THE SUBSTITUTION BETWEEN HOME/COMMUNITY CARE AND INSTITUTIONAL CARE FOR THE POST-HOSPITAL CHRONICALLY ILL ELDERLY AND FOR THE COMMUNITY-DWELLING CHRONICALLY ILL ELDERLY

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Major Paper presented to the
Department of Economics of the University of Ottawa
in partial fulfillment of the requirements of the M.A. degree
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Ottawa, Ontario
January 1994

TABLE OF CONTENTS

1. INTRODUCTION

The search for an alternative to the conventional provision of long-term care for the elderly, consisting mainly of hospital and of institutional care, has gained importance in most developed countries because of both the development, and the combination, of various factors: serious fiscal constraints, experienced by these societies since the late 1980s; demographic trends, which point to a greater number of elderly out of a smaller younger population; and prolonged life expectancies, which are expected at least to maintain the present level of health care expenditures. Moreover, at a deeper level, the appropriateness of the manner by which the elderly are being cared is being questioned, particularly with respect to the impact of medical interventions and of institutionalization on the elderly's overall condition. In the light of these issues, home/community care, which has been explored over the past fifteen years as a substitute for institutional care, is the topic of this paper.

The analysis is divided into four parts. Part 2 provides a description of the context within which Parts 3 and 4 are analyzed. First, the above-mentioned factors, which explain the motivation underlying the interest in providing long-term care for the elderly outside of institutions, are examined more closely in section 1 of Part 2. Since the present form of home/community care originates from home health care, its development is described in section 2 of Part 2. Third, because the literature which addresses this issue springs from the fields of gerontology and public health, a framework, which offers an economic interpretation of the reasons for the presence (or the absence) of substitution between the two types of services and its effect on total health care costs, is presented in section 3 of Part 2. Fourth, the occurrence of substitution between home/community and institutional care is manifested through specific variables, which are explained in section 3 of Part 2. Lastly, basic institutional information concerning the health care insurance system in the United States, as well as other details, are provided in section 4 of Part 2 to clarify the meaning of the findings of the research projects presented in Parts 3 and 4.

The substitution of home/community care services for institutional care services is examined from two perspectives. The first, home/community care as a substitute for non-medical nursing home placement or as follow-up care for the post-hospital chronically ill elderly, is explored in Part 3 through research projects undertaken by Weissert et al. (1980), Oktay and Volland (1990) and Melin et al. (1993). As explained in the overview of the development of home care services (section 2.2), this elderly population was the first to be examined by demonstration projects to evaluate the potential for substitution between long-term home/community care and institutional care services. The second perspective, home/community care as a substitute for the premature institutional placement for the community-dwelling elderly, is examined in Part 4 as per Skellie et al. (1982) and (1984), Weiss and Sklar (1984), and a special issue of *Health Services Research* (1988), with papers by Applebaum; Applebaum, Christianson, Harrigan and Schore; Carcagno and Kemper; Corson, Grannemann and Holden; Kemper; Phillips, Kemper and Applebaum; Thornton, Dunstan and Kemper; Wooldridge and Schore. These projects were chosen because, according to section 2.2, this community-dwelling elderly population represents the present object of long-term home/community care policy. In both Parts 3 and 4, the effects of the home/community care services provided through these projects on the study population's condition, on the use of health care services and on total health care costs are compared, followed by an analysis of the conditions conducive to the substitution between the two types of services.

Studies in both parts analyze the cost-effectiveness of home/community care; unlike either effectiveness or cost analyses, these studies focus on the impact of the 'intervention' program on *both* the costs, and the health and well-being of the elderly. The selected studies, completed during the 1980 to 1993 period, capture the most recent work considered as being 'classic' and that which is not necessarily widely quoted in the literature. Research pre-dating this period is vastly documented in various surveys of the literature; moreover, earlier demonstration projects did not focus exclusively on the elderly, but rather on the 'chronically ill population', and, as such, did not meet the objectives of this paper. Indeed, the programs examined herein concentrate on a truly elderly population (mean ages of the study groups being at least seventy-five years). All projects are quasi-experimental and all, except those dealing with the Channeling Demonstration reported in the issue of Health Services Research mentioned above, are purpose-built programs. Consequently, Part 5 summarizes the findings gleaned from the analysis of the research programs presented in Parts 2 and 3 on the potential for the substitution between home/community and institutional care services. Accordingly, the issue of whether a policy of home/community care services as an alternative to institutional care ought to be adopted is addressed.

2. DESCRIPTION OF THE CONTEXT

2.1 Demographic Trends, Life Expectancy, Morbidity and Health Care Costs

Why should policy makers have a particular interest in the level and the type of long-term care alternatives for the elderly? The issue can be reduced to a matter of cost and to society's capacity (ability and willingness) to pay. Health care expenditures are considerably higher for the elderly than for other age categories of the population. Concurrently, the number of elderly is growing, exerting in itself upward pressure on total health care costs. At the same time, the ability and/or the willingness of governments to uphold even the present level of financing of health care services for the elderly is being challenged by serious fiscal problems *and* by the declining portion of the working-age or 'active' population relative to the proportion of the elderly (Gross and Schwenger (1981, p. 73); Garber (1989, p. 247); Cassel et al. (1992, p. 89)).

The growth in the number of elderly, both absolutely and as a proportion of the population, is explained partly by increased life expectancies of current and future generations (due to advances in medical technology) and partly by the age distribution of the population (most notably, the bulge of baby boomers, and the lower fertility rates of recent decades). Not only are the numbers of elderly rising, but those described as the 'frail elderly', aged 80 years and over, are projected to increase even more rapidly than the total number of elderly (Defever (1991, pp. 3-4)).

As Defever (1991, pp. 5-6), Cassel et al. (1992, p. 91) and Barer et al. (1987, pp. 852-4) explain, there are conflicting views about the effect of longer life expectancies on the use of health care services. One view, known as the theory of the compression of morbidity (Fries, quoted in Defever), suggests that, consequent to medical progress and increased life expectancy, the onset of multiple chronic illnesses and disabilities would occur at a later stage in life (more specifically, within the few years preceding death). This would allow for a wider proportion of years free of chronic impairments out of an increasing life span, implying that the use of both hospital and institutional care would be most intense within the frail elderly population over a relatively short period. The second view, known as the theory of medicalization (Verbrugge, quoted in Defever), proposes that morbidity rises with declining mortality, as patients who would have died earlier now survive to be chronically ill and disabled. This suggests that the increased incidence of chronic, degenerative diseases and conditions, as an inevitable part of the *extended* aging process, would subject the frail elderly to a higher risk of developing multiple disabling conditions (Gross and Schwenger (1981, pp. 74-5)). The outcome of this scenario would imply a concomitant increase in the utilization of health care services over a longer period of time than that expected by Fries' theory. Nevertheless, whether the elderly are healthier or not at any given age, their growing numbers and their longer life expectancies *will* mean that more of society's resources will have to be devoted to their support and long-term care, especially with respect to the frail elderly (Garber (1989, pp. 258-9); Cassel et al. (1992, p. 95)).

Indeed, the elderly presently make greater use of costly services such as acute care hospitals and long-term institutional care than other segments of the population (Barer et al. (1987, p. 858)). However, institutionalization in acute care hospitals and in long-term care facilities -- the traditional way of providing long-term care to the elderly -- is often medically improper (Brook (1990, p. 239)). Many of the elderly in institutional care do not need constant supervision or the technologically and medically intensive services provided by skilled health care providers, but rather, long-term supportive services that could be provided in a non-institutional setting (Blum and Minkler (1980), pp. 135-138). Moreover, according to Kistin and Morris (1972, p. 139), Patten (1974, p. 638) and Clarfield (1983, p. 1182), most elderly would actually prefer to remain at home, suggesting that premature and medically-unnecessary institutionalization can be detrimental to their psychological well-being and can hasten the degeneration of their conditions (Portnoi (1979, p. 1388) and Applebaum et al. (1988, p. 144)). Home/community care services could serve to meet the elderly's preferences, to reduce the incidence of improper treatment in institutional settings and, perhaps, to reduce the cost of long-term care to the elderly.

2.2 From Home Health Care to Home/Community Care

As explained by Minkoff (1954, p. 516) and Kavesh (1986, pp. 137 and 141), while home care was originally conceived as 'custodial care', providing low-intensity care to homebound patients, its role was expanded during the 1950s to facilitate hospital discharge of chronically ill patients who, because of a short supply of long-term care beds, were inappropriately placed in acute care beds (Gogan (1958b, p. 43)). The provision of home *health* care services (medical and nursing care) was expected to yield savings by averting the expansion of physical capital which would have been required to meet the increasing demand for institutional care (Gogan (1958a, p. 40) and (1958b, p. 64)).

This type of home care, according to Kavesh (1986, p. 144), is provided to post-hospital patients to "facilitate convalescence following surgery or hospitalization due to an acute medical problem". It is medically-oriented, offered for a brief period of time, and usually includes professional nursing and related health aide services, which are arranged by the hospital discharge planner, and are authorized by the patient's physician prior to discharge (ibid.; Hughes (1985, p. 463) and Phillips et al. (1988, p. 76-7)).

Hammond (1979) and Hughes (1985) reviewed various studies on the cost-minimization and/or the effectiveness of home health care as a substitute for inpatient recuperative services, and reported that post-hospital home health care services are successful in reducing hospital use subsequent to discharge which can be attributed to the uniform needs of the populations studied and the ability to match services to needs (Hughes (1985, p. 466)).

However, according to Kistin and Morris (1972, p. 140) and Hughes (1985, pp. 466-467), these relatively short-term home health care services were inadequate in providing support for post-hospital chronically ill *elderly* who typically suffered from a multiplicity of chronic health problems and functioning impairments, and who were susceptible to the onset of acute problems. Many had to be either rehospitalized or admitted to a nursing home. However, many of the elderly who were admitted to nursing homes (to recuperate from an acute care episode or for long-term care), were found not to need the intense medical care provided, but simply maintenance care and social support (Patten (1974, p. 638)).

Concern over the incidence of medically-unnecessary hospital readmission and/or premature institutionalization of the post-hospital chronically ill elderly led researchers to widen the scope of the population being studied to include the community-dwelling elderly, who also suffer from chronic and functioning problems and who were at risk of admission to long-term institutions for non-medical reasons. The definition of home care was also expanded. By including basic health, personal and social support services, 'home care' became 'home/community care', a more broadly-based way to enhance independence and, thereby, to reduce non-medical admissions to hospitals and institutions in both populations (Blum and Minkler (1980, p. 134); Nisbet (1970, p. 134)). In other words, post-hospital home health care became a subset of home/community care.

Hughes (1985, p. 472) explains that studies which evaluated the ability of home/community care services to reduce the utilization of institutional services produced conflicting results which may be due, according to author, to the ambiguous expectations of these services, and to the delineation of the population in need of them: eligibility criteria for these programs, mainly defined according to the eligibility to enter nursing homes, mixed the elderly likely to need long-term care with those who were not.

As Hughes (1985, pp. 473-474) and Phillips et al. (1988, p. 67) explain, the expansion of home care to include home/community care was not sufficient to prevent inappropriate institutionalization: the lack of organization within the delivery system and, at least in the United States, the incomplete and differing eligibility conditions for insurance coverage for such services, left many chronically ill elderly unable to avail themselves of these long-term care services. While Schwenger (1967, p. 538) called for better coordination of basic medical, social and personal care services, Clarfield (1983, p. 1183) proposed a more concerted effort to match services to needs. To achieve these ends, research projects of home/community care then adopted case management (Hughes (1985, p. 473)).

Demonstration programs of case management and home/community care services have reported discouraging results, however: cost savings, expected by replacing institutional care with home/community care, coordinated through case management, were not found overall

(Weissert et al. (1988)). Hughes (1985, p. 479) attributes this to improper population targeting.

It should be noted that the goal of home/community care is not to replace medical care, since the chronically ill elderly, post-hospital or community-dwelling, will still experience acute care episodes. Rather, these services aim to avoid the incidence of non-medical admissions to nursing home facilities and to reduce that portion of hospital stays. In this way, these services share the same objectives of the initial post-hospital home health care services. The difference between the two types of care is that home/community care also recognizes, and tries to address, the social and personal needs of the chronically ill elderly population.

Although widely studied, expanded home/community care and case management have not been officially implemented in the United States; thus, the generalization of project results may be somewhat tenuous.

2.3 Economic Framework[1]

As noted in section 1.1, the purpose of home/community care is either to shorten the non-medical portion of acute care hospital and of medically-intensive, short-term institutional stays, or to avoid or delay non-medical admissions to less-intensive, longer-term institutional facilities.

According to conventional consumer theory, individuals, each with given preferences or tastes and faced with a budget constraint, would seek to maximize their utility by choosing between home/community and institutional care. The presence of health care insurance coverage

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[1] The conventional approach to consumer theory and to substitution can be found in Varian (1984), while the non-traditional approach to 'consumer' theory, to the effect of health care insurance on 'consumer' behaviour, to moral hazard and to need for health care are found in Evans (1984).

could reduce the 'prices' faced by individuals, thereby increasing the budget set and the demand for both services, ceteris paribus.

If, as is often the case, insurance coverage favours medically-oriented institutional and home health care services, and hinders the access to, and the affordability of, home/community care, individuals could use relatively more institutional care services, despite their actual needs or preference for the services possibly provided, because the insurance coverage distorts the relative prices. If insurance coverage were expanded to include home/community care services, their 'price' would also be lowered, changing the relative prices but also further increasing the budget set.

While this could lead to a substitution between services, it may instead induce the problem of moral hazard. Faced by an increased budget set, individuals may choose to consume more home/community care services than desirable from a societal point of view, without a reduction in the utilization of institutional services. Consequently, society would be committing more total resources to the two types of care. In the presence of universal, comprehensive, health care insurance, the impact of moral hazard on total health care costs may be even more pronounced.

The commitment of additional resources to both institutional and home/community care services in the absence of universal insurance could also be due to adverse selection. Adverse selection arises when, in the presence of a pool of insured individuals with differing risk statuses, low-risk users choose to opt out of a health care insurance program because the gains accruing to them (in the form of reimbursement for expected health care costs), are less than the costs (the premiums) for belonging to the program. In other words, it is more beneficial for low-risk users to seek insurance plans whose premiums and coverage better represent their risk status and their patterns of utilization. Consequently, the initial pool of insured individuals now mainly holds high-risk users whose utilization patterns produce higher average health care costs. From a social perspective, however, the incidence of adverse selection should lead to a redistribution of increased costs within the health care insurance 'industry' so that, overall, health care costs should not increase. On the other hand, the incidence of moral hazard would lead to an increase in total health care costs, because the insured individuals share the same risk status: the overall redistributive effect, anticipated in the presence of adverse selection, should not occur (Evans (1984, p. 45)).[2]

However, viewing increased demand as a problem of moral hazard may only be appropriate if individuals regard institutional care and home/community care services as they would any other goods or services, where an increase in consumption directly increases well-being or utility. If, as Evans (1984) proposes, the consumption of health care in general, and of institutional and home/community care services in particular, does not directly increase utility, but does so indirectly by maintaining or improving the individual's health, an increase in the consumption of home/community services, in addition to institutional services, could simply be related to the fact that the home/community services, to some extent, satisfy legitimate basic needs that were previously not being met, because the services were either unavailable or inaccessible. Providing people with access to services to satisfy unmet basic human needs -- in this case, maintenance and personal care for the chronically ill elderly to prevent or slow down

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[2] In the case of the elderly population, the risks discussed pertain to the risk of hospitalization or of institutionalization for non-medical reasons. Indeed, these risks are the 'raison d'être' of research projects on the substitution of home/community care for institutional care because the elderly, on the whole, are assumed to be at high risk of admission to either type of facility.

the deterioration of their health condition -- is not equivalent to providing consumers with the opportunity to improve their utility through increased consumption of expensive cars. Thus, the absence of substitution may simply suggest that home/community care services could be regarded as complementary to institutional care services, and it may be appropriate for society to devote more resources to providing these services.

The studies described in Parts 2 and 3 of this paper examine whether greater availability of, and accessibility to, home/community care services result in their substitution for non-medical institutional care in hospitals and nursing homes and, if so, what conditions favour this type of substitution.

2.4 Criteria for the Analysis of the Presence of Substitution

The presence (or absence) of substitution between home/community care and institutional care will be examined in this paper by focusing on the following elements in the various selected studies: the effectiveness of the substitutive services on the elderly population studied, the impact of the use of these services on the use of other (institutional and non-institutional) care services, the choice of the study population, and the effect of the provision of the substitutive services on the total costs of providing services.

The effectiveness in maintaining or improving the elderly's well-being with home/community care services, compared to the levels achieved in the institutional setting, is usually assessed according to two measures. As explained by Applebaum et al. (1988), the first, the mortality rate, indicates if the home/community care services can "prevent premature death, usually associated with imposed institutionalization" (p. 144). The second, functioning, indicates if home/community services enhance independence. Typically, functioning is measured as the number and the severity of impairments in "activity and in mobility" (Kavesh (1986, p. 145)). Impairments in activity are measured according to the "Katz scale of Activities of Daily Living (ADL) (in) six personal care functions: eating, toileting, dressing, bathing, transferring, and continence" (ibid., p. 146). Impairments in mobility are measured by the "Instrumental Activities of Daily Living (IADL) scale, whose elements include meal preparation, housekeeping, shopping, money management and telephone use" (ibid.). Various studies use different combinations of these elements to define their ADL and IADL scales.

As Weissert et al. (1980, p. 242) explain, substitution between home/community care and institutional care is manifested through a reduction in the rates of admission to and/or the length-of-stay in hospitals and institutions. Specifically, if substitution occurs, the number of days spent in institutions should decrease as the use of home/community care increases. The same applies to the rate of admissions to institutional care facilities.

The potential for substitution between home/community and institutional services is likely to be strongly influenced by the characteristics of the study populations. For example, the

> hospital-referred elderly (to case management), who tend to be younger and to recover from an acute care episode, seem to need intensive, immediate medical attention, whereas the community-referred elderly, who tend to be older, more dependent functionally and to suffer primarily from chronic health problems, seem to require long-term care (Warrick (1992, pp. 786-787)).

Because a difference in needs for either home/community care or institutional care can be expected to affect the potential for substitution, the analysis of the studies in this paper will describe in some detail the eligibility criteria of the programs, the sources of referral, the mix of diagnoses, and, as explained in Weissert et al. (1980, pp. 235-6), the study group's risks of institutionalization and of hospitalization.

Lastly, the effect of the substitutive services on costs will be discussed. Typically, if substitution has not occurred, total costs of health care services are expected to increase, as the use of substitutive services are simply added to the range of existing institutional and non-institutional services.

2.5 Institutional Information

Because most programs studied in this paper are American, an explanation of health care insurance coverage and of other details related to these project designs in the United States is important.[3]

2.5.1 Services Covered by Medicaid and Medicare

Medicare, a non-means-tested program[4] (Barer et al. (1987, p. 770)), covers part of the cost of health care services for all elderly who are sixty-five years of age and over, regardless of income (Blum and Minkler (1980, p. 139)). Services can be divided into two types:

- Medically-oriented services and ambulatory services, including short-stay institutional care, outpatient and physician visits, laboratory work, rehabilitative therapies and medical devices (Weissert et al. (1980, Table 3, p. 236); Barer et al. (1992, p. 771)).

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[3] The findings of these American studies are relevant for Canada since, as Barer et al. (1987, p. 778) show, American and Canadian elderly populations are very similar in the prevalence of disability and in the use of hospital and medical services.

[4] A means-tested health care insurance program establishes its eligibility criteria for coverage according to the individual's assets and income, which include personal and nonhousing assets. As such, Medicare is the nearest counterpart to the coverage of health care services for the elderly in Canada, although the comprehensiveness of services covered in Canada is wider than that in the United States (Barer et al. (1987, p. 771)).

- In-home health care services, according to Kavesh (1986, p. 154), provided to the 'homebound' elderly at the authorization of a physician; these services may include intermittent professional nursing and/or rehabilitative therapy, supplemented perhaps by professional home health aide services (providing assistance in activity) which are received simultaneously with skilled nursing or any other skilled therapy service (Blum and Minkler (1980, p. 141); Weissert et al. (1980, p. 230); Hughes (1985, p. 468)); these services can be compared to those provided in skilled nursing facilities (LaVor and Callender (1976, p. 870)).

Medicaid (Title XIX of the Social Security Act), a means-tested program health insurance program, covers part of the cost of health care services for low-income and disabled individuals, regardless of age (Barer et al. (1987, p. 771) and Blum and Minkler (1980, p. 141)). Again, services can be divided into two types:

- Institutional services, including long-stays in skilled nursing and in intermediate facilities (Kavesh (1986, Table 4-6, p. 153); LaVor and Callender (1976, p. 870); Weissert et al. (1980, Table 3, note b, p. 236)).
- Home health aide services described above *if* provided by a Medicare-certified agency, authorized by a physician and supervised by a registered nurse: "the recipient does not need to be homebound or to require in-home skilled care services" (Kavesh (1986, p. 156)).

Title XX of the Social Security Act and Title III of the Older Americans Act provide coverage for less-intensive, long-term home-based and/or community-based care; community-based services typically include social and counselling services, whereas home-based care includes "homemaker/chore/home health aide services" (Kavesh (1986, pp. 157 and 160); Blum and Minkler (1980, pp. 143-144)). Such services, which, according to LaVor and Callender (1976, p. 871), provide "assistance in basic maintenance and personal care", are offered to prevent or delay institutionalization and to enhance elderly independence.

2.5.2 Case Management

As explained by Kavesh (1986) and Hughes (1985, pp. 473-4), case management refers to the use of a "single agency" (p. 167) to regulate and direct access to long-term home/community care services. According to Kavesh (1986, p. 167),

> Under this model, a single agency serves as the point of entry ... for long-term care services. The agency carries out assessment of the client's needs and certifies the individual as meeting the eligibility criteria for the program. The case manager, often with assistance from an interdisciplinary team, develops a care plan. The case manager then arranges services by contacting various providers as well as coordinating with the client and informal provider. Finally, the case manager monitors the client's progress and modifies the care plan and service package as necessary.

Phillips et al. (1988, pp. 76-7) add that case management is offered within a hospital or by a community service agency, and, according to Kavesh (1986, pp. 167-70), is usually made available through the temporary expansion of insurance coverage ("waivers") by relaxing Medicaid and Medicare regulations.

3. HOME/COMMUNITY CARE AS A SUBSTITUTE FOR INSTITUTIONAL CARE FOR THE POST-HOSPITAL CHRONICALLY ILL ELDERLY

3.1 Summary of the Studies

The studies reviewed in this section (Weissert et al. (1980), Oktay and Volland (1990) and Melin et al. (1993)) addressed the issue of home/community care as a substitute for non-medical institutional care for the post-hospital elderly.

These studies report the results of purpose-built programs, which establish their own eligibility criteria and, thereby, define their target populations. Weissert et al. (1980) and Oktay and Volland (1990) explain two American programs, while Melin et al. (1993) report on a Swedish experiment.

Although these programs aimed to provide different types of services to the post-hospital chronically ill elderly, their designs nonetheless had elements in common. For example, all programs built upon existing medical and social services; they were conditional upon the maintenance, or even the improvement, of the study population's functioning status relative to that found in institutional settings; and they aimed to reduce, or even avoid, the incidence of hospital readmission and/or of institutional admission following discharge by offering basic medical/health services and support in mobility and activity through the provision of home/community services.

The first two programs assessed whether the institutionalization of post-hospital elderly was caused by the time-limited insurance coverage of basic medical and social services (Oktay and Volland (1990)) or by the absence of insurance coverage of homemaker services (Weissert et al. (1980)); to this end, the coverage of these services was extended for one year following hospital discharge. Oktay and Volland (1990) further examined whether institutionalization might also be due to the lack of coordination of the delivery of comprehensive medical and social services in the community; to this end, the project coordinated the delivery of medical and social services through hospital-based case management. The last project, based in Sweden, assessed whether the institutionalization of post-hospital chronically ill and disabled elderly, who lived alone, could be avoided through the coordination of existing outpatient and home care services tailored to this population's needs for rehabilitative care. Insurance coverage of overall medical and social services for this project was not a constraint because, "in Sweden, health care services are financed through compulsory national health insurance funded by general tax revenues" (Melin et al. (1993, p. 356)).

While Weissert et al. (1980) and Melin et al. (1993) observed the effect of expanded services provided to post-hospital elderly patients on their subsequent use of institutional services, Oktay and Volland (1990) examined the impact of case management and of expanded insurance coverage on the patient's subsequent use of institutional services and on the informal caregiver's well-being. In this instance, the avoidance or the delay of the elderly's institutionalization depended on the ability of medical and social services to sustain the patient's condition and to reduce the caregiver's level of stress.

The eligibility criteria for the programs differed substantially, ranging from Medicare coverage eligibility for medically-intensive institutional care (Weissert et al. (1980)); to the condition that the post-hospital patients' needs and the in-home care provided by informal caregivers be extremely similar to those found, and offered, in nursing home facilities (Oktay and Volland (1990)); to the clinical assessment of the severity of chronic conditions and functioning impairments in activity and mobility (Melin et al. (1993)). Accordingly, the institutions targeted for substitution differed. In Weissert et al. (1980), medically-intensive, short-stay facility services (as explained in section 1.4) were to be substituted, whereas the program in Melin et al. (1993) targeted long-stay institutional care for substitution. In Oktay and Volland (1990), both hospital and nursing home care are targeted for substitution, but it is unclear whether the short-term or long-term stays in skilled nursing facilities were to be reduced. It could be both, given that approximately 30% of the population was Medicaid-eligible (p. 40).

The range of referral sources narrows from the first to the third program. In Weissert et al. (1980), participants were either awaiting discharge from the hospital, or they had recently been discharged and were living in the community. In Oktay and Volland (1990), participants were recruited prior to discharge from an "acute care hospital" (p. 39), while in Melin et al. (1993), patients were chosen, also prior to discharge, from an "acute short-stay rehabilitation hospital" (p. 356).

All three projects involved some form of initial assessment to determine whether the participants would benefit from the expanded services offered. The components of the assessments were wide-ranging, but for the purposes of this paper, it will be mentioned that all programs evaluated the population's functioning status according to mental status and impairment in ADLs (Weissert et al. (1980)), and in ADLs and IADLs (Oktay and Volland (1990) and Melin et al. (1993)). In addition, only the program studied by Oktay and Volland (1990) assessed the population's risk of institutionalization according to official standards of medical needs for admission to skilled nursing facilities.

On average, the populations studied were either severely dependent in ADL (Weissert et al. 1980, Table 2) or moderately dependent in both ADL and IADL (Melin et al. 1993, Table 1), and most likely lived alone (a condition for eligibility in Melin et al. (1993)). The range of primary diagnoses most prevalent in the study populations requiring different types and intensity of medical care varied widely in Weissert et al. (1980), while they were more narrowly defined in Melin et al. (1993). Oktay and Volland (1990) did not specify diagnoses, but prognoses; the authors indicated that improvement in the elderly's functional and medical conditions was possible; most of the informal caregivers had cared for the elderly patient before the initial hospitalization.

In two of the three projects, (Weissert et al. (1980) and Melin et al. (1993)), patients were randomly assigned to the experimental or to the control group following the initial screening. Oktay and Volland (1990, p. 40) carried out a "quasi-experimental" program, where the elderly discharged during the first year of the program, and their caregivers, formed the control group's elderly/caregiver pairs, and those discharged during the second year of the program, with their caregivers, formed the experimental group's pairs.

In all three programs, the experimental group received the expanded services. Specifically, the experimental group in Weissert et al. (1980) received the expanded homemaker services, along with the both types of Medicare-reimbursed described in section 1.4, while the control group received the Medicare-covered services only. In Oktay and Volland (1990, p. 39), the experimental group received the program's case management, hospital inpatient and ambulatory services, in-home nursing and social work services, and various social support services; the control group received existing Medicare/Medicaid-covered as per section 1.4 and case management from sources other than the project hospital. In Melin et al. (1993, p. 357), the experimental group received in-home rehabilitative services, basic health and support services; the control group was followed through the existing institutional setting for continuing rehabilitation, followed by home care services.

The study periods were similar in the three projects. Weissert et al. (1980) carried out their study for one year (although the year of the study is not specified). In Melin et al. (1993), the recruitment lasted from 1988 to 1990 and, once admitted to the project, each participant was observed for six months. The project described in Oktay and Volland (1990) carried out its recruitment period from 1983 to 1985, and each participating "elderly/caregiver pair" (p. 40) was observed for one year.

3.2 Summary of the Results

This section examines the effect of substitutive services in each project on the functioning status and mortality rate, on the use of hospital, nursing home and proposed home/community services, and on total costs.

3.2.1 Functioning Status

In Weissert et al. (1980), expanded homemaker services did not improve the functioning status (group difference not statistically significant at the 95% level; Table 6). Project services in Oktay and Volland (1990) did not affect the informal caregivers' level of stress or the elderly patients' functioning and mental statuses (group difference not statistically significant at the 95% level; Table 4). The results in Melin et al. (1993) show that program services did improve the elderly's mobility performance (intra-group difference statistically significant at the 99% level; Table 3), although it did not affect their activity level or their mental status (intra-group differences not statistically significant at low levels of significance; ibid.). Overall, it would appear that the provision of the various program services generally did not improve the functioning status, but neither did it contribute to their deterioration.

The effects of the substitutive services on mortality rates are mixed. Results presented in Weissert et al. (1980) suggest that homemaker services enhanced survivorship, especially for the subgroups aged 74 and over and/or the severely dependent (group difference statistically significant at the 99% level; Table 3). Meanwhile, the results in Oktay and Volland (1990, pp. 41-43)) indicate that the services offered had little impact on the mortality rate. Melin et al. (1993) did not measure the mortality rate.

3.2.2 Use of Hospital Services

In Weissert et al. (1980), homemaker services did not shorten any subsequent stays in an acute care hospital (group difference not statistically significant at either the 95% or the 99% levels; Table 3), nor did they delay hospitalization, since a substantial proportion of both groups was hospitalized ("77% of the experimental and 73% of the control group"; p. 236) . This suggests either that the provision of homemaker services had no effect on the experimental group's need for non-medical hospital care, or that the control group was able, through informal caregiving (family and friends), to obtain comparable levels of homemaker services. On the other hand, the results presented in Oktay and Volland (1990) indicate that project services contributed to a reduction of hospital stay (group difference statistically significant at the 95%

level; Table 6). The project's case management service, in addition to monitoring the elderly patient's condition and readjusting the services provided according to the needs of both the elderly and their caregivers, may have enhanced the caregivers' ability to provide care at home and to prevent reinstitutionalization and/or hospitalization. In Melin et al. (1993), the program did not affect the average length-of-stay in short-term and rehabilitation hospitals (group difference not statistically different, even at very low levels of significance; Table 5).

3.2.3 Use of Nursing Home Services

In Weissert et al. (1980), homemaker services did not affect the length-of-stay in skilled nursing facilities (group difference not statistically significant at the 95% level; Table 3), although a small portion of both groups was admitted to a skilled nursing facility ("16% of control group and 18% of the experimental group"; p. 235), implying that the entire study group was at low risk of institutionalization. Results in Oktay and Volland (1990) indicate that, on average, program services reduced the stay in skilled nursing facilities but, "due to the width of the confidence interval, it cannot be concluded that this difference was not due to chance" (p. 43). Since the proportions of both groups admitted to a skilled nursing facility were small and very similar ("12% in the control group compared to 10% in the experimental group"; ibid.), the total study group seems to have been at low risk of institutionalization; the authors suggest that case management, and comprehensive medical and social services, delayed nursing home admissions rather than avoided them. Project services in Melin et al. (1993) reduced the length-of-stay in long-term care facilities (group difference statistically significant at the 99% level; Table 5), indicating perhaps that the study group was at high risk of institutionalization and that the project's primary rehabilitative/home care services were well matched to the participants' needs.

3.2.4 Use of Program and Other Existing Services

In Weissert et al. (1980, p. 234), the homemaker services were used intensively, which, according to the authors, was partly due to the patients' diagnoses, although, as they note, many users persisted in using the services even when their functional status had improved. Given that these services were being provided to patients at a 'lower cost', through the expansion of insurance coverage, the persistent use may indicate 'moral hazard'.[5] Program services in Oktay and Volland (1990) also were used intensively[6] (group difference statistically significant at a 95% level; Table 3), while slightly more outpatient physicians' services were used, suggesting, the authors note, a shift from inpatient to outpatient services (group difference not statistically significant at the 95% level; Table 6). Likewise, project services in Melin et al. (1993) were used intensively (group difference statistically significant at the 99% level; Table 6). This may indicate a substitution between these home/community care services and corresponding services in long-term institutional facilities. Overall, the results suggest that, in all programs, substitutive services were extensively used by those who were entitled to receive them.

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[5] On the other hand, as discussed in section 1.2, the increase in use of services may simply reflect the extent of otherwise unmet needs rather than an abuse of the extended financial support.

[6] This was especially true during the interval between 3 and 12 months, probably owing to the fact that the control group's eligibility to receive these services under Medicare and Medicaid had terminated after 3 months, or upon improvement in health status.

3.2.5 Total Costs

In Weissert et al. (1980), since homemaker services did not substitute for the use of hospital and skilled nursing facility services, total costs of care rose "by 60%" (difference in cost statistically significant at 99% level; Table 3 and p. 242). In Oktay and Volland (1990), on the other hand, there were net savings: the reduced length-of-stay in the hospital and, to a lesser extent, in the nursing home, and of the shift from inpatient to outpatient physician care, amounted to "average cost savings per patient per year of approximately 60%" (p. 44). In Melin et al. (1993), the "total service cost per patient, including the cost of implementing the team care unit, was lower by 20.2 %" (difference in cost statistically significant at the 98% level; Table 7): according to the authors, the major source of savings in this case was the reduction in inpatient days spent in long-term facilities (p. 361), as the personal and primary medical care services provided in these institutions were instead offered on an in-home basis by the physician-led primary home care team.

3.2.6 Study Conclusion and Presence of Substitution

In Weissert et al. (1980), the provision of homemaker services, in addition to existing skilled home nursing and home health care services, did not improve functioning status but it did reduce the mortality rate. However, the services did not substitute for acute care and skilled nursing facilities services, probably because the study population was not at high risk of being admitted to these nursing home facilities, although it was at high risk of hospitalization.

According to the results in Oktay and Volland (1990), the provision of case management and of extended insurance coverage for comprehensive medical and social care did not adversely affect either informal caregivers' level of stress or the elderly patients' functioning and mortality rate. The services did shorten the hospital length-of-stay upon readmission, suggesting a substitution between inpatient recuperative services and in-home services. The effect on stays in skilled nursing facilities is inconclusive, which may be due to the small number of participants admitted to these facilities and/or to a potentially wide variation in the use of these services, as a result of the presence of both high users and low users within the total study group.

In Melin et al. (1993), the provision of physician-led primary home care services improved the elderly's mobility performance and reduced the length-of-stay in long-term institutions, mainly because the population was at high-risk of institutionalization to these facilities and services were well matched to needs. This project did not examine the effect of the services on the mortality rate.

The outcomes of the three projects indicate that substitution can be achieved in specific instances, although project designs may make it difficult, at times, to discern the presence of substitution. For example, substitution between home/community and institutional services is more difficult to observe when medical diagnoses (calling for either acute care, or chronic care, or both) are present within a population. Further, the aggregation of medically-intensive *and* chronic care services provided to a population as substitutes for institutional services may mask any substitution between particular services. The combination of these factors weakens the ability to measure empirically the existence of substitution: the absence of overall substitution in a study's results does not imply that it did not occur within subgroups of the population and for certain types of services. In other words, the selection criteria of the population and the choice of services provided as substitutes are very important in measuring the replacement of institutional care by home/community care services.

In Weissert et al. (1980), the eligibility criteria gathered a study group which represented a mixed lot of elderly patients needing either acute care, chronic care, or both (as indicated by the range of diagnoses and of referral sources). In Oktay and Volland (1990), the population selected needed the type of care typically provided in skilled nursing facilities. In Melin et al. (1993), the population was chosen according to chronicity, restriction in activity, and living arrangement, and uniformly needed basic medical, rehabilitative and personal care. The success in measuring substitution, as evidenced across the studies, seems highly correlated with selection criteria.

A population's risks of hospitalization and of institutionalization, sources of referral and mix of diagnoses, which indicate the need for institutional care, can also affect the potential for substitution; the importance of this relationship was clearly evidenced in Weissert et al. (1980) and Melin et al. (1993).

The results of the third study (Melin et al. (1993)) also demonstrate the importance of the choice of the institution targeted for substitution, given the type of home/community care offered as a substitute (as contrasted to Oktay and Volland (1990)). It is also noteworthy that this program, where the incidence of moral hazard would be most expected (because health care services are fully reimbursed through public funds), did succeed in substituting home/community care for institutional care. This strongly suggests that what may be perceived as conventional moral hazard in other studies (such as Weissert et al. (1980)) may simply reflect an inappropriate offering of services for substitution, services that were used to satisfy previously unmet basic needs.

3.2.7 Concluding Remarks

In summary, the substitution of home/community care for institutional care, as demonstrated with varying degrees of success in the three programs examined, depends on: the homogeneity of the population's needs for either institutional (medically-intensive) or home/community (basic medical/social/personal) care services, determined by the project eligibility criteria; the extent to which services offered as substitutes for institutional care correspond to the population's needs; and the degree to which substitutive services match the non-medical services provided in the institutions targeted for substitution.[7]

In the light of the potentially wide-ranging acute and chronic care needs of the post-hospital chronically ill elderly population, as evidenced in the studies, substitution may be expected within subgroups of this population, but it is unlikely across the population as a whole. Efforts to enhance the accessibility and the affordability of home/community care services through the expansion of insurance coverage may, for the majority of post-hospital elderly population, simply make accessible needed services that are complementary to the existing institutional and non-institutional services.

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[7] These observations are confirmed in Hughes (1985, p. 473), where a "better understanding of nursing home use would allow more precise definition of target populations and more sensitively tailored outcome measures".

4. HOME/COMMUNITY CARE AS A SUBSTITUTE FOR INSTITUTIONAL CARE FOR THE COMMUNITY-DWELLING CHRONICALLY ILL ELDERLY

The studies analyzed in the previous section focused on the post-hospital chronically ill elderly. This part examines the chronically ill elderly currently dwelling in the community. This population may be at high risk of institutionalization in hospitals and/or long-term care institutions for non-medical reasons, because of a deterioration in their chronic conditions brought about by a lack of supportive services within the community and/or to barriers to access these services. Home/community care can then serve two purposes: to provide long-term health, personal and social services to slow the deterioration of chronic conditions and/or to provide the type of maintenance care these elderly would have received had they been institutionalized.

4.1 Summary of the Studies

The three selected studies, all American, share the same goals: to provide comprehensive home/community services to avoid or to delay the institutionalization of community-dwelling chronically ill elderly brought about by non-medical factors, and to reduce the costs of caring for this population, without adversely affecting their functioning status. The first two projects -- The Alternative Health Services Project (Skellie et al. (1982) and (1984)) and Project OPEN (Weiss and Sklar (1984)) -- are purpose-built programs, which establish their eligibility criteria and, thereby, determine their populations. The findings of the third program, the Channeling Demonstration, are based on the works of various authors, published in a special issue of Health

Services Research (April 1988), which, in turn, are based on the project's Final Report referred to in Carcagno and Kemper (1988).

While all three projects sought to avoid or delay institutional placement, Project OPEN (Weiss and Sklar (1984)) specifically intended to do so by forestalling the advent of acute complications brought about by a deterioration of the elderly's chronic conditions. The Channeling Demonstration (Applebaum et al. (1988)), recognizing the contribution of informal caregiving 'services' in delaying long-term institutionalization, addressed the health and social needs of both the community-dwelling elderly and of their informal caregivers.

All projects provided case management and extended insurance coverage for services otherwise not available to the community-dwelling elderly. However, as Cargagno and Kemper (1988, p. 4) and Kemper (1988, p. 164) explain, the Channeling Demonstration proceeded in an incremental manner by offering two types of case management services. The first, the basic case management model, coordinated existing services under existing insurance coverage regulations, while the second, the financial control model, expanded insurance coverage in addition to providing case management. Existing coverage restrictions on certain services were circumvented in the second model by combining public reimbursement funds (as per section 1.4) for the case managers to allocate as required. Each model was tested in five separate sites, where partial case management already existed and direct community services were present.

The three projects accepted referrals from various sources, including hospitals, nursing homes, community agencies and family and self-referrals, but, ultimately, the participants of Project OPEN (Weiss and Sklar (1984), p. 130) and Alternative Health Services Project (Skellie et al. (1984), Table 1) were referred mostly by community service agencies, while Channeling

(Applebaum (1988)) participants were referred mostly by "hospitals and home health agencies" (p. 54).

Eligibility criteria differed among the projects according to the type of institutional services targeted for substitution. The Alternative Health Services Project (Skellie et al. (1984)) targeted a population eligible to be admitted to a nursing home for long-term care. According to Applebaum (1988), the Channeling Demonstration established its criteria according to functioning impairments to obtain a community-dwelling chronically ill elderly population as similar as possible to that of a long-stay nursing home population. Project OPEN (Weiss and Sklar (1984)) sought a population most likely to enter a medically-intensive institution for short-term care due to unmet "basic health or social needs that make it difficult to live or function independently" (p. 130).

The project populations obtained from these criteria suffered, to varying degrees of severity, from multiple chronic health and functioning problems, which included some degree of mental impairment. The most prevalent diagnoses varied across the studies, although, as evidenced in Weiss and Sklar (1984, Table 1), Skellie et al. (1984, Table 1) and Applebaum (1988, pp. 57-9), cardiovascular disease appeared in all three study groups, hypertension was found in the Alternative Health Services Project and in the Channeling Demonstration, and arthritis in both the Project OPEN and the Channeling Demonstration; the Channelling Demonstration population was severely impaired in activity levels.

The three projects provided typical case management services: assessment of needs, care planning, service coordination, and continuous monitoring and reassessment of services according to needs. While the evaluation of needs comprised many elements, for the purposes of this paper, the measures of functioning status, which included impairment in ADL, IADL, mental status, will be used.[8]

All projects 'measured' the impact of their services on participants' well-being. Project OPEN gauged well-being according to participants' "perception of satisfaction with life" (Weiss and Sklar (1984, p. 135)); well-being in the Alternative Health Services Project was measured as the participants' "perception of whether they were receiving enough help" (Skellie et al. (1984, p. 63)); while varying elements were used in Channeling's assessment of well-being, including "reduction of unmet needs and elderly and informal caregiver satisfaction with life" (Applebaum et al. (1988, pp. 152-7)).

According to Weiss and Sklar (1984, pp. 129 and 132), the services offered by Project OPEN included existing medical, health, social and in-home support services. According to Phillips et al. (1988, pp. 75-7) and Thornston et al. (1988, Table 1), the Channeling Demonstration coordinated existing paid community services, and institutional, outpatient and ambulatory services. According to Skellie et al. (1984), in addition to existing Medicaid services (as per section 1.4), the Alternative Health Services Project participants had access to one of three service packages, according to their dependency in mobility and activity and to their need for supervision: "Alternative Living Services (ALS), Adult Day Rehabilitation (ADR) and Home Delivered Services (HDS)" (p. 55-6). The first package is of particular importance: the services provided attracted a population who "(according to) the assessment team (was) more likely to be more at risk of entering a nursing home" (Skellie et al. (1982, p. 357)).

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[8] For a complete description of the elements used to assess needs, consult Phillips, Kemper and Applebaum (1988), Carcagno and Kemper (1988), Skellie et al. (1984) and Weiss and Sklar (1984).

Following the assessment of needs, participants of the three programs were randomly assigned to an experimental group, that received the project services described above, or to a control group that returned to similar, existing services.[9]

Project OPEN (Weiss and Sklar (1984)) introduced cost containment measures in the project's management of funds, the most important being the ability to negotiate the price of services with providers. The Channeling Demonstration also incorporated cost containment measures in its project under both models:

> average expenditures (across all clients) were limited to 60% of the prevailing nursing home rates, individual service expenditures were limited to 85% of nursing home rates, and clients, whose incomes were in excess of a protected amount for services that would not otherwise have been available without a charge, had to share the cost of services (Carcagno and Kemper (1988, p. 4)).

The study periods of programs lasted either two or four years. According to Weiss and Sklar (1984, Table 4 and p. 135), Project OPEN lasted from 1980 to 1982, and the effect of its services on functioning status and on well-being was measured at six months following project intake, while the use of Medicare-reimbursed institutional services, of program services and of existing Medicare services were reported over the 1980-1982 period. According to Skellie et al. ((1982, p. 354) and (1984, p. 50-1)), the Alternative Health Services Project lasted from 1976 to 1980, and the impact of program services on functioning status, on well-being, on the use of hospital, nursing home facilities, and on existing non-institutional long-term care services were measured at the end of the first year following intake and at the end of the two-year period

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[9] As Skellie et al. (1982, p. 354) explain, under the Alternative Health Services Project, the members of the control group were initially recommended for one type of project services, but received instead, as described in section 1.4, regular Medicaid or other existing long-term care services, without case management, while, according to Carcagno and Kemper (1988, p. 17), the Channeling control group returned to existing community-provided case management and long-term care services, as described in section 1.4.

following intake. According to Carcagno and Kemper (1988, Table 2 and p. 14), Channeling operated from 1982 to 1984, and the effects of its services on functioning status, on both participant and caregiver well-being, and on the use of hospital, nursing home, project services and other existing non-institutional services were evaluated at six, twelve and eighteen months following intake. In all cases, the latest results are reported below.

4.2 Summary of the Results

4.2.1 Functioning Status and Well-Being

The impact of project services on the participants' functioning status are mixed. After two years, the Alternative Health Services Project did not affect participants' overall functioning status (group difference not statistically significant, although the authors do not specify at which level of statistical significance; Skellie et al. (1984)).[10] As reported in Weiss and Sklar (1984), after the first six months, Project OPEN services forestalled a deterioration in mobility impairment (intra-group difference statistically significant at the 99% level; Table 2). The results presented in Applebaum et al. (1988) indicate that, overall, Channeling Demonstration services, under either model, did not improve impairment in mobility (Table 2) while, under the financial model, performance in certain activities actually deteriorated (group difference statistically significant at the 99% level; Table 1).

The Alternative Health Services Project (Skellie et al. (1984)) improved survivorship (higher survival rate and prolongation of life), even though, "at the end of the (two-year) study

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[10] Skellie et al. (1984) report however that recipients of the ALS package "maintained a higher performance in ADL than did control group ALS recommendees" (p. 63).

period, the mortality rates were the same for both groups" (p. 63). Weiss and Sklar (1984) report that, under Project OPEN, the mortality rate was higher, which was not expected and which the authors cannot explain (statistical significance of difference not reported; p. 135)). Meanwhile, according to Applebaum et al. (1988, pp. 145-6), Channeling services did not affect the mortality rate, under either model (group difference not statistically different, although, the authors do not specify the level of significance).

All three projects considered participants' well-being. According to Applebaum et al. (1988, pp. 152-157), after one year into the project, Channeling services reduced the number of unmet needs (group difference statistically significant at the 99% level after 12 months under both the basic model and at 12 months under the financial model; Figure 2); and improved both the participants' overall satisfaction with life (group difference statistically significant under the basic model at six months only at the 95% level; group difference statistically significant under the financial model after twelve months at the 95% level; Table 5); and informal caregivers' satisfaction with life (group difference statistically significant under the basic model after six months at the 95% level, while the group difference statistically significant under the financial model after twelve months at the 95% level; Table 6). Similarly, Skellie et al. (1984) report that, after two years, the well-being of the Alternative Health Services recipients had improved (group difference statistically significant, although the authors do not specify at which level of significance; p. 63). Weiss and Sklar (1984) report that, after the first six months, Project OPEN services contributed to the improvement of the participants' well-being who were "unhappy at intake" (p. 135 and Table 3).

4.2.2 Use of Hospital Services

After two years, Project OPEN (Weiss and Sklar (1984)) services reduced the rate of admission to acute care hospitals ("36% of experimental group and 48% of control group was hospitalized"; group difference statistically significant, although the authors do not specify at which level; p. 138), but had no effect on the length-of-stay, once admitted (no statistical analysis for group difference is provided). Woolridge and Schore (1988) report that Channeling services offered by either model did not significantly reduce the use of hospital services, as revealed by the high proportion of the study group being admitted to a hospital and by the number of days spent in hospital (group difference not statistically significant at the 5% level on a two-tail test; Table 2).[11] Similarly, according to Skellie et al. (1982), after one year, the Alternative Health Services Project did not affect the use of hospital services (group difference not statistically significant at the 95% level; Table 3).[12] Overall, only Project OPEN succeeded in decreasing the use of hospital services by significantly reducing the rate of admission to these facilities, confirming the effectiveness of program services to forestall the population's deterioration in functioning status.

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[11] The proportions of the control and the experimental groups hospitalized were similar, and decreased in a parallel manner over the eighteen-month period; the authors suggest that this reduction may be explained by the "diminishing effect of an acute episode, which precipitated the application to Channeling for some participants, and by the possibility that the sicker participants died earlier, leaving a healthier population at a later date" (Woolridge and Schore (1988, pp. 125-126)).

[12] The use of hospital services are not explicitly presented in Skellie et al. (1984) because the costs of Medicare-covered institutional and non-institutional services are aggregated (Figure 1).

4.2.3 Use of Nursing Homes Services

According to the results in Skellie et al. (1984), a relatively small proportion of the Alternative Health Services Project study group was admitted to a nursing home ("22% of the experimental group and 21% of the control group"; p. 60), indicating, according to the authors, that, although eligible for nursing home placement, the study group as a whole was not at high risk of institutionalization. However, substitution did occur within a subgroup: recipients of the Alternative Living Services, who were assessed as being at high risk of institutionalization at intake, spent fewer days in nursing homes (Skellie et al. (1982, p. 357) and (1984, p. 60)).[13]

Weiss and Sklar (1984, pp. 138-9) report that Project OPEN services reduced the rate of admission to skilled nursing facilities (group difference statistically significant, although the authors do not specify at which level) but they did not affect the length-of-stay in these institutions (group difference not statistically significant, although the authors do not specify at which level). However, the authors warn that because few members of the study group were admitted to these facilities, it precludes any conclusive statement about substitution between skilled nursing and home/community care services.

Woolridge and Schore (1988) report that, under both Channeling models, the entire population was at low-risk of institutionalization.[14] In addition, services provided by either model did not reduce the number of days spent in nursing homes (group differences not

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[13] Skellie et al. (1982, p. 357), who report outcomes after one year into the project, caution that group differences in use were not statistically significant (without specifying the level). However, in Skellie et al. (1984, p. 60), who report outcomes after two years into the project, the finding is repeated as being a potential source of substitution between nursing home and home/community services.

[14] Under the basic model, "13% of the control group and 12% of the experimental group were institutionalized, whereas 14% of the control group and 11% of the experimental group were institutionalized under the financial model" (Woolridge and Schore (1988, p. 121)).

statistically significant at the 5% level of a two-tail test; Table 1). However, the authors add that services provided under both models reduced nursing home use within the subgroup of participants who were discharged from a nursing home at intake; further, they suggest that Channeling may have facilitated early discharge from nursing homes for these participants, but that overall, Channeling services did not substitute for nursing home use (p. 124). It appears the only program that could have substituted home/community care services for institutional services is Project OPEN, although, given the small proportion of the study group to be admitted, it is doubtful that this population was at high risk of institutionalization. Overall, study populations were at low risk of being admitted to institutions targeted for substitution, except for two specific subgroups (the Alternative Health Services Project and the Channeling Demonstration) for which it appears that the services provided were adequately matched to their needs.

4.2.4 Use of Program and Other Existing Services

Weiss and Sklar (1984) report that Project OPEN services were used more intensively than the equivalent Medicare services (Table 4). Similarly, according to Corson et al. (1988), over a twelve-month period, Channeling's basic case management model encouraged the use of project in-home services (group difference statistically significant at the 99% level; Table 2), while the financial model stimulated an even stronger use of program in-home services over an eighteen-month period (group difference statistically significant at 99% level; Table 2). The additional use of these services under the financial model may be explained by the presence of lower-priced services, as case managers reduced the cost of these services by "5 to 13% below those paid by the control group. However, potential savings in total costs were lost due to the large increase in the use of these services" (Thornton et al. (1988, pp. 135-136)). Corson et al. (1988, p. 90) note that the control group under both models used in-home services substantially, suggesting that, even without Channeling services, existing in-home services would have been used extensively. Likewise, Skellie et al. (1982) report that, after one year, the Alternative Health Services Project did not discourage the use of existing outpatient hospital, physician and home care services (Table 3); after two years, the use of existing institutional and non-institutional Medicare and Medicaid services was not mitigated by project services (Skellie et al. (1984, p. 60)).[15] These results indicate that, other than Project OPEN services, program services, although widely used themselves, did not abate the use of other existing services.

4.2.5 Total Costs

Skellie et al. (1984, p. 60) report that, since Alternative Health Services were used extensively and because they did not substitute for existing health care services (including nursing home facilities), "the average combined Medicare-Medicaid costs per client were found to be significantly higher for the experimental group than for the control group" (Skellie et al. (1984, p. 60)).[16]

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[15] However, according to the authors, after nine months, the subgroup receiving ALS services used less Medicaid and Medicare services than the ALS recommendees in the control group (Figure 2), suggesting a potential for cost savings (statistical significance in group difference is not presented; Skellie et al. (1984, p. 61)).

[16] The authors do not mention the size of the cost difference or its statistical significance (Skellie et al. (1984)).

As reported in Weiss and Sklar (1984, p. 138), under Project OPEN "total demonstration participant expenditures were 17% lower than the total control group costs" (no statistical test of the difference was provided), mainly due to the reduction of the rate of hospital admissions through the prevention of acute complications in chronic conditions.

Over the eighteen-month study period, Channeling's basic and financial models both stimulated an overall increase in the use of case management services and formal community services without inducing a reduction in the use of institutional services, all of which was translated into an increase in "the total costs of services (averaged over the months patients were alive) of 6% under the basic model and of 18% under the financial model" (Thornton et al. (1988, p. 131)).[17]

4.2.6 Study Conclusions and Presence of Substitution

Although the Alternative Health Services Project increased the survival rate, enhanced its participants' well-being and did not jeopardize their physical and mental functioning, its services did not substitute for nursing home services. While the Channeling Demonstration enhanced both the participants' and their informal caregivers' well-being and maintained its participants' functioning status, it did not substitute long-term community care services for long-stay institutionalization. Services provided by Project OPEN improved its participants' well-being and slowed the deterioration of their condition, which contributed to the reduction of the rate of admission to acute care hospitals. However, the services did not shorten hospital length-

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[17] The overall cost constraint measure was exceeded, although the individual cost containment measure (as described earlier in section 3.1) was met. In Table 1, Thornton et al. (1988) explain the reasons for which the statistical significance of group difference in total costs was not presented.

of-stay and there was no significant substitution between community-based services and skilled nursing facilities. Thus, substitution between home/community and institutional services was achieved partially in only one program.

A variety of factors could explained the statistical tests' inability to capture instances of substitution, as discussed in section 2.2.6. Most likely, the inability of home/community care services to substitute for hospital and/or institutional services can be explained by the characteristics of the populations studied.

Considering the Alternative Health Services Project and the Channeling Demonstration first, even though the progression of eligibility criteria in these two projects ranged from official definitions of a population at high risk of institutionalization (the Alternative Health Services Project), to functioning impairments similar to those found in a nursing home population (The Channeling Demonstration), overall substitution of home/community care services for institutional care services did not materialize, mainly because the study populations were not at high-risk of being admitted to the institutions targeted for substitution. In addition, the Channeling study group was at high risk of hospitalization.

Given the referral sources to these two projects, the range of diagnoses, as well as the risks of institutionalization just noted, the study populations may have required both acute and chronic care services. Moreover, the project services combined institutional and non-institutional services. As explained in Part 2, these combined factors make the measurement of overall substitution very difficult. In addition, the presence of substitution is further elusive if the institution targeted for substitution is not well matched with the population expected to substitute home/community care for institutional care. For example, Channeling targeted long-term institutional care, but it gathered, mostly, a population referred by hospitals and by home health agencies. On the other hand, the Alternative Health Services project targeted, it seems, both short-term and long-term institutional care for substitution, but candidates for the program were referred mainly by community agencies.

However, these two programs did identify a subgroup that substituted home/community care for institutional care; in both cases, this subgroup had been assessed as being at high risk of institutionalization, indicating that the long-term home/community care services being offered as substitutes for institutional care were matched closely both to the services otherwise found in these institutions and to the institutionalized population that would have received them.

Meanwhile, the third program, Project OPEN achieved its objective to delay hospital admissions, but its services did not substitute for skilled nursing facilities, since the study group appeared to be at low risk of admission. Unlike the other two projects, Project OPEN was not targeting a long-stay nursing home population, but one whose deterioration in its chronic condition could be delayed: the population was less functionally impaired in mobility. This suggests that its needs were more narrowly defined, which contributed to the reduction in the range of services required to meet the program objectives. Because the conditions noted in Part 2 were more fully met than in the other two projects, the measurement of substitution between program home/community services and the acute care sector was easier.

In other words, the conditions that could lead to substitution by the community-dwelling elderly are very similar to those found in the post-hospital elderly studies described in part 2.

The issue that seems to distinguish the community-dwelling chronically ill elderly population from the post-hospital chronically ill elderly population is the *extent* of unmet needs, whose effect is manifested by the participants' significant use of project services, which, for the two studies examining the provision of long-term, home/community care, led to increased overall costs. In other words, case management and the extension of insurance coverage for these services, which otherwise would not be available for the community-dwelling elderly studied in these projects, seem to have filled a gap left by the existing network of home/community care services. As discussed before, the increased use of these services *may* be viewed as a problem of moral hazard, as study participants were able to increase their well-being by consuming more home/community care services without reducing their use of institutional services. Within a community-dwelling chronically ill elderly population in need of both acute and chronic care services, it appears there is limited scope for the measurement of substitution between any type of long-term institutional care and home/community care.[18]

4.2.7 Concluding Remarks

Most of the programs demonstrated that there is little substitution of home/community care for institutional care within the overall community-dwelling chronically ill elderly population. In the instances where substitution was measured, the population was narrowly delineated and was at high-risk of institutionalization (as with Melin et al. (1993) in Part 2). In most other instances, the additional home/community services made available to the study

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[18] These findings are confirmed in articles discussing the potential for substitution between community-based, long-term care and long-term institutional care within the community-dwelling chronically ill elderly (Weissert (1985, pp. 424, 426-428), and Weissert, Cready and Pawelak (1988, pp. 366-367)).

populations through expanded insurance coverage were used in addition to existing institutional services. As such, the expanded home/community services should be viewed as complements rather than substitutes.

5. CONCLUSION

Why *should* policy makers have a particular interest in health care alternatives for the elderly ? Given the fiscal constraints facing Canada and many other industrialized countries, the expected demographic wave of elderly who will require some form of long-term care, and the costs associated with present patterns of care for the elderly, alternatives ways of providing this care must be considered.

The focus of the studies examined in this paper has been the substitution of home/community care for institutional care in relation to two populations: the post-hospital chronically ill and the community-dwelling chronically ill elderly. In general, home/community care was found to be successful in maintaining or improving the elderly's mortality rate, functioning status and well-being. Where substitution for institutional care occurred, there was a decrease in total health care costs. In most instances, however, costs were higher because home/community care services were being 'consumed' as supplements to, rather than substitutes for, institutional health care services. Partial substitution was noted in this context only in subgroups of the study populations.

Three particular, interrelated conditions, seem to be necessary for a study to be successful in finding substitution between services: the identification of substitutive home/community services equivalent to institutional services; the alignment of the substitutive services with the needs of the study population; and the selection of a study group expected to substitute home/community care for institutional care services.

Substitution was observed within the post-hospital chronically ill population when these conditions were met. Meanwhile, the studies involving the community-dwelling chronically ill elderly population had trouble identifying because the conditions were not met.

The additional home/community care services, when made available to the study populations, were generally regarded as supplements to institutional care, rather than substitutes. This may be viewed as a traditional problem of moral hazard, where individuals will 'consume' more of any good or service that contributes to their well-being, if given the opportunity through lower prices or an expanded budget constraint. But it is probably more appropriate in this case to view the increased consumption as indicative of the existence of important basic needs that were not being adequately met through existing care alternatives. For most of the chronically ill elderly, therefore, it may not be reasonable to expect to substitute home/community care for institutional care, because of the persisting need for both short-term acute and long-term chronic care services.

In the studies examined in this paper, the increased demand for services was not constrained in any of the studies by a lack of resources. In reality, given the fiscal constraints described in the introduction to this paper, it is unlikely that public reimbursement bodies would be willing or able to finance more home/community services without there being a corresponding reduction in resources devoted to institutional care. While the positive outcomes of home/community care for the chronically ill elderly population and their caregivers cannot be ignored, it seems that any expansion in the availability of home/community care would likely be carefully targeted to those elderly patients who are most likely to use these services as substitutes for institutional care, unless society is willing to raise the existing level of resources directed towards long-term health care for the elderly.

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