment guidelines and disease management protocols for conditions, such as CHF, COPD, and diabetes, generally do not address dementia, and increasingly, these guidelines place strong emphasis on patient self-management, which is unlikely to work for people with dementia. Moreover, little research has been published on the clinical implications of dementia in people with particular medical conditions or adaptations to usual treatment practices that may be needed for people who have these conditions plus dementia. Exceptions include the growing number of studies on delirium and dementia, hip fracture and dementia, recognition and management of pain in patients with dementia, and clinical and ethical issues in decisions about the use of diagnostic tests and aggressive medical

treatments, especially for people in the late stages of dementia [3,34,38,45–53]. More research is needed on these and many other issues in the treatment of serious medical conditions complicated by dementia. In the meantime, nurses and other health care professionals can help to ensure that dementia is recognized in people with other serious medical conditions and that consideration is given to the implications of dementia when treatment recommendations are made for them.

*Coexisting medical conditions increase the burden of care giving for families and others*

Families provide most of the care for most people with dementia, and research conducted over the past 20 years has documented the difficulties they face and the negative effects of care giving on their physical and emotional health and well-being. Similarly, research on families of people who require hospital and posthospital care for acute medical conditions has documented the many problems these families encounter and their resulting anxiety and discomfort. Levine describes some of these problems as follows:

During their relatives' hospitalizations, caregivers say, they routinely meet with staff resistance when seeking information about patients, and feel at best invisible and at worst unwelcome. While playing a larger part in patient care than ever before, family caregivers also cite a lack of training on equipment and procedures, and dismissal of their fears and discomfort about having to take on professional tasks [54].

For families of people with dementia and other serious medical conditions, the combined effect is undoubtedly greater than the effect of either dementia or another serious medical condition. Little research has been done to describe and compare these situations, however.

In ongoing work to replicate their ground-breaking research on transitional care for elderly people with CHF, myocardial infarction, and other medical conditions [55], Naylor et al from the University of Pennsylvania followed a small number of elderly people with dementia through hospitalization and 6 weeks after discharge. Their objectives were to identify the major problems faced by the patients and their families and to design a nursing intervention to address the problems [56]. Quotes from the families illustrate the difficulties they face. One family member said, "They taught her how to handle the cast but she did not remember what to do when she came home, and we had no idea who to turn to" [56]. Another said, "She always forgets to take her medications, decompensates, and ends up in the hospital" [56].

As the nursing intervention designed by the University of Pennsylvania research team and interventions designed by other researchers and clinicians are tested over the next few years, valuable information will emerge about effective approaches for assisting family caregivers of people with both dementia and other serious medical conditions. In the meantime, nurses and

other health care professionals can help by explicitly acknowledging with families the difficult care giving issues they face, proposing alternate ways to accomplish recommended treatments, and tailoring their stated and unstated expectations about the family caregivers' ability to ensure the patient's compliance with all treatment recommendations.

### Summary

Research-based information about the prevalence of other serious medical conditions in people with dementia has become available only recently, and the true prevalence is not known, primarily because many people with dementia do not have a diagnosis. The existing information is sufficient, however, to show that these other conditions are common in people with dementia. It is also clear that coexisting medical conditions increase the use and cost of health care services for people with dementia, and conversely, dementia increases the use and cost of health care services for people with other serious medical conditions. Nurses and other health care professionals should expect to see these relationships in their elderly patients. They should know how to recognize possible dementia and assess, or obtain an assessment of, the patient's cognitive status. They should expect the worsening of cognitive and related symptoms in acutely ill people with dementia and try to eliminate factors that cause this worsening, to the extent possible, while assuring the family that the symptoms are likely to improve once the acute phase of illness or treatment is over. Families, nurses, and other health care professionals are challenged by the complex issues involved in caring for a person with both dementia and other serious medical conditions. Greater attention to these issues by informed and thoughtful clinicians will improve outcomes for the people and their family and professional caregivers.

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