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## Innovations in the nursing care of the chronically ill: a literature review from an international perspective

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This literature review focuses on substitution-related innovations in the nursing care of chronic patients in six western industrialized countries. Differences between primary and secondary care-orientated countries in the kind of innovations implemented are discussed. Health care systems are increasingly being confronted with chronic patients who need complex interventions tailored to their individual needs. However, it seems that today's health care professionals, organizations and budgets are not sufficiently prepared to provide this kind of care. As a result, health care policy in many countries targets innovations which reduce health care costs and, at the same time, improve the quality of care. Frequently, these innovations are related directly to the 'substitution of care' phenomenon, in which care is provided by the most appropriate professional at the lowest cost level, and encompass advanced nursing practice, hospital-at-home care and integrated care. The main conclusion of this paper is that integrated care innovations are implemented in both primary care as well as in secondary care-orientated countries. However, innovations in hospital-at-home care and advanced nursing practice are primarily implemented in primary care-orientated countries. Whether these innovations positively influence the quality of care, costs of care or patients' use of health care facilities remains rather unclear.

### INTRODUCTION

Ageing western populations and the increasing numbers of the chronically ill are challenging health care policy in western industrialized countries (Kendig *et al.* 1992, Raffel 1997, Saltman & Figueras 1997).

In addition to the ageing of the population and the increase in chronic diseases, the demand for health care is influenced by other socio-demographic or cultural changes. People more often live alone and consequently require professional care more frequently (Organization for Economic Co-operation and

Development, OECD 1996). People also insist on good quality health care and impose a greater burden on health care professionals (Steering Committee on Future Health Scenarios 1993). In addition, technological developments like advanced medical technology, electrically adjustable beds, personal lifting devices and staircase elevators provide a challenge to health care systems. Such developments are among those that make it possible to substitute home care for hospital care.

As a consequence, current western health care policy is anticipating increasing health care demand from chronic patients. In most industrialized countries, government policy focuses on the improvement of the quality of care by encouraging ongoing and patient-tailored care. Further, health care policy often stresses the importance of reducing health care costs (OECD 1994). However, good quality, affordable care for chronic patients is often difficult to provide owing to organizational gaps in health care systems. In most western industrialized countries, traditionally there have been strong organizational and financial boundaries between (generalist) primary and (specialist) secondary care services. These boundaries have often resulted in a lack of cooperation between these settings and consequently it is difficult to provide care tailored to the needs of the chronically ill (Bringewatt 1996, Timpka *et al.* 1996, Brodsky & Habib 1997, Etzwiler 1997). New forms of health care organization are therefore desirable.

Nurses play a pivotal role in the care of chronic patients (Borst-Eilers 1997). In consequence, innovations relating to the nursing practice and care for chronic patients are being implemented in many countries to produce new forms of health care. These innovations often aim to break through the barriers mentioned and are often directly related to the 'substitution of care' phenomenon. Substitution of care means a shift of care responsibilities and tasks in such a way that qualitatively good care is provided by the most appropriate health care provider at the lowest cost level. If, for instance, responsibilities and tasks shift from medical specialists to nurses, then substitution can be said to be taking place.

In this paper, the assumption is made that characteristics of substitution-related innovations differ between countries because their health care systems differ. Health care systems can be distinguished on the basis of organizational and financial indicators. On the basis of such indicators, three categories of health care system will be distinguished. The first category includes countries which, traditionally, have a strong emphasis on (generalist) primary care while the second category consists of countries which are, traditionally, orientated towards (specialist) secondary care. The third category consists of countries that do not have a specific orientation towards either primary or secondary care.

The purpose of this paper is to shed more light on to important substitution-related care innovations for chronic patients in the three categories of countries mentioned. Accordingly, the following research questions have been addressed:

- What kind of substitution-related innovations directed at chronic patients, in which nurses play a role, are described in the international literature?
- Are these innovations found in: (a) primary care orientated countries, (b) secondary care-orientated countries, or (c) countries that do not have a specific orientation to either primary or secondary care?
- What is known about outcomes of these innovations with respect to quality of care, use of health care facilities and costs of health care?

## METHODS

Searches were carried out in three computerized databases: Nursing & Allied Health Literature (1982-August 1998), Medline (1990-August 1998) and the literature database of the Netherlands Institute of Primary Health Care (NIVEL) (1985-1998). The combination of keywords used in these searches was: chronic disease and (innovation, transmural care, disease management, case management, shared services, managed care programmes, discharge planning, integrated care delivery, collaborative practice, partnerships, hospital-based home care, *l'hospitalization à domicile*, specialization or substitution). In addition to the databases mentioned, references in articles and books were scanned to gather relevant literature.

The titles found in these sources have been scanned and only those publications were included that described: (1) substitution-related innovations in western industrialized countries; (2) innovations for chronic patients like patients suffering rheumatism, asthma or diabetes; (3) a (quasi-) experimental

evaluation study (in the sense that a pre-test-post-test and/or a control group design was used); and (4) nursing care as part of the innovation. A total of 20 publications met the criteria mentioned and were used for answering the research questions. These publications covered six countries, namely Sweden, the United States of America, the Netherlands, Canada, the United Kingdom (UK) and Ireland.

Health care systems of the six countries mentioned were categorized following the method used by Starfield (1994) and Westert (1997). These authors distinguished indicators reflecting primary and/or secondary health care services. When combining these indicators, the health care orientation (primary vs. secondary health care) of countries can be compared.

In this study, the availability of generalist primary services per country was measured using three indicators, namely: (1) the number of general practitioners (GPs) per specialist doctor; (2) expenditure on home care; and (3) the function of GPs as gatekeepers (see Table 1). In addition to this, the supply of specialist secondary health services in a country was measured using the following five indicators: (1) the percentage of practising specialist doctors to the total number of physicians; (2) the percentage of total expenditure on acute care compared to the total expenditure on health; (3) the number of available acute care beds; (4) the ratio of admissions per year to available acute care beds; and (5) the number of acute care bed days per capita (see Table 2).

[ TABLE 1 ]

[ TABLE 2 ]

To make a categorization between the three types of health care systems, each country was ranked on every indicator. Further, mean scores at generalist primary care indicators as well as at specialist secondary services indicators were calculated (see Tables 1 and 2). On the basis of these two means, a matrix in which the three kinds of health care systems were distinguished was constructed (Figure 1). It is important to mention that this meant only relative distinctions between countries. The final position of a country depended to a large extent on other countries included and the indicators used in the analysis.

[ FIGURE 1 ]

### **DISTINCTIONS AMONG HEALTH CARE SYSTEMS**

The three horizontal rows in Figure 1 classify the countries on the 'supply of generalist primary services' dimension, based on the mean ranking scores as displayed in Table 1. In the three vertical columns the same was done for the level of supply of specialist secondary services (see Table 2). The combination of rows and columns gives insight into overall care supply patterns per country.

Countries which are orientated towards generalist primary care services occupy the lower shaded area of Figure 1: in these three cells, a country ranks higher in terms of generalist primary services compared with specialist secondary services. The countries occupying the upper shaded areas rank higher on specialist secondary services instead of generalist primary services. The country in the middle of the matrix, the Netherlands, is assumed to supply both generalist primary services and specialist secondary services at an average level. From the analysis, it can be concluded that countries like Ireland and the UK focus relatively more on generalist primary health care. Countries which are relatively more orientated towards specialist secondary health care are the USA, Sweden and Canada.

### **INNOVATIONS IN THE CARE FOR CHRONIC PATIENTS**

The 20 publications describing innovations following the inclusion criteria mentioned, were divided into three main types of innovation: advanced nursing practice, hospital-at-home and integrated care. These three types of innovation are not entirely mutually exclusive. Each type of innovation will be described in the following sections.

#### **Innovations regarding advanced nursing practice**

Advanced nursing practice is a way to meet the changing and complex care demands of chronic patients. In addition, advanced nursing practice is often important in achieving substitution. If, for

instance, a nurse specializes in the care of patients with chronic obstructive airway disease (COPD), part of the responsibility and work of the (child) pulmonologist may be shifted to this nurse.

In the field of advanced nursing practice, six publications concerning quasi-experimental evaluation studies were found (Hill *et al.* 1994, Donaghy 1995, Grahame & West 1996, Ketelaars 1996, Hill 1997, Ridsdale *et al.* 1997). Most of these six innovations were implemented in (generalist) primary care systems: the UK and Ireland. One innovation described was implemented in the Netherlands.

Three of these six articles concerned nursing care for rheumatic patients in the UK. In the 1997 study by Hill (1997), patients with rheumatic arthritis were randomly allocated to either the hospital-based clinic of a specialist rheumatology nurse practitioner (RNP) or of a rheumatologist. The patients of the RNP recorded significantly more satisfaction with their care than the patients who visited the rheumatologist. They were, for example, more satisfied with the provision of information and continuity of care. In the 1994 study by Hill *et al.* (1994), the same comparison was made between patients attending a hospital-based RNP clinic and patients at an outpatient rheumatology clinic. This study showed that, in patients managed by the RNP, pain, morning stiffness, psychological status, patient knowledge and satisfaction had improved significantly, while these improvements were not mirrored by the rheumatologist cohort.

The aim of the project described by Grahame & West (1996) was to explore the possibility of conferring the skills and knowledge of a RNP upon others. A trained and experienced RNP paid a series of regular visits to general practices. Interactive sessions involving the RNP, practice nurse (PN) and patients were set up with a view to (1) instructing the PNs in the role of the RNP in the education and care of patients, and (2) educating patients about their disease and its treatment. On the basis of a quasi-experimental evaluation study, Grahame & West (1996) concluded that both PNs' as well as patients' knowledge improved following the RPN visits.

In addition, the positive impact of specialist asthma nurses has been shown. Ketelaars (1996) performed a quasi-experimental evaluation study on specialist nursing for COPD patients in the Netherlands. It was established that specialized nurses paid more attention to psychosocial problems, while general community nurses focused on practical issues. The quality of the nursing report was higher in specialist nurses than in general ones. Effects on patients' health-related quality of life, coping strategies, compliance and hospitalization were not found. However, patients in the experimental group were more satisfied with the care provided by specialist community nurses. Donaghy (1995) compared a group of asthmatics who received instruction from a doctor with a comparable group who received an additional individual education programme conducted by an asthma nurse specialist in Ireland. This study demonstrated that asthma education provided by a nurse specialist improves inhaler technique and understanding of asthma.

Finally, in a randomized clinical trial performed in the UK, Ridsdale *et al.* (1997) tested the feasibility and effect of nurse-run epilepsy clinics in primary care. In this trial, the intervention group was offered an appointment with a nurse with special training in epilepsy at what was called a neurology clinic. Patients in the control group received standard care delivered by a general practitioner or specialist. Ridsdale *et al.* (1997) concluded that nurse run clinics for patients with epilepsy were feasible and well attended. Furthermore, such clinics could significantly improve the level of advice and drug management recorded.

### **Hospital-at-home innovations**

Substitution of tasks and responsibilities between care providers and organizations is often realized within the framework of hospital-at-home innovations. Hospital-at-home is a generic term referring to home-based nursing and rehabilitation services which target early hospital discharge or prevention of hospital admissions (Coast *et al.* 1998). The main object of the hospital-at-home is to provide efficient complex care of good quality by meeting patient needs in the home setting (Munsterman 1993). Hospital-at-home is, for instance, put into practice by teams of hospital nurses who deliver complex (often technological) care to patients who have recently been discharged from hospital.

Innovations in hospital-at-home care for chronic patients were found in literature from the UK and Canada. The UK was classified as a (generalist) primary care orientated country, while Canada was classified as a (specialist) secondary care-orientated country (see Figure 1). Six publications that met the criteria were included. Richards *et al.* (1998) compared the effectiveness and acceptability of early discharge by providing hospital-at-home to elderly patients in a randomized clinical trial with routine

hospital care in the UK. They concluded that there were no differences in mortality, functional ability, quality of life and most measures of satisfaction at follow-up. The main significant difference between the forms of care was the length of stay. This was in the group who received routine hospital care for significantly shorter periods.

Shepperd *et al.* (1998a) performed a randomized clinical trial which also compared the effect of hospital-at home delivered to both chronic and acute patients (elderly patients, patients with COPD, patients recovering from hip replacement, knee replacement and hysterectomy) with routine hospital care. Their results also suggest that there are no major differences in patients' health outcomes. However, patients preferred hospital-at-home to hospital care.

The quasi-experimental Canadian study performed by Tin *et al.* (1995) described a community-based respiratory therapy for patients with COPD. In this innovation, a respiratory rehabilitation programme incorporating education was offered by a hospital-employed respiratory therapist (presumably with a nursing background). Upon referral by a physician, inpatients at the hospital were seen for assessment, diagnostic screening and education and discharge planning was initiated. Further, in-home visits for assessment were made and education was given by the respiratory therapist (Tin *et al.* 1995). Based on their quasi-experimental research, Tin *et al.* (1995) concluded that, for patients suffering from COPD, respiratory therapy provided at patients' homes had no significant effect on either hospital readmission rate or number of hospital days spent. However, Tin *et al.* (1995) concluded also that COPD patients visited their physicians less frequently while they were receiving care from the respiratory therapist. In addition, patients' knowledge of the illness increased.

Also some (quasi-) experimental cost analyses of hospital- at-home were recently performed in the UK (Hensher *et al.* 1996, Coast *et al.* 1998, Shepperd *et al.* 1998b). Coast *et al.* (1998) and Hensher *et al.* (1996) concluded that hospital-at-home, delivered to elderly patients and orthopaedic patients, is less costly per day than care in the hospital. However, Hensher *et al.* (1996) remark that in hospital-at-home, the total duration of care episodes increases, so that total costs of hospital-at-home are higher. Shepperd *et al.* (1998b), however, could detect no differences in total health care costs between hospital at- home and routine hospital care for elderly patients. According to Shepperd *et al.* (1998b) hospital-at-home significantly increased health care costs for patients with COPD. Moreover, their study showed that hospital-at home significantly increased general practitioners' costs for elderly patients and for those with COPD.

### **Innovations regarding integrated care settings**

Substitution of care also takes the form of innovations in which care settings are integrated. In the international literature, several terms are used to indicate innovations concerning integrated care settings. For instance, concepts like disease management, managed care, case management, shared care and transmural care are used.

Integrated care innovations were found in all three categories of countries distinguished and can be divided into three main types (Persoon *et al.* 1996). Firstly, integrated care delivered by a *combination of hospital professionals and primary care professionals* is identified. This type includes, for instance, hospital-at-home care delivered by a team of hospital and home care professionals instead of care delivered only by hospital professionals, as described in the previous paragraph.

A second type of integrated care is *care delivered by primary care professionals* during admission to and *discharge from hospital*. This type includes, for example, liaison nursing, in the sense that home care nurses are working in a hospital in which they are responsible for the coordination of care when patients transfer from hospital to home care and vice versa. A third type is integrated care delivered by *primary care professionals who are supported by hospital professionals*. Integrated care with this characteristic can be practised by, for instance, community nurses who run outpatient clinics in a hospital and who work closely together with a medical specialist (Temmink *et al.* 1998).

In four publications (Campbell Haggerty *et al.* 1991, Dawson & Critchley 1992, Smeenk 1998, Witteveen 1998), an innovation in which *care is delivered by a combination of hospital professionals and primary care professionals* is assessed. Dawson & Critchley (1992) describe a Quick Response Team (QRT) in Canada. This QRT targeted the health needs of frail elderly people with multiple social, emotional, physical and medical problems who were at risk of a custodial admission to acute care. The QRT required collaboration in health policy decision-making between community health and acute hospital organizations and arranged emergency home support services. These services

included 24-hour services such as home nursing care, short respite care, adult day care and counselling.

In the QRT community nurses worked together with emergency room physicians and family physicians. The nurses arranged all services before the patient left the emergency room to ensure that the support sources were established and provided within 10 minutes to half an hour of the patients' return home. Based on findings of the performed quasi-experimental evaluation study, Dawson & Critchley (1992) concluded that the accessibility improved and provision of care was shorter due to the QRT. The cost of care was also much less in the QRT situations compared with the control group patients who received standard hospital care. Further, it was found that, due to the QRT, the client waiting list for placement in a long-term facility was extremely decreased (1992).

Campbell Haggerty *et al.* (1991) described an innovative home care programme for patients suffering COPD in the USA. In this innovation, a contractual arrangement between a hospital and a public health nursing agency provided a link between these services. A hospital-based pulmonary clinical nurse specialist coordinated the programme, with a pulmonologist serving as medical advisor. The service included nursing home visits every week, respiratory therapy and social service visits every 2 weeks. Other services available to patients included physical and occupational therapy, dietary, home health aid and a home volunteer programme. In addition to the scheduled visits, a 24-hour on-call coverage by respiratory and nursing personnel was available (Campbell Haggerty *et al.* 1991). To evaluate this innovation Campbell Haggerty *et al.* (1991) used a pre-test-post-test control group design. It was concluded that the innovation resulted in a reduction of hospitalizations, hospital days, emergency room visits and costs.

Smeenk (1998) in the Netherlands investigated the effects of a transmural hospital-based home-care programme for terminal cancer patients. Main elements of the programme were: coordination of care by a specialist cancer nurse; a transmural hospital-based home-care team which delivers a 24-hour telephone service for home care professionals; and the implementation of a home care dossier and transmural care protocols. This research showed that the transmural home care programme reduced hospital admissions and had a positive influence on patients' physical functioning. A significant positive effect on relatives' quality of life was also established.

Finally, Witteveen (1998) in the Netherlands, performed a quasi-experimental evaluation study of transmural home care technology for patients with cancer or serious infections. In this innovation GPs and community nurses were trained by a medical oncologist and two specialist hospital nurses to use various medical technology interventions correctly in patients' homes. The medical oncologist and specialist nurses also prepared protocols, were responsible for the coordination of the supply logistics and, as a 24-hour support team, were prepared to make home visits if required. Witteveen (1998) concluded that this innovation improved patients' quality of life and resulted in lower health care costs. However, the participation of volunteers or relatives was a factor missing from the calculation of costs and should therefore be kept in mind especially when treatment periods are prolonged (Witteveen 1998).

Two quasi-experimental evaluation studies concerning integrated care during admission to and discharge from a hospital delivered by primary care professionals were found in the literature. Häggmark & Nilsson (1997) conducted an experimental study in which the effects of a Swedish intervention programme for improved discharge planning for cancer patients were described. The integrated care character of this programme implied that hospital and home care professionals collaborated closely and made appointments on how to deliver patient care. Before hospital discharge, a district nurse and a GP received information about the patient and they visited the patient in the hospital. During this hospital visit, the district nurse and the GP received information from the nurse and the doctor in the hospital ward about the patient's disease and treatment. The patient received information from the district nurse and GP regarding the kinds of help and support they could give. This study did not show significant effects on re-admissions to the hospital (Häggmark & Nilsson 1997).

Peters (1995) described a Dutch innovation in which a transmural liaison nurse was responsible for discharge planning for elderly patients. Based on a quasi-experimental evaluation study Peters (1995) concluded that patients and hospital nurses were satisfied with discharge planning, continuity of care and aftercare received. Further, it was concluded that the quality of discharge planning had improved.

In addition, two publications were found on a (quasi-) experimental evaluation study of *primary care professionals supported by hospital professionals*. Osman *et al.* (1996) compared asthma patients in the UK who received care from their GP with asthma patients who received care from an integrated care service. Patients in the integrated care innovation programme were reviewed by their GP every 3 months, with review data being returned to the clinic to be seen by the referred clinician. At any time, patients could be referred back to the full hospital clinic, where nurses were employed, if the GP felt it appropriate. After 1 year, all patients were reviewed at the hospital outpatient clinic. This randomized trial found no difference between the integrated and conventional specialist review groups in clinical outcomes such as: hospital admissions, lung function, morbidity measures and acute episodes. Further, no difference was found with respect to quality of life outcomes. However, patients in integrated care were more likely to feel they were 'in control' of their asthma.

Rietkerk & Hirasig (1997) described a Dutch transmural innovation in which a community nurse runs clinics at the outpatient department of a hospital for patients with chronic non-specific lung diseases. At this clinic, the nurse gave information and education about the disease, the use of inhalers and how to deal with the illness. Children with asthma and their parents who did receive support from the specialist nurse reported fewer hospital admissions, fewer visits at the medical outpatient clinic and less exacerbation of the problem compared with children/parents receiving routine care.

## CONCLUSIONS AND DISCUSSION

This literature review describes types of substitution related innovations for chronic patients in which nursing practice plays a part. It describes differences between primary and secondary care-orientated countries with respect to the kind of innovation implemented. Further, findings of (quasi-) experimental evaluation studies concerning innovations for chronically ill people are discussed.

It appeared that three kinds of substitution-related innovations occur in the international literature. The first kind of innovation is *advanced nursing practice*. The innovations described in the literature were mainly conducted in countries which were orientated towards (generalist) primary care. Based on (quasi-) experimental research performed, there are some indications that these innovations do improve the quality of care; some studies reported improvement of patient and professional satisfaction, knowledge, physical or psychosocial functioning. Whether innovations concerning advanced nursing practice influence patients' use of health care facilities or the costs of care is unclear from the literature studied.

*Hospital-at-home care* was the second kind of substitution-related innovation described. This kind of innovation was mainly reported in publications from primary care orientated countries. (Quasi-) experimental evaluation studies performed do not suggest that there are differences between hospital-at-home care and standard hospital care with respect to the quality of care. On the basis of the cost analyses of hospital-at-home care programmes it also seems that this kind of innovation does not reduce today's costs of health care for chronic patients and chronic patients' use of health care facilities.

The third kind of substitution-related innovation described concerned *integrated care settings* which are implemented in both (generalist) primary care-orientated health care systems and (specialist) secondary care-orientated health care systems. The small number of (quasi-) experimental evaluation studies described in the international literature focus on a rather broad range of integrated care innovations. This inhibits deriving conclusions about the effectiveness of integrated care in general. However, based on the commonalities between the described integrated care innovations (e.g. concerning integrated care for chronic patients in which substitution takes place and nurses play a central role) it is possible to conclude that integrated care settings may lead to a decrease in costs and hospital admissions. However, whether integrated care innovations result in better quality of care remains unclear. Still, there are some indications that integrated care innovations in which complex care is transferred from a hospital to a home care setting may influence patients' physical functioning and relatives' quality of life positively.

In general, it can be concluded that many initiatives are being launched in western industrialized countries to solve problems in organization, finance and expertise with regard to the care of chronic patients. In both primary-care orientated as well as in secondary care-orientated countries, a process of integration between generalist and specialist health care services is ongoing. In addition, in primary

care-orientated countries a tendency for meeting specialist health care needs of chronic patients in the primary care setting is arising. Primary care-orientated countries are anticipating the specialist health care needs of chronic patients by implementing hospital-at-home innovations and innovations in which advanced nursing practice plays a central role.

The number of evaluation studies found in this study was, compared to the variety of innovations described, low. Consequently, it is difficult to derive general conclusions about the effectiveness of substitution-related innovations in nursing care for chronic patients. Therefore, it is recommended that future research should be carried out that gives insight into whether such innovations lead to better quality of care and/or a decline in patients' use of health care services and health care costs. Based on such research it should be decided whether broader implementation might be gainful.

It is important to realize that this paper did not intend to give a complete survey of nursing-related innovations for chronic patients in each country. This limitation is related to the inclusion criteria of the literature ((quasi-) experimental evaluation studies regarding substitution-related innovations for chronically ill patients in which nurses play a central role) and the categorization of countries on the basis of primary and secondary care orientation. The health care orientation matrix used indicated relative distinctions between countries and has an explorative character. The indicators used could have been extended with several other indicators like the availability of advanced nurse practitioners. However, internationally comparable data on, for instance, the latter indicator is very scarce. Therefore, the method used to compare countries on the basis of the indicators described in this article seems the most eligible. Another advantage is that this method has been used previously by others (see Starfield 1994, Westert 1997). Furthermore, a limitation of our study is that comparisons between countries and innovations could only be made on a national level instead of a provincial or local level. Therefore, it is possible that conclusions drawn about a specific country do not count completely for every province in that specific country. However, it can be assumed that the data used for making the categorization of countries reflects the average situation in a country.

As stated previously, this paper is based on innovations for chronic patients described in the international literature. Further, only those innovations which were evaluated by using a (quasi-) experimental design were included. Therefore a publication and selection bias may exist. It is plausible that substitution-related innovations are implemented in more countries than those included in this article. For instance, in France, innovations known as '*L'hospitalization à domicile*' are implemented on a large scale. Two reasons for not finding publications about (quasi-) experimental evaluations concerning innovations in countries like France can be that these innovations do not often aim at the chronically ill (Raffy-Pihan 1994) or that innovations and their outcomes are not published in international sources and, consequently, are not available to international colleagues. It is therefore recommended that outcomes of research should be published in international accessible sources. This will give insight into developments throughout the world that can be used by professionals, researchers and policy makers to face today's challenges in health care.

## TABLES AND FIGURES

Table 1 The availability of generalist primary services\*

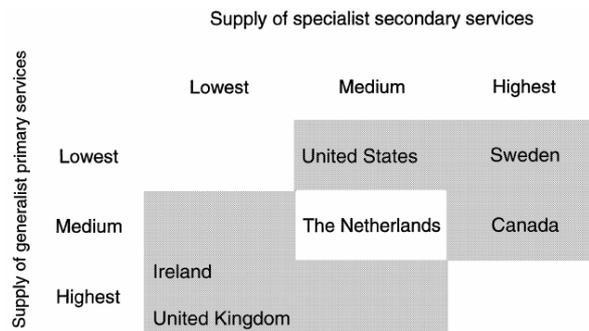
Country (year)	Ratio of GPs to specialist doctors		% Total expenditure on home care compared to total expenditure on health		General practitioner as gatekeeper†	
	Number	Rank	Number	Rank	Rank	Mean ranking§
Ireland (1996)	1.5	1	na	—	1	1
United Kingdom (1994)	na	—	3.0 ('91)	1	1	1
Canada (1996)	1.1	2	2.0 ('94)	3	1	2
The Netherlands (1995)	0.5	3	na	—	1	2
United States (1992)	0.2 ('89)	5	2.3	2	2	3
Sweden (1996)	0.3	4	na	—	2	3

\*based on OECD (1998); †based on Saltman & Figueras (1997), Raffel (1997), Hutten & Kerkstra (1996), Weekers & Pijl (1998) and Boerma & Fleming (1998) Key: 1 = GP has gatekeeper function; 2 = GP has no gatekeeper function. §The mean of the ranks in the previous categories. Note: GP = general practitioner; na = information not available in OECD (1998).

**Table 2** The supply of specialist secondary services\*

Country (year)	% Practising specialist doctors compared to total number physicians		% Total expenditure on acute care compared to total on health		Acute care beds†		Ratio of admissions to available beds (turnover)		Number of acute care bed-days per capita		Mean ranking§
	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank	
Sweden (1996)	71.1	1	na	-	2.8	4	42	2	0.8	3	2.5
Canada (1996)	42.4	3	34.5	1	3.6 ('93)	2	23.9 ('93)	6	1.3 ('95)	1	2.6
United States (1995)	50.0 ('89)	2	31.1	2	3.4	3	33	3	0.8 ('94)	3	2.6
The Netherlands (1995)	35.8 ('91)	4	30.8	3	3.9	1	26.3	5	1	2	3
United Kingdom (1995)	na	-	30	4	2	5	49.5 ('94)	1	0.8	3	3.3
Ireland (1996)	14.5	5	na	-	3.4	3	30.6 ('94)	4	1	2	3.5

\* based on OECD (1998); † per 1000 inhabitants; § the mean of the ranks in the previous categories; Note: na = not available in OECD (1998).



**Figure 1** Health care orientation matrix.

## REFERENCES

- Boerma W.G.W. & Fleming D.M. (1998) The role of general practice in primary health care. The Stationary Office/WHO Regional Office for Europe, St Crispins.
- Borst-Eilers E., Minister for Health & Welfare and Sports, The Netherlands (1997) Government policy on the chronically ill. In Proceedings of the Key-Note Lectures of the 2nd European Nursing Congress, Amsterdam, 5-8 October 1997, pp. 2-7.
- Bringewatt R.J. (1996) Integrating care for people with chronic conditions. *Creative Nursing* 2, 7-9.
- Brodsky J. & Habib J. (1997) New developments and issues in home care policies. *Disability and Rehabilitation* 19, 150-154.
- Campbell Haggerty M., Stockdale-Woolley R. & Nair S. (1991) Respi-care, an innovative home care program for the patient with chronic obstructive pulmonary disease. *Chest* 100, 607-612.
- Coast J., Richards S.H., Peters T.J. et al. (1998) Hospital at home or acute hospital care? A cost minimisation analysis. *British Medical Journal* 316, 1802-1806.
- Dawson J.L. & Critchley L. (1992) Community-hospital partnerships. The Quick Response Team. *Journal of Nursing Administration* 22, 33-39.
- Donaghy D. (1995) The asthma specialist and patient education. *Professional Nurse* 11, 160-162.
- Etzwiler D.D. (1997) Chronic care: a need in search of a system. *The Diabetes Educator* 23, 569-573.
- Grahame R. & West J. (1996) The role of the rheumatology nurse practitioner in primary care: an experiment in the further education of the practice nurse. *British Journal of Rheumatology* 35, 581-588.
- Häggmark C. & Nilsson B. (1997) Effects of an intervention programme for improved discharge-planning. The frequency of re-admissions, problems and treatments of cancer patients receiving repeated treatments in hospital. *Vård I Norden* 17, 4-8.
- Hensher M., Fulop N., Hood S. & Ujah S. (1996) Does hospital-at home make economic sense? Early discharge versus standard care for orthopaedic patients. *Journal of the Royal Society of Medicine* 89, 548-551.
- Hill J., Bird H.A., Harmer R., Wright V. & Lawton C. (1994) An evaluation of the effectiveness, safety and acceptability of a nurse practitioner in a rheumatology outpatient clinic. *British Journal of Rheumatology* 33, 283-288.
- Hill J. (1997) Patient satisfaction in a nurse-led rheumatology clinic. *Journal of Advanced Nursing* 25, 347-354.
- Hutten J.B.F. & Kerkstra A. (1996) Home Care in Europe. A Country-Specific Guide to its Organization and Financing. Arena, Hants/Vermont.
- Kendig H.L., Hashimoto A. & Coppard L.C. (1992) Family Support for the Elderly. The International Experience. Oxford University Press, Oxford.
- Ketelaars C. (1996) Aftercare and specialised community nursing. Implications for patients with chronic obstructive pulmonary disease. PhD thesis, Rijksuniversiteit Limburg, Maastricht.
- Munsterman D.K. (1993) De ontwikkeling van ziekenhuisverplaatste zorg in Nederland (The development of hospital based home care in the Netherlands). *Ziekenhuis Management Magazine* 12, 284-290.
- Organisation for Economic Co-operation and Development (OECD) (1994) Health Policy Studies No. 4. Health: Quality and Choice. OECD, Paris.
- Organisation for Economic Co-operation and Development (OECD) (1996) Caring for Frail Elderly People: Policies in Evolution. OECD, Paris.
- Organisation for Economic Co-operation and Development (OECD) (1998) Health Data. OECD, Paris.
- Osman L.M., Abdalla M.I., Russel I.T. et al. (1996) Integrated care for asthma: matching care to the patient. *European Respiratory Journal* 9, 444-448.
- Persoon A., Francke A., Temmink D. & Kerkstra A. (1996). Transmurale Zorg in Nederland: Een Inventarisatie Op Basis Van Bestaande Gegevensbestanden. NIVEL, Utrecht.
- Peters P. (1995) Liaisonverpleegkundige Schakel Tussen Ziekenhuis En Thuiszorg (Liaison nurse. A link between hospital and home care). VU, Amsterdam.
- Raffel M.W. (1997) Dominant issues: convergence, decentralization, ompetition, health services. In *Health Care and Reform in Industrialized Countries* (Raffel M.W. ed.), The Pennsylvania State University Press, Pennsylvania, pp. 291-302.
- Raffy-Pihan N. (1994) L'hospitalisation à Domicile: Un Tour D'horizon En Europe, Aux Etats-Unis et Au Canada. CREDES, Paris.
- Richards S.H., Coast J., Gunnell D.J., Peters T.J. & Pounsford J. (1998) Randomised controlled trial comparing effectiveness and acceptability of an early discharge, hospital at home scheme with acute hospital care. *British Medical Journal* 316, 1796-1801.

- Ridsdale L., Robins D., Cryer C. & Williams H. (1997) Feasibility and effects of nurse run clinics for patients with epilepsy in general practice: randomised controlled trial. *British Medical Journal* 314, 120-122.
- Rietkerk M.G. & Hirasing R.A. (1997) Effect-Evaluatie TASKProject. Transmurale Astmaverpleegkundige Voor Kinderen in Gouda (Effect-evaluation TASK-project. Transmural asthma nurse for children in the town Gouda). TNO Preventie en Gezondheid, Leiden.
- Saltman R.B. & Figueras J. (1997) European Health Care Reform. Analysis of Current Strategies. WHO, Copenhagen.
- Shepperd S., Harwood D., Jenkinson C. et al. (1998a) Randomised controlled trial comparing hospital at home care with inpatient hospital care. I: three month follow up of health outcomes. *British Medical Journal* 316, 1786-1791.
- Shepperd S., Harwood D., Gray A., Vessey M. & Morgan P. (1998b) Randomised controlled trial comparing hospital at home care with inpatient hospital care. II: cost minimisation analysis. *British Medical Journal* 316, 1791-1796.
- Smeenk F.W.J.M. (1998) Transmural care of terminal cancer patients. An evaluation study in the eindhoven region. PhD thesis, Universiteit Maastricht, Maastricht.
- Starfield B. (1994) Is primary care essential? *Lancet* 344, 1129- 1133.
- Steering Committee on Future Health Scenarios (STG) (1993) Primary Care and Home Care Scenarios 1990-2005. STG, Rijswijk.
- Temmink D., Francke A.L. & Kerkstra A. (1998) Over spreekuren gesproken. Een inventarisatie van transmurale verpleegkundige spreekuren in Nederland (Spoken about clinics. An inventarisation of transmural nurse clinics in the Netherlands). Elsevier/ De Tijdstroom, Maarssen.
- Timpka T., Svensson B. & Molin B. (1996) Development of community nursing: analysis of the central services and practice dilemmas. *International Journal of Nursing Studies* 33, 297-308.
- Tin K., Keller G. & Kaufman E. (1995) The effect of community based respiratory therapy on hospital readmission rates for patients with chronic obstructive pulmonary disease. *Canadian Journal of Respiratory Therapy* 31, 68-73.
- Weekers S. & Pijl M. (1998) Home Care and Care Allowances in the European Union. A-D druk/NIZW, Zeist/Utrecht.
- Westert G.P. (1997) State control and the delivery of health care: a preliminary study in eleven European countries. *Environment and Planning C: Government and Policy* 15, 219-228.
- Witteveen E. (1998) Home care technology for patients with cancer or serious infections. Unpublished PhD thesis, Universiteit Utrecht, Utrecht.