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Integration and continuity of Care in health care network models for frail older adults

ABSTRACT

A detailed review was conducted of the literature on models evaluating the effectiveness of integrated and coordinated care networks for the older population. The search made use of the following bibliographic databases: Pubmed, The Cochrane Library, LILACS, Web of Science, Scopus and SciELO. Twelve articles on five different models were included for discussion. Analysis of the literature showed that the services provided were based on primary care, including services within the home. Service users relied on the integration of primary and hospital care, day centers and in-home and social services. Care plans and case management were key elements in care continuity. This approach was shown to be effective in the studies, reducing the need for hospital care, which resulted in savings for the system. There was reduced prevalence of functional loss and improved satisfaction and quality of life on the part of service users and their families. The analysis reinforced the need for change in the approach to health care for older adults and the integration and coordination of services is an efficient way of initiating this change.

DESCRIPTORS: Frail Elderly. Health Services for the Aged. Comprehensive Health Care. Quality of Health Care. Review.

INTRODUCTION

In recent years, the ageing population has led to discussion of the needs and particularities of older adults as health care system users. There is intense concern to maintain health care quality and sustainability with regards costs.^{4,12,25,38}

Trust and bonding are values inherent to qualified health care.^{22,27} To guarantee the continuance of these values, a care pathway needs to be established within the system.²⁵

The older people have specific needs due to clinical-functional and socio-familial characteristics peculiar to this group. Care models for this segment of the population need to be centered on the individual, considering such characteristics. In order to do this, attention should be organized in an integrated way and care needs to be coordinated following network logic throughout the care pathway.

However, as a result of fragmentation in care, current health care service provision consists of a multiplicity of appointments, tests and other procedures which, in addition to increasing costs, do not guarantee a positive cost-effectiveness relationship.^{28,36,37} Health care is not providing a secure service to older adults and their families. As a consequence, health care systems are overloaded, implying higher costs and inefficiency.³⁶

In an attempt to deal with this problem, in North America and Europe in recent years health care service provision has been offered in a coordinated and integrated way by Integrated Services Delivery (ISD) programs.²⁴ These programs are developed to improve continuity in health care and to increase the efficiency of health care services, especially those provided to older adults and those with disabilities.

The aim of this study was to conduct a detailed review of the literature on models evaluating the effectiveness of integrated and coordinated health care models for older adults.

METHODOLOGICAL PROCEEDINGS

A review was conducted of health care models for older adults, the effectiveness of which had been evaluated. The following bibliographical databases were consulted to identify studies: PubMed, through the National Center for Biotechnology Information (NCBI); The Cochrane Library; Lilacs; PAHO; WOLIS MEDCARIBE and IBECS through the Virtual Health Library (BVS); Web of Science; Scopus and SciELO.

The descriptors used to search the databases were: Delivery of Health Care, Effectiveness, Program Evaluation, Health Care, Structure of Services, Aged, Elderly, Older, Health Services for the Aged, Old Age

Assistance, Outcome and Process Assessment, Quality Integrated Care, Demonstration Programs, Balance of Care, Aged, 80 and over, Quality of Health Care.

These descriptors were combined in a variety of ways to find the greatest possible number of publications in the databases. The combinations followed the order: intervention, population and outcome.

No limits were placed on the dates of publication. Texts available in English, Spanish or Portuguese were selected and, at this stage, there was no restriction placed on the type of study.

At each stage of the selection process, the studies were selected by pairs of authors (RCS, RTSVR, LMAMS and ACLCG). The studies had to refer to assistance programs and integrated health care for older adults and evaluate effectiveness. Older adults were deemed to be those aged ≥ 60 .

In total, 5,135 titles were identified. After eliminating duplicates and reading abstracts, thirty publication were selected. A further three articles found in the references of the selected articles were added to complement information.

After reading and analyzing the 33 articles, 12 works referring to five coordinated and integrated health care models for older adults were included. These studies evaluated the effectiveness of the models with significant results regarding the integration of health care services. Works describing models without analyzing results, those which did not present the data analyzed or did not demonstrate methodological rigor were excluded.

Pairs of authors read the entire articles, using a third reviewer in case of discrepancies in the eligibility criteria. A summary of the data was added to a pre-formulated and standardized record, from which the researchers extracted the following data for each eligible study: type and aim of the study, population, description of the intervention, location, year implemented and duration and financing of the model, result of evaluation of costs, reductions in number of hospitalizations, impact analysis, user satisfaction or other evaluation. Space was included for a subjective evaluation of the quality of the study and for researchers' comments, for example, on research bias or strong points.

RESULTS

The results of the research included the best information on integrated systems presented in the literature. The principle characteristics of the five models of coordinated and integrated health care for older adults according to structural composition, assistance process and results¹⁴ are shown in the table.

Table. Characteristics of the models of integrated and coordinated care networks for older adults.

Model	Structure	Processes	Results
SIPA ^{1,2}	ER and hospital, institutionalization and palliative care. General practitioner and specialists, home care, sheltered housing, "hospital dia" and "day center".	Triage for frailty confirmed by functional assessment.	Higher community spending, lower institutional spending, increased user and carer satisfaction. Main impact: freeing up hospital beds previously occupied by patients awaiting.
PACE ^{10,32}	Day center (centralizes medical and social services and functions as a residence) pays for services it does not have.	Medical and social services with support from an interdisciplinary team. The team manages the case.	Greater use of outpatients, less hospital use, less time in nursing homes. Better perceived health, quality of life, satisfaction with care and better perception of functional state.
PRISMA ¹³	Home Care, hospital services, hospital dia, day center, social services, voluntary support including providing meals in the home and community transport.	Single entry point, triage of frailty risk confirmed by functional assessment, case manager, care plan, computerized medical records.	Less hospital use, increased patient and carer satisfaction with care received.
Guided Care ^{5-7,15,20}	Trained nursing, GP, multi-disciplinary team and computerized medical records.	Comprehensive geriatric assessment, care plan, case management, carer support.	Less use of in-home, hospital and specialist nursing services. Families spending less, less functional loss and better perceived health.
Grace ^{12,13}	Multi-specialties center, acute care unit, specialized nursing and physician house call program. One computerized medical record integrates patient to local health care services.	Triage of risk, comprehensive geriatric assessment, care plan and case management.	Less use of ER. Patients identified as at greater risk made less use of ER, hospital and hospital dia.

The Integrated Care System for Older Adults (SIPA) is a Canadian program providing integrated care for frail older adults.^{1,2} The structure of this program contains both institutional and community services. It includes delivering care plans and monitoring by a case manager.^{1,2}

The institution based services offered are: hospital ER, short and long term hospitalizations, hospitalizations for rehabilitation, institutionalization and palliative care. Community based services were: medical prescriptions, general and specialty clinical appointments, in-home assistance, adapted housing for older individuals with some dependence, in-home technical support, "hospital dia" (Day Hospital) and day centers.^{1,2}

Triage was performed to identify frailty, confirmed by functional assessment (IsoSMAF score ≤ 10)^{1,2} for individuals to qualify for the program. Each team is responsible for 160 patients. The family GP received an annual \$400 Canadian dollars subsidy per patient to compensate for the time spent communicating with other team members. The teams were composed of a case manager (nurse or social worker), community nurses, social workers, occupational therapists, in-home assistants, GP, pharmacist (one per area) and community resource organizers (one per area).^{1,2}

The SIPA model was constructed based on a clinical trial of 1,230 older adults aged ≥ 64 . The intervention

was analyzed and found to result in a 22.0% reduction in institutional costs and a 50.0% reduction in hospitalizations for acute events, with no difference found in stays in the intermediary care sector. Increased user and carer satisfaction was also found, with no difference in the carer's workload or in the family's spending. There was a 44.0% increase in community service spending, although the main impact was freeing up hospital beds previously occupied by patients awaiting institutionalization.

The Program of All-Inclusive Care for the Elderly (PACE)¹⁰ originated in On-Lok in Chinatown, USA, and offers health care to individuals with disabilities and frail older adults on low income and eligible for in-home nursing care. The network is structurally limited and offers medical and social services, supported by an interdisciplinary team, as well as a day center for adults (social center, centralizing medical and social services and, in many cases, residence for patients). The team's intense effort in monitoring and managing cases resulted in reduced institutionalization, reduced use of ER services and reduced hospitalization times.^{10,32}

A study carried out between 1995 and 1997¹⁰ analyzed PACE outcomes. The authors suggested that use of outpatient services maintained "improved" health, avoiding higher costs in other areas of care. The high level of outpatient care use (93.0% in the first six months of monitoring) found in the study may be

the result of a lack of access to medical care before entering the PACE, as users were minority groups, individuals living in extreme poverty and with low levels of schooling.

Another study³² evaluating PACE outcomes was published in 1998. Its results estimated savings for the financier (Medicare) to be 38.0% in the first six months and 16.0% between the seventh and 12th months of the period of the study. There was greater use of outpatient services, less use of hospital services, less time in nursing homes and more time spent in the community. More patients reported better perceived health, quality of life, satisfaction with health care and better perception of their functional state compared with the control group.³²

The Program of Research to Integrate Services for the Maintenance of Autonomy (PRISMA),¹⁹ another Canadian program, formulated its structure in partnership with local health care and community services. There were six components to its functioning: coordination between regional and local decision makers, one single entry point, individual evaluation instruments (triage of frailty risk using the PRISMA-7, confirmed by the FAMS (Functional Autonomy Measurement System) functional evaluation system, together with management systems for complex cases, case management, individualized care plans and computerized medical records.

The PRISMA¹⁹ institutional services included in-home care, rehabilitation services, hospital services, day center, voluntary services (personal care, home maintenance, delivering meals, community transport and voluntary care) and social services. The main focus of the program, coordination, is established at each level of the organization.

In a study conducted during the first four years of PRISMA¹⁹ in three regions Quebec, 920 older adults aged ≥ 75 or 77 and identified as at risk of frailty were monitored. Greater use was made of the ER, although this was generally not followed by hospitalization, which suggests inappropriate use of these services. Even so, hospital admissions were a little higher than in the control group in the first year, although this situation was reversed in the fourth year, as expected.

The small difference in results of evaluations of the impact of PRISMA¹⁹ compared with the control group may be due to the local health care system being integrated to ISD templates.

The study found a 13.9% increase in patient and carer satisfaction with the health care received. The workload was similar at the end of the four years, when the individuals monitored had grown older and had greater functional loss.¹⁹

Even with greater user dependence, the probability of using the ER was lower in the fourth year [0.49 (Prisma group) *versus* 0.54 (control group), $p < 0.001$].¹⁹

The Guided Care²² Program is a system of health care service provision, offered in several American states, focusing on primary health care and an in-home approach. Although the health care service provider facilities are not linked to the Program, they are available in the community and the Program coordinates their use by patients.

The primary health care services are offered by a team composed of a trained nurse, a GP and a multi-disciplinary team. The Program provides medical records available on line, comprehensive geriatric evaluation, evidence based care plans, case management (nurse), transitional care, self-management and support to the carer.^{5-7,22,31}

Nursing services are performed by professionals specially trained to monitor the patient⁶ and their activities are divided into eight processes: (1) conducting a comprehensive geriatric evaluation of the patient in their own home, (2) drawing up a care plan, (3) monthly monitoring of patients, (4) monitoring patient's transition between care provision, smoothing transfers, (5) making coordinated efforts to ensure all patients receive care, (6) encouraging self-management, (7) providing guidance and support to the family carer and (8) facilitating appropriate access to community resources.⁵

A clinical trial⁵ involving care teams and 904 older adults aged ≥ 65 , identified as at high risk of hospitalization was conducted by Boulton et al in 2001. This study yielded several complementary publications and their principle results suggest a 29.7% reduction in in-home service use, a small percentage reduction in hospital use (26.0% *versus* 30.0%), nursing homes (20.0% *versus* 22.0%), and specialist nursing services (8.0% *versus* 9.0%), compared with the control group. They also reported less spending by the families, less functional loss, better perceived health and greater patient satisfaction with the model.^{5-7,23,31}

The professionals involved (such as doctors and nurses) were also satisfied, there was improved doctor-patient communication with chronic patients and their respective families and better knowledge of their clinical conditions on the part of the patients.³¹

The analyses of the studies of the Guided Care²² Program suggests reduced hospital use, ER use, rehabilitation use and qualified installation of nursing and in-home health care services use. The avoided costs of these services appear to be more than sufficient to compensate for the costs of providing this primary care program. There was also improved self-reported health care, especially among those patients with multiple chronic diseases.⁷

The Geriatric Resources for Assessment and Care of Elders (GRACE) is a local health care service program for older adults on low income in the USA.^{12,13} The institutions used by the patients are not linked to the Program, but there is a commitment not to lose patient data. The computerized medical record “accompanies” the patient in all procedures, as it can be accessed via the internet. This enables all professionals, from GRACE or otherwise, to register their activities, creating an integrated network.¹³

Based on tracking the risk of hospitalization using the PRA (instrument to predict risk of repeated hospital admission), the older adult is monitored by the support team, in collaboration with the primary care doctor and an inter-disciplinary geriatric care team. This team is managed by a geriatric specialist who interacts with community health care services. ACOVE^a (Assessing Care of Vulnerable Elder) recommendations are used as indicators of care quality and medical records accessed through the internet integrate the patient with local health care services.¹³

The support team conduct a comprehensive, annual geriatric assessment and the inter-disciplinary geriatric care team develop an individualized care plan, applying protocols of care specific to geriatric alterations. The inter-disciplinary team meet weekly to review implemented care plans.¹³

A clinical trial involving 951 older adults aged ≥ 65 was conducted between 2002 and 2004. Support provided to the primary care doctor during the monitoring period was geriatric assessment of the patient, the multi-specialty center, the unit for appointments and admitting acute cases, specialized nursing services and the physician house call program.¹²

The estimated results suggest less use of ER not followed by hospitalization [1,445 (n = 474) *versus* 1,748 (n = 477)], and the estimates for visits to the ER, hospital admission and *hospital dia* were lower among patients identified as being at higher risk of hospitalization (PRA > 0.4) in the second year of the study. There was no significant difference in hospital admissions or outpatient visits, nor in readmission within 30 days of the first discharge.¹²

Close collaboration between primary care and doctors working in the hospitals encouraged better use of limited resources in geriatrics and the specially trained inter-disciplinary geriatrics team had more impact on the patient’s results.¹²

Although the results of the GRACE¹³ evaluation indicated greater costs in the low risk group, a cost-effectiveness analysis is needed to quantify the benefits in quality

adjusted life years, rather than in dollars. This would help to guide clinical decisions for this population.

The ISD model was implemented in Bois-Francs, Canada, in 1997. The model integrated the gerontogeriatric services available in the location and coordinated promotion and prevention of diagnosis, treatment, rehabilitation, long-term care and palliative care. Patients were admitted to the service after a comprehensive geronto geriatric assessment. The data were made available on an electronic medical record accessible to all local health care services, including by professionals who supported the network.³⁵

An evaluative study was conducted during the program’s implementation and compared outcomes with those of a control group in the Drummond-ville area, where no ISD network was established. This study, of a quasi-experimental design, monitored 482 individuals for three years. The results do not show less use of hospital or emergency services compared with the control groups, although less use was made of local community services. However, carers had a lower workload and there was less desire to move into an institution.³⁷

The importance of the care process associated with the structure can be observed in the experience of Rovereto, a city in Italy with a wide range of health care services geared towards the older people, although not integrated. Integrating local services after adding a case manager, care plan and geriatric assessment to a community unit resulted in reduced risk of hospitalization and shorter stays when this was the case, and reduced functional and cognitive decline. Consequently, total per capita health care costs were reduced.³

Some of the selected studies did not report the structuring of the integrated network, but rather a multi-professional approach^{8,9,26} or case management^{24,33} in caring for the health of the older people. Others merely described the models,^{18,21,29,35,34,39} implementation^{30,34} or evolution of the initial model,^{15,20} without analyzing effectiveness. In two articles, the studies suffered from methodological bias³² and changes in the country’s legislation during the period analyzed,¹⁶ compromising the reliability of the results. Clauser et al¹¹ (1995) outline final considerations regarding the PACE model.

Publications describing the evolution of PACE in the USA report the need to understand the preferences of the populations and to guide families on the approach with the case managers.¹⁵ They report difficulties in implementing the model and contracting trained professionals, especially doctors.^{15,20}

^a A set of indicators of quality developed specifically for older adults, aiming to identify the quality of health care provided to the most vulnerable older adults, with the highest chance of dying or becoming seriously incapacitated in the next two years.

FINAL CONSIDERATIONS

The ISD were developed to improve care continuity, increasing the efficiency of the services offered, especially for older adults and those with disability.²⁴

Some programs aimed to improve the process of referring and transferring patients between services, e.g., discharge from hospital to in-home care or to a rehabilitation institution.¹⁹

Other programs were more ambitious and complex, developing an organization responsible for offering all services to a specific group of individuals. In general, they operated with a budget to hire specialized local services, such as residential homes for the older individuals and hospital services.¹⁷

This study includes experiences which analyze the use of more complex programs, understanding that coordinating care and integrating the service network are requisites in creating continuity in care.

The main items found in the structure of the programs are hospital services, ER, day centers centralizing specialist services and social activities, in-home care, telephone switchboard, long-term stay institutions and transport for patients in the network. Computerized medical records, accessible through the internet, integrated the patient to services in the network.

There was one entry point for users to enter the system, accompanied by a triage of risk, be that risk of frailty or risk of repeated hospitalization. This was followed by a comprehensive functional or geriatric assessment to orient the care plan. The case manager was presented as the patient's "coordinator" in the network of institutional and community services.

The results found by the SIPA, PACE and Guided Care programs, systems which invested in recruiting and training the professionals involved, i.e. those which valued the process of providing services, reinforced the benefits of the ISD model for caring for older adults.

The SIPA and PRISMA systems showed significant network integration and care coordination with the patient. This meant benefits developed which went beyond the costs by satisfying users and carers.

This is an important result as the target population of the majority of programs were frail older adults with high levels of functional dependency and consequent work overload of carers. Even so, the patients showed better perceived health and less functional decline and desire to move into an institution.

Increased spending on community services is expected when investment in primary care is increased, including in-home care, in order to reduce use of hospitals, ER and nursing homes in the long term.²⁵ The PRISMA¹⁹ outcomes reinforce this approach in primary care with investment in the management process in order to make other savings in the long term.

A limitation of this study is the small number of studies evaluating health care provision programs for the older individuals, as well as the poor methodological quality of others which were not included. Another limitation was being limited to key words in the languages included, which may have excluded experiences published in other languages.

The results of this study reinforce the need to modify the approach to health care. Patients' care needs to be managed from entry into the system until end of life, with services integrated at all levels. This configuration has been shown to be the most advantageous for health care systems, for patients and for their families.

This study, developed in the research line of "developing health care models for Older Adults",^b will form part of another project, furthering the discussion of the adoption of one of the models (or a mixed model) to the Brazilian situation.

The Brazilian model needs to be constructed based on the peculiarities of the country regarding current health care system proposals, considering advances and limitations which can be matched to these international experiences.

^b Study developed by the Grupo de Pesquisa sobre Envelhecimento e Saúde, Universidade Aberta da Terceira Idade, Universidade do Estado do Rio de Janeiro, January to December 2013.

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