Advanced Home Health Care and Home Rehabilitation

– Reviewing the Scientific Evidence on Costs and Effects

SBU Summary and Conclusions

Background

"Advanced home health care" was introduced in Sweden 20 years ago as an alternative to hospitalization. The basic intent behind advanced home health care was to offer patients and family an alternative to hospitalization which would enhance the quality of care for all parties. Naturally, many patients preferred care at home where they could retain their integrity and be close to family, particularly during the severe stages of disease near the end of life. A survey by the Federation of Swedish County Councils in 1998 showed that a large majority of the interviewees preferred to receive care at home.

The percentage of elderly in the population has increased steadily during the final decades of the 1900s. As the risk for disease increases with age, so does the number of individuals in the population with health disorders. Furthermore, less invasive methods have enabled providers to offer a wider range of technological and medical interventions, even to those in the higher age groups. Healthcare finances have become increasing strained, which has led to a reduction in the number of inpatient beds. To compensate for bed reductions, home health care has been extended as a less expensive alternative to hospitalization.

Given the situation described above, there is a risk that the original concepts underlying home health care, ie, free choice and quality care, will be overshadowed. There is a risk that patients will be referred to home health services without freely choosing this alternative and without being assured of quality care. Family members may feel overloaded and anxious. Furthermore, there is concern that even advanced long-term care, eg, for advanced dementia and the frail elderly, will be carried out in the home. Pressure on family members may become too great if this type of care must be provided over an extended period. For home health care to be successful, patients must have a home which is well adapted to the care situation and family members who are willing to provide such care. The expected duration of care is a decisive factor.

In Sweden, women have a high rate of employment outside of the home. This fact, along with gender roles, must be considered when planning advanced home health care. If not, the expansion of home health services may result in adding the care of the elderly to the already heavy responsibilities which women now bear for the care of newborns, children, and grandchildren.

Hence, whether advanced home health care and home rehabilitation are superior to, or less expensive than, hospital care is a question of major importance from humanitarian, social, and economic perspectives. Part of the literature shows home health care to be less expensive, yet other research has found it to be more expensive than hospital care. The purpose of this report is to synthesize what has actually been reported in the extensive body of scientific literature.

This report focuses on advanced home health services, also referred to as hospital-at-home, organized around physician-managed teams equipped to replace hospital care. The report also addresses home rehabilitation aimed at reducing the hospital length of stay and replacing day-care. Home rehabilitation may also continue for an extended period, to some extent replacing rehabilitation via normal outpatient services. The basic question addressed here is whether or not the scientific literature shows advanced home health care and home rehabilitation to be superior to, or less expensive than, hospital based alternatives.

Methods

To determine the scope and cost of home health care and home rehabilitation in Sweden, SBU commissioned Spri to inventory these services throughout the country during the autumn of 1998. The results were compared with previous studies.

Scientific publications addressing the effects and costs of home healthcare were identified by searching databases (1966–1999), checking reference lists, monitoring scientific conferences, and manually searching relevant journals. In many cases, direct contacts were established with active researchers in the relevant fields.

The minimum criterion for including a study in this review was whether the study compared the effects and/or costs of advanced home health care/home rehabilitation with the effects and/or costs of conventional care alternatives. Accepted studies were then classified into one of three quality grades:

- High quality evidence: Usually the results of studies that compare randomly selected groups.

- Moderate quality evidence: Studies with control groups from other geographic areas, and studies where researchers made special efforts to enhance comparability.

- Low quality evidence: Studies using other types of control groups, since these groups are selected and hence are not adequately comparable.

The same minimum criterion was applied to control groups in the cost studies. The quality of economic estimates were assessed according to a special rating scale, and the best studies received more weight when formulating the conclusions.

The special areas addressed by the report are:

- Advanced Home Health Care
  - Palliative home health care
  - Other advanced home health care

- Home Rehabilitation
  - Following stroke
  - Following orthopedic surgery

An attempt was also made to identify other systematic overview articles.

The conclusions presented in the summary for each special area of the literature review were graded as A, B, or C, with A representing the strongest scientific evidence and C the weakest.

Results

Scope and Costs

The survey, commissioned by SBU and conducted during the autumn of 1998by Spri, showed that approximately 50 organizations in Sweden offered advanced home health care. Annually, 10 000 to 12 000 patients received home health services. Palliative care in the final phase of life dominated. However, at least one third of the patients received care for earlier stages of chronic disease. The average length of care was 55 days. Patients age varied from1 to 103 years, 70% were over 65 years of age, and 56% were women.

Based on the 1998 survey, an estimated 662 000 care days per year could be provided by home health services. The total cost for these services was estimated at 580 million SEK in 1997. Home health care assumes that family members provide voluntary care. Economic studies have not considered this factor. Likewise, the costs for reserve hospital beds have not been included. Hence, the costs to society for home health care might be underestimated.

Given 11.5 million inpatient hospital days, advanced home health care represents approximately 5% of the total number of care days per year. On average, this corresponds to a capacity of approximately 29 patients per100 000 population. Where home health care is most frequent in Sweden, the capacity is doubled.

In 1998, home rehabilitation services were provided to around 5 000 patients at a cost of approximately 44 million SEK. Hip surgery and stroke patients dominated. Their median age was 80 years, 67% were women and the average length of stay was 27 days. Home rehabilitation might free 2 to 6 hospital inpatient days per patient, ie, 10 000 to 30 000 inpatient days per year. Releasing beds means that more patients in the aging population have access to hospital care, eg, for hip surgery or stroke care, without needing to add expensive inpatient beds.

Literature Search

The literature search yielded different results within the different subject areas. In total,

7 207 studies were listed with titles and short summaries. At least two persons in the group, independent of each other, reviewed the studies. Studies that did not contain information relevant to our hypothesis were eliminated. From the large body of scientific publications, 464 were chosen as potentially relevant, and the full articles were acquired. After review, 95 were chosen for more thorough analysis. Among these were all studies included in this report. In many cases, these studies have been published in a series of different articles. Other review articles were also included, as were several studies that were eventually eliminated since they did not meet the minimum quality standards.

Among the studies which met the quality norms, very few were Swedish or Nordic. This observation should be considered when applying the findings to the situation in Sweden. However, at least within palliative care and home rehabilitation Swedish studies are available which could be considered when formulating conclusions.

Table 1.1 Number of scientific publications, by subject area, included in various stages of the review process.

Chapter	Subject Area	Initial Search + Additions	Articles Ordered	Thorough Review
8	**Advanced Home Health Care**			
8.1	- Palliative home care	5 792	159	21
8.2	- Other advanced home health care			
	Acute geriatrics	531	71	9
	Neurology	33	33	2
	Infusion	4	4	-
	Pulmonary diseases	192	40	4
	Pediatrics	181	38	10
9**.**	**Home Rehabilitation**			
9.1	Following stroke	204	89	29
9.2	Following orthopedic surgery	270	30	20
	Total	7 207	464	95

Palliative Home Health Care

The report includes 21 studies on palliative care involving 7 817 patients. These studies were based on relatively short periods of care in the final phase of life, and the following conclusions could be drawn from the data.

The scientific literature shows that both patients and family members are more frequently satisfied with home care than with hospital care (A-grade evidence). Regarding symptom control, functional ability, and perceived quality of life, the results of advanced home health care and hospitalization were similar (A).

Cost estimates of acceptable quality were presented in five studies judged to be of moderate to high quality. A large, controlled, nonrandomized study showed lower per diem costs for home health care than for hospital care. Three studies showed no statistically significant difference among the direct medical costs of the care alternatives. The fourth, a smaller study, showed lower costs for home health care, but it is uncertain whether this was were statistically significant.

Hence, the cost estimates are uncertain. However, the scientific evidence shows that palliative home health care results in patients and family members who are more satisfied, while the quality of care is not lower.

Other Advanced Home Health Care

The field of acute geriatrics is poorly defined and studied. Several studies of elderly individuals with mixed disorders suggested that the number of hospital days could be reduced (B-grade evidence) without a deterioration in quality (B). Whether this led to lower costs is unclear.

Home health care for severe chronic pulmonary disease is characterized by the periodic demand for advanced interventions, thereby replacing hospitalization .In the interim periods, relatively few interventions are needed. Four studies involving 565 patients found that care outcomes defined as lung function, quality of life, and mortality are similar among the types of care (B).Although it was possible to reduce the number of hospital days and acute visits with home health care teams (B) the costs did not appear to be lower than for hospital-based care (C).

Home health care of children was assessed in several high-quality, randomized studies and a few smaller studies of lower quality. Treatment outcomes were similar among the types of care (B), but home health care resulted in higher quality of life for sick children (B) and their parents, who also were more satisfied (B). The scientific literature does not show whether home healthcare for children is less expensive than hospital care.

There are no studies on the effects of home health care on neurological disorders. Likewise, infusion treatment of the elderly at home is inadequately assessed.

Home Rehabilitation Following Stroke and Orthopedic Surgery

Home rehabilitation following stroke has been assessed in seven studies of relatively high quality, involving 1 487 patients. The outcomes of rehabilitation for these patients were similar to the outcomes from regular care. Hence, home rehabilitation was shown to be neither better nor worse as regards the patients' ability to manage on their own or resume social activities (A-grade evidence). Depression, stress, and reduction in quality of life were common among patients and family, to the same extent in home rehabilitation as in other types of rehabilitation (A). Satisfaction with care was also similar (A). Regarding the costs, it was shown that home rehabilitation for stroke was less expensive than regular day-care during a corresponding period, largely due to the high costs for transportation of day-care patients and full-day treatment several times per week (B). However, when home rehabilitation was compared with conventional care (ie, hospital care, day care, outpatient visits, and combinations of these services

according to need) the costs were approximately the same even though it was possible to reduce hospital inpatient days (B).

Home health care involving rehabilitation following orthopedic interventions was analyzed in ten studies (including 2 302 patients) that met the minimum quality requirements. The outcomes of home health care regarding patient symptoms, quality of life, and mortality were similar to the outcomes from hospital care (B) and also the degree of satisfaction among patients (B).The hospital length of stay could be shortened via these interventions (B).However, hospital stays are currently so short that the relevance of previous studies is questionable. Cost comparisons are uncertain, but do not indicate in this context that home health care and rehabilitation result in economic gains.

Conclusions

- Advanced home health care may serve patients well and in accordance with the ideal image of humanitarian care for adults in the final phase of life and for children. It requires freedom of choice and an effective care organization of good quality with readily accessible hospital beds.

- All studies included in this report address care for shorter periods of time. In palliative care and care of children, both the patients and family members are more satisfied with home health care than with hospital care. Otherwise, the outcomes are similar. There is no solid evidence to show that home health care results in either higher or lower total costs than other care alternatives. At present, freedom of choice and the quality of care should therefore be the driving factors in planning advanced home health care.

- The outcomes of home rehabilitation following stroke and orthopedic surgery are similar to outcomes in alternative types of rehabilitation, and the costs are probably comparable. Even here, the freedom of choice and local conditions should be guiding factors in how to best organize this type of care.

Need for Further Research

Since there are few studies concerning Swedish and Nordic conditions, further research is essential. The findings from foreign studies may be less applicable due to social and cultural differences. Relatively comprehensive background data are available on the effects of advanced home health care during the final phase of life and on home rehabilitation of stroke patients. Some information has also been published on Swedish findings in this area.

Regarding other diseases and patient groups, the outcomes of advanced home health care in Sweden are poorly known. The need for well-designed studies is especially great, in particular, as regards longer term care, where outcomes and costs have not been investigated. The cost data are generally uncertain and need to be studied with reliable methodology applicable to Swedish conditions.

Research must incorporate new, well-assessed methods for measuring patient and family experiences regarding the quality of care and life situations. Methods must also be developed and applied to include family inputs when calculating the positive/negative effects and the costs of informal care.

As regards stroke rehabilitation, there is a major need for studies to test methods aimed at the common problems of depression and reduced quality of life among patients and their families.

Furthermore, it is necessary to assess advanced home health care and home rehabilitation in everyday. Scientific studies tend to analyze recently established activities compared to routine hospital-based care. An important question to consider is whether outcomes deteriorate when new activities become routine and enthusiasm declines, or whether they improve with increased experience.