Integrated service delivery to ensure persons' functional autonomy

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Acknowledgments

Canadian Health Services Research Foundation (CHSRF)

Fonds de la recherche en santé du Québec (FRSQ)

Regional Health and Social Services Boards (Estrie, Mauricie-Centre-du-Québec, Laval, Montérégie, Quebec City)

Canadian Institutes of Health Research (CIHR)

Réseau québécois de recherche sur le vieillissement (RQRV)

Quebec Ministry of Health and Social Services

Research Centre on Aging

Sherbrooke Geriatric University Institute

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Introduction
Integrated Services Delivery
to Ensure Personal Autonomy

Réjean Hébert

The context of the ageing populations of Québec and Canada calls for major changes in the organization and delivery of sociohealth services. The Québec and Canadian health care systems were set up at a time when the population was young and suffered primarily from acute conditions that required case-specific treatment. At that time, the hospital was the hub of the system and ancillary services revolved around it. The ageing of the population naturally results in a preponderance of chronic illnesses that require ongoing, long-term care. This means the traditional hospital-centric model is inappropriate and must be replaced by another model developed with users’ place of residence in mind. In the new model, first-line health services and homecare will form the crux of the system and, given the plethora of organizations and professionals involved, integrated services are crucial.

The PRISMA (Program of Research to Integrate the Services for the Maintenance of Autonomy) group was set up to bring about this change and to develop the mechanisms and tools that will enable Integrated Services Delivery (ISD). This group was formed through an association between two research groups: the Université Laval Geriatric Research Team then led by Dr. Pierre Durand, and the team from the Sherbrooke Research Centre on Aging, headed up by Dr. Réjean Hébert. These two teams pooled their efforts and worked with the directors and managers of the health and social services network from the ministry and five regional boards, in addition to the Sherbrooke Geriatric University Institute. PRISMA therefore represents a unique partnership of researchers, decision-makers, managers and clinical practitioners who collaborated to define research objectives, design and carry out protocols and introduce the results in the field through the implementation of innovative services and programs. Since 1999, this group has been actively involved in the development, implementation and evaluation of ISD mechanisms and tools primarily by studying frail elders experiencing loss of
autonomy (frail elders). PRISMA also had a major impact on the development of Orientations ministérielles pour les personnes âgées en perte d’autonomie (Health department guidelines for frail elders experiencing loss of autonomy).

This document reports on the work completed during the first three years of the research program, the results of which were presented during two symposia organized in 2001 and 2003 by the PRISMA group.

The PRISMA research program had five objectives:

1. Put into play strategic (governance), tactical (management) and operational (clinical) plans and the mechanisms and tools needed to deliver the integrated services that ensure continuity of care.

2. Develop and validate the clinical and management instruments to support ISD deployment and facilitate the changeover to new professional practices and organizational methods. These instruments included the Iso-SMAF profiles, Computerized Clinical Chart (Dossier clinique informatisé, DCI) and the Geronto-Geriatric Computer System (Système d’information géronto-gériatrique, SIGG).

3. Develop, adapt and validate service quality measures and a method for evaluating costs and continuity of services indicators.

4. Evaluate the implementation and operation of an ISD network by determining the conditions that would facilitate/forestall the implementation of strategic, tactical and operational plans, from the viewpoint of frail elders and their support network, caregivers and managers.

5. Evaluate the impact of ISD on frail elders and their support network, as well as the use of resources (public, private and volunteer) and the cost of the services.

This document describes the integrated model developed by the PRISMA group, which does more than simply link up the various services, organizations and programs. The model differs from traditional approaches to comprehensive integration previously adopted in Europe and North America, which are developed around organizations providing care to specific patients, concurrently with the sociohealth network. The PRISMA model is unique in that it includes all public, private or
volunteer organizations that provide care and services to frail elders. We believe this model is better suited to the public and universal health system in place in Québec and Canada.

The pilot project carried out in Bois-Francs in the late 90s will be presented with an implementation evaluation that will provide information of use to decision-makers, managers and clinical practitioners during future implementations. The impact of the Bois-Francs project was also measured during a study of potential effectiveness, which demonstrated a strong correlation between the patient’s functional autonomy and the consumption of health services. This two-pronged implementation/impact assessment is characteristic of the PRISMA group and was introduced in the Estrie region using a population approach.

When introducing a model of this kind, it is important to monitor the degree of implementation, both qualitatively and quantitatively. The tool developed to measure implementation proved very useful, not only to decision-makers for tracking implementation projects, but also to the researchers themselves for comparing degree of implementation with impact on the network.

During the Estrie implementation, case managers and clinical practitioners requested a tool to help identify frail elders who might eventually enter the ISD system. To respond to this request, the research team reanalyzed data collected during a previous study, and developed the PRISMA-7 questionnaire to identify frail elders and determine the questionnaire’s sensitivity, specificity and predicative value. The questionnaire was then used to identify those experiencing severe loss of autonomy; it was administered by telephone, during single entry contacts and in health establishments, notably in emergency wards or volunteer agencies.

During the Bois-Francs experiment, it was vitally important to provide ISD organizations and professionals with an information system to facilitate communications between health care workers and organizations. The SIGG computerized clinical chart was developed and a group of ISD organizations has monitored its development over the past several years. It was crucial to evaluate the users’ satisfaction with this tool, and to learn how the patients felt about this type of information technology.

The implementation of a single evaluation tool is characteristic of ISD. Using a multipatient evaluation tool to determine user needs (in terms of homecare and admission to and follow-up in a long-term care
INTEGRATED SERVICE DELIVERY TO ENSURE PERSONS' FUNCTIONAL AUTONOMY

facility) is a major change aimed at ensuring harmonized evaluation. This tool includes the Functional Autonomy Measurement System (Système de mesure de l'autonomie fonctionnelle, SMAF), which adopts a different conceptual approach, one based on functional autonomy as opposed to increased use of nursing services. To reflect this change in paradigm, new management tools had to be developed to monitor patients as well as the organizations’ operations and financial management. Iso-SMAF profiles, which classify patients according to functional autonomy, are aimed at reconciling clinical evaluations with case management information. In fact, this system is designed to use information collected by clinical practitioners for management purposes. It will help to avoid redundant data collection and to prevent unfair treatment. The system will coordinate recommended services, resource allocation, patient/management tracking, quality evaluations and organizational accountability.

In the long-term care organizations, use of the Iso-SMAF profile ushered in a shift away from nursing-care indicators towards an approach based on autonomy profiles. In terms of homecare, use of the Iso-SMAF profiles made it possible to develop a patient profile for the first time, and to measure the gap between the needs and the services provided. This information is crucial since it can be used to quantify the paucity of health care resources, and to counterbalance the indicators already available to hospitals and long-term care facilities to inform government officials of the wisdom and urgency of investing in homecare. A management system of this kind can also be used to document additional budget outcomes and help ensure financial accountability.

In the current economic climate, it is important to properly document the financial impact of ISD. As Leutz indicated, “we must invest in integration before we can see a profit.” To understand the first part of the cost equation – integrated services benefits, it is necessary to document the cost of implementing and operating an ISD system. The team is presently attempting to quantify ISD benefits in order to solve the financial equation of this model, and to determine and generalize the resulting economic fallout.

While ISD must result in greater patient autonomy and more rational use of sociohealth services, it must also have a positive impact on other crucial variables as well. One of these variables, patient satisfaction, is becoming increasingly important. To date, the satisfaction
measurement has been problematic, since the suggested instruments targeted primarily specific services and could not be applied to all of the services provided to patients in this network. These measurements also presented a major ceiling effect, which limits their usefulness for monitoring degree of satisfaction with a new health service. The team was able to develop a satisfaction assessment tool that measures the patients’ perceptions and the importance they place on each variable. Patient empowerment is one the values of integrated services; it will become increasingly important with the advent of ageing baby-boomers who wish to play a more active role in decisions affecting them and services designed for them. A tool was developed and validated to measure empowerment and to quantify the impact of ISD on this important variable.

One of the recommended ISD tools is the Individualized Services Plan (ISP). It is invariably referred to in ISD projects, but is rarely documented properly. The ISP is an essential tool for documenting medical services, establishing objectives and determining whether or not these objectives have been achieved. This document presents a summary of ISP publications in an attempt to identify certain application standards and better define elements that need to be integrated into this tool. This information could be used to define this instrument in terms of operations. It could then be applied to the training and daily services provided by the case managers.

ISD would be completely ineffective if it did not result in improved quality of services. In the first phase, the team developed a framework to evaluate the quality of care and services on which future studies should be based in order to provide the ISD networks with quality evaluation instruments and promote continuous quality.

Lastly, we present our observations on the sociopolitical determinants of integrated services. These observations constitute the framework for analyzing the sociopolitical determinants of implementing an ISD and provide some essential information in terms of general deployment of these networks elsewhere in Québec and for other patients.

The PRISMA group is continuing its research in order to achieve the objectives it has set for itself. As a result of the Estrie study, over the next few years, we will be able to document the impact of ISD on health services consumption and to determine the related costs through a population-based approach. Continuity indicators are being developed to measure the impact of ISD on continuity of services, which is the ulti-
mate objective of integration. We will continue to analyze ISD implementation through the Estrie project in order to pinpoint favourable/unfavourable elements and support future implementations throughout Québec and elsewhere in Canada. Work is underway to develop a balanced scorecard to be used by managers for monitoring future ISD network implementations. The PRISMA group is also adapting the model for other patients, notably those with physical and intellectual disabilities and mental health problems. The validity of the Iso-SMAF profiles has been verified with other patients and their application to private nursing homes has been tested. The services associated with each profile will be analyzed to update estimations for nursing, assistance and surveillance services and include psychosocial and rehabilitation services.

The computerized clinical chart is still in development to improve its performance and a questionnaire for evaluating the satisfaction of users and professionals is currently being validated. A sociopolitical analysis of ISD implementation in Estrie, Bois-Francs and the Chaudière-Appalaches region is ongoing. The group will also study the impact of ISD on professional practices and on frail elders and their immediate caregivers. These studies will be included in a second volume slated to appear in 2006 when the current project comes to an end. Additional symposia, scheduled to take place between now and that date, will be organized to study the progress of these projects.

This is admittedly an ambitious research project, but the results of the two first years presented in this document clearly demonstrate that the group met expectations and is well on its way to achieving its objectives. It is important to reflect on the impact this research will have on the introduction of organizational changes and the implementation of a new method of delivering services. This project appears to demonstrate that research and politics can be combined for the greater benefit of frail elders and the improvement of the Québec and Canadian sociohealth system. The PRISMA group also may have demonstrated the most effective way of combining research with action in order to rapidly and effectively transform research data into new ways of delivering services, and conversely, to ensure that decisions made by government officials and managers are based on solid data.
1. PRISMA: A New Model of Integrated Service Delivery for the Frail Older People in Canada

Réjean Hébert and the members of the PRISMA Group

PRISMA (Program of Research to Integrate the Services for the Maintenance of Autonomy) is a partnership between two research teams (Research Centre on Aging in Sherbrooke and Laval University Geriatric Research Team in Quebec City) and several health organisations in the Province of Quebec: Ministry of Health and Social Services, five Regional Health and Social Services Boards (Estrie, Mauricie-Centre-du-Québec, Laval, Montérégie, Quebec City), and the Sherbrooke Geriatric University Institute. PRISMA is funded by the Canadian Health Services Research Foundation, the Fonds de la recherche en santé du Québec (FRSQ), and the partnering organisations. Many projects run by the PRISMA group are also funded by the Canadian Institutes of Health Research.

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Introduction

Although the problem of continuity applies to and is significant for all health care and services, it is particularly acute at the present time in regard to the frail elderly. Many factors – demographic (accelerated aging of the population), social (break-up of families, children moving away to find work), economic (low income women living alone), health (increased life expectancy, high incidence of disabilities) and financial (reduced health care budgets) – are putting strong pressure on both the demand for and the supply of services for this clientele. Functional decline generates an increased need, for both the dependent individuals and their families, for evaluation, treatment, rehabilitation, psychological and social support, help to remain at home, and temporary or permanent long-term care facilities. These multiple needs can also change quickly over time due to the biological, psychological and social vulnerability of this frail clientele. In terms of supply, a wide range of resources and services involving numerous practitioners and partners have been developed over the past twenty years to try to meet these needs. However, continuity-related problems compromise both service accessibility and the efficiency of health care services. For example: multiple entry points, service delivery which is influenced by the resource contacted rather than the user’s need, numerous redundant evaluations of clienteles not using standardised tools, inappropriate use of costly resources (e.g., hospitals, emergency services), waiting time for services, inadequate transmission of information, and the piecemeal response to needs. In a situation where resources are scarce and the demand for services is increasing, it is essential to ensure that the services meet the users’ needs, without duplication and as efficiently as possible. Therefore, there is an urgent need to provide managers and decision-makers with reliable data on the process and impact of mechanisms and tools designed to improve the continuity of care and services and to establish a monitoring system so that it is possible to adapt quickly and effectively to changes in the demand for services. Last but not least, these mechanisms and tools could subsequently be adapted to care and services for other clienteles that also present continuity problems (e.g., mental health, young people with physical and/or intellectual disabilities).

Continuity refers to the organised, coordinated and steady passage of individuals through the various elements in a system of care and services. It comprises two aspects: the short-term aspect (synchronic)
relates to the application of an intervention and concerted, coordinated service plan over a given period; the long-term aspect (diachronic) relates to monitoring and harmonising intervention and service plans over a protracted period. This later aspect has also been called “longitudinality” by Starfield.

Integrated Service Delivery (ISD) programmes have been developed to improve continuity and increase the efficacy and efficiency of services, especially for older and disabled populations. Kodner and Kyriacou define integrated care as “a discrete set of techniques and organisational models designed to create connectivity, alignment and collaboration within and between the cure and care sectors at the funding, administrative and/or provider levels.” According to Leutz, there are three levels of integration: 1) linkage; 2) coordination; and 3) full integration.

The three levels of Integrated Service Delivery

At the linkage level, organisations may develop protocols to facilitate referral or collaboration to deal with patients’ needs. However, the organisations continue to function within their respective jurisdictions, responsibility and operational rules. In Canada, since the health care system is universal and mainly publicly funded, there are already many initiatives and programmes in the health care system that integrate services at the linkage level.

At the other end of the spectrum, the full integration level, the integrated organisation is responsible for all services, either under one structure or by contracting some services with other organisations. Many examples of this level of ISD programmes have been developed. In the United States, the California On Lok project gave rise to the PACE (Program of All inclusive Care for the Elderly) projects. In Canada, the CHOICE (Comprehensive Home Option of Integrated Care for the Elderly) project in Edmonton is an adaptation of the PACE projects. These programmes are built around Day Centres where the members of the multidisciplinary team who evaluate and treat the clients are based. Clients are selected according to relatively strict inclusion (degree of disability compatible with admission to a nursing home) and exclusion (e.g., behavioural problems) criteria. These systems usually function in parallel with the socio-health structures in place. Services are delivered by structures operated by the system or by external structures linked through contracts (hospitals, specialised medical care, long-term care
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An evaluation of these programmes in the USA showed that they have an impact on the number and duration of short-term hospitalisations, the number of admissions to long-term institutions, drug use, mortality and the cost of services. However, this study did not include any specific control groups and the data from the PACE projects were only compared to national statistics for groups whose comparability is questionable. In Northern Italy, Barnabei et al. showed with a randomised controlled trial that a programme of integrated social and medical care and case management is effective in reducing admission to institutions and functional decline in older people living in the community.

The Social HMO (Health Maintenance Organization) in the United States and the SIPA (Système de services intégrés pour personnes âgées en perte d’autonomie) project in Montreal are also integrated services but do not include a Day Centre. However, home care services are provided by personnel hired by or under contract with the organisation. All these fully integrated models are nested in the usual health and social services in a particular area but are run in parallel to them. They do not involve significant changes to the structure or processes of existing services, except for the negotiation of protocols for referring clients to ISD and the provision of some services not covered by ISD. Capitation budgeting is usually a key component of these programmes.

The other level of integrated care, coordination, involves the development and implementation of defined structures and mechanisms to manage the complex and evolving needs of patients in a coordinated fashion. Every organisation keeps its own structure but agrees to participate in an “umbrella” system and to adapt its operations and resources to the agreed requirements and processes. At this level, the ISD system is not only nested in the health care and social service system but is embedded within it. Figure 1.1 and Table 1.1 compare the coordination model with the full integration model.

The PRISMA (Program of Research to Integrate the Services for the Maintenance of Autonomy) project in the Province of Quebec is an example of this type of integrated care. This article will describe in more detail the integrated care mechanisms and tools developed and implemented by PRISMA. The mechanisms refer to 1) coordination between decision-makers and managers at the regional and local level, and the use of 2) a single entry point, 3) a case management process and 4) individualised service plans. The tools refer to 5) a single assessment
Figure 1.1
Comparison of Two Models of Integrated Service Delivery Systems

TRADUCTION (CLIC)

Coordination model (PRISMA)

Full integration model (SIPA, PACE, CHOICE)
INTEGRATED SERVICE DELIVERY TO ENSURE PERSONS’ FUNCTIONAL AUTONOMY

Table 1.1
Comparison of the Coordination and Full Integration Models of Integrated Service Delivery

<table>
<thead>
<tr>
<th>Elements of Integrated Care</th>
<th>Coordination Model (e.g., PRISMA)</th>
<th>Full Integration Model (e.g., SIPA, PACE, CHOICE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link with the health care system</td>
<td>Embedded within</td>
<td>Nested in</td>
</tr>
<tr>
<td>Coordination</td>
<td>Essential at all levels (governance, management, clinical)</td>
<td>Essential for clinical work only</td>
</tr>
<tr>
<td>Case manager</td>
<td>Essential (works with existing teams in services)</td>
<td>Essential (with a multidisciplinary team)</td>
</tr>
<tr>
<td>Single entry</td>
<td>Essential</td>
<td>Not essential (referral procedure only)</td>
</tr>
<tr>
<td>Individualized service plan</td>
<td>Essential</td>
<td>Essential</td>
</tr>
<tr>
<td>Unique assessment tool</td>
<td>Essential for all partners and services</td>
<td>Essential for internal purposes only</td>
</tr>
<tr>
<td>Computerized clinical chart</td>
<td>Essential for all partners and services</td>
<td>For internal use only</td>
</tr>
<tr>
<td>Budgeting</td>
<td>Negotiation between partners (capitation not essential)</td>
<td>Capitation essential plus contract with external services</td>
</tr>
</tbody>
</table>

instrument coupled with a management system based on the clients’ functional autonomy, and 6) a computerised clinical chart for communicating between institutions and clinicians for client monitoring purposes. These tools not only facilitate the delivery of services adapted to the clients’ needs but can also continuously monitor the resources and manage the supply of services effectively and efficiently. Since this model of coordinated system was developed to fit in a publicly funded health care system, capitation budgeting is not an essential component and funding of the system can be included as part of the agreement between organisations.

Description of the PRISMA Model

Coordination between institutions is at the core of the PRISMA model. Coordination must be established at every level of the organisations. First, at the strategic level (governance), by creating a Joint Governing Board (Table de concertation) of all health care and social services
organisations and community agencies where the decision-makers agree on the policies and orientations and what resources to allocate to the integrated system. Second, at the tactical level (management), a Service Coordination Committee, mandated by the Board and comprising public and community service representatives together with older people, monitors the service coordination mechanism and facilitates adaptation of the service continuum. Finally, at the operational level (clinical), a multidisciplinary team of practitioners surrounding the case manager evaluates clients’ needs and delivers the required care.

The single entry point is the mechanism for accessing the services of all the health care institutions and community organisations in the area for the frail senior with complex needs. It is a unique gate which older people, family caregivers and professionals can access by telephone or written referral. A link is established with the Health Info Line available to the general population in Quebec seven days a week, 24 hours a day. Clients are referred to the ISD system after a brief needs assessment (triage) to ensure they meet the eligibility criteria for the integrated system (Table 1.2). Otherwise, they are referred to the relevant service. ISD eligible clients are then referred to a case manager.

From previous work, we have developed a quick 7-question screening instrument (PRISMA-7) to be used by professionals and non-professionals to identify clients who should present moderate to severe functional decline and be eligible for ISD. This screening tool is used for triage either at the single-entry point or in volunteer agencies, and health and social services (emergency rooms, physicians’ offices, home care services, etc.).

<table>
<thead>
<tr>
<th>Table 1.2 Admission Criteria to an Integrated Service Delivery System</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To be over 65 years old</td>
</tr>
<tr>
<td>• To present moderate to severe disabilities (SMAF score ≥ 15 out of 87)</td>
</tr>
<tr>
<td>• To show good potential for staying at home</td>
</tr>
<tr>
<td>• To need two or more health care or social services</td>
</tr>
</tbody>
</table>

The case manager is responsible for doing a thorough evaluation of the client’s needs, planning the required services, arranging to admit the client to these services, organising and coordinating support, directing the multidisciplinary team of practitioners involved in the case, and monitoring and re-evaluating the client. In a randomised trial, Eggert
et al. showed that case management is more effective if the case manager is not just a service broker but is also actively and directly involved in delivering the services to the client in his/her area of expertise. The case manager should be legitimised to intervene in all institutions or services. Family physicians should be one of the case manager’s primary collaborators because, in addition to being the main medical practitioner, they are pivotal in regard to access to and coordination of specialised medical services. On the other hand, the case manager relieves family physicians of some of their burden by facilitating access to and coordinating the rest of the social and health interventions. Figure 1.2 illustrates the case manager’s place in the network.

The individualised service plan results from the overall assessment of the client and summarises the prescribed services and target objectives. It must be led by the case manager and established at a meeting of the multidisciplinary team including all the main practitioners involved in caring for the older person. In services or programmes where multidisciplinary meeting processes are already in place, the case manager joins this process without duplication. The individualised service plan includes the intervention plans of each of the practitioners and must be reviewed periodically.

The single assessment instrument is an essential element in this ISD model. It must allow for evaluating the needs of clients either at home or in institutions. The instrument must measure the clients’ disabilities, resources and handicaps. The SMAF (Système de mesure de l’autonomie fonctionnelle – Functional Autonomy Measurement System) is a 29-item scale developed according to the WHO classification of disabilities. It measures functional ability in five areas: activities of daily living (ADL) [7 items], mobility [6 items], communication [3 items], mental functions [5 items] and instrumental activities of daily living (IADL) [8 items]. For each item, the disability is scored on a 5-point scale: 0 (independent), -0.5 (with difficulty), -1 (needs supervision), -2 (needs help), -3 (dependent). The resources available to compensate for the disability are also evaluated and a handicap score is deducted. The stability of the resources is also assessed. A disability score (out of -87) can be calculated, together with subscores for each dimension. The SMAF must be administered by a health professional who scores the subject after obtaining the information either by questioning the subject and proxies, or by observing and even testing the subject. This instrument has been submitted to a number of validity and
Figure 1.2: The PRISMA Model of Integrated Service Delivery System
reliability studies. Correspondence of the SMAF score with the required nursing-care time and the cost of long-term care, either at home or in different institutional settings, has also been established.

A case-mix classification system based on the SMAF has also been developed. Fourteen Iso-SMAF profiles were generated using cluster analysis techniques in order to define groups that are homogeneous in regard to their profiles, but heterogeneous in other respects. These analyses were carried out with the data from a provincial study done by our team on nearly 2,000 subjects living at home or in different types of residential facilities. By linking the evaluation of the Iso-SMAF autonomy profile of an older person to the amount and cost of the resources that person requires, based on his/her living situation (community-living, institutionalised, etc.), it is a quick and easy task to monitor the clinical, administrative and research data. These profiles are used to establish the admission criteria to the different institutions and to calculate the required budget of the institutions, given the autonomy of their clientele. In a health care system with multiple sources of funding, this system could be used as a basis for capitation budgeting.

In addition, implementation of an integrated system like this requires the deployment of a continuous information system and the use of computerised tools to facilitate communications and ensure the continuity of services. Through a computerised clinical chart (CCC), all the practitioners have quick access to complete, continuously updated information and can inform the other clinicians of the client’s progress and changes in the intervention plan. The CCC is part of the management system and thus provides an interface between the clinical information and the management information. A CCC called the gerontogeriatric computer system (Système d’information géronto-gériatrique - SIGG) has been developed and implemented in a pilot project in Victoriaville (Quebec, Canada). This shareable, clinical chart is common to all the professionals in the service continuum for the older person. It uses the Quebec Ministry of Health and Social Services Internet network and Lotus Notes.

On-going studies on PRISMA model

The PRISMA group has implemented this model in two CLSC (Centre local de services communautaires - local community services center) territories in the Victoriaville region (the Bois-Francs project). The purpose of this pilot project was to evaluate, using a quasi-experimental
design, the implementation and impact of this model for community-living clienteles. Two cohorts of subjects in the study (n = 272) and control (n = 210) areas were followed and evaluated annually over a three-year period (1997 to 2000). One of the main outcomes of the study, functional decline, was defined as either death, institutionalisation and significant increase in disabilities (difference of 5 points or more on the SMAF scale). In the study, there were fewer people who experienced a functional decline in the study group for those with moderate to severe disability at entry but not for the ones with mild disability. This effect was significant at 12 months (49.1 % vs 31.3 p = 0.002) and tended to remain at 24 months (35.9 vs 25.9 p = 0.066). Desire to be institutionalised showed a significant decrease in the experimental group at 12 and 24 months. Caregivers’ burden was significantly lower in the study group than in the control group at 12 and 24 months. Although the utilisation pattern of acute care hospitals was similar, the risk of returning to the emergency room within 10 days after a first visit or after discharge from an acute care hospital was significantly greater in the control group. The risk of being institutionalised tended to be greater in the control group (RR = 1.44; p = 0.06).

Based on these preliminary results, the group is now extending this model to CLSC territories in other regions in the Eastern Townships that present different environments: presence of multiple and university institutions, urban vs rural, presence or absence of an acute care hospital. The evaluation of the implementation focuses on the process of implementing the mechanisms and tools and how they function. The objective is to explain the variations observed between the different implementation settings using a case study approach developed by Yin. The questions that are documented try to define the extent to which the clientele using the services corresponds to the clientele initially targeted; if the services delivered correspond to those planned; and if the delivery procedure corresponds to the one initially defined. Other questions focus on evaluating the process itself and identifying its strengths and weaknesses in order to reinforce or correct some of the elements comprising the new mechanisms and tools. The unit of analysis (case) is each of the selected CLSC territories involved in the study. The main variables and dimensions studied are: involvement of the decision-makers in the implementation; whether the main users have the same understanding of the mechanisms or tools; the population reached, productivity achieved, delays encountered, sources of references, time
breakdown in relation to the mechanism functions, clinician-client interactions, problems identified, facilitating factors, etc. Data are collected from the policy-makers, managers, clinicians, as well as clients and informal caregivers using different methods (interviews, focus groups, surveys).

Effectiveness is being evaluated using a quasi-experimental design (pre-test, multiple post-tests with control group). As opposed to the Bois-Francs pilot project where efficacy was measured using service users as subjects, this study measures the effectiveness by selecting a sample of older individuals “at risk” of using the services. It employs a different sampling strategy from that used to recruit the users in the system. Although it requires a larger sample size, this strategy will enable us to measure the real populational effectiveness and to estimate the system penetration rate (accessibility). Using a list from the Quebec Health Insurance Board, a sample of people over 75 were selected and sent a postal questionnaire already developed and validated by our team. The responses to this questionnaire or the fact of not returning it establish a risk of presenting a significant functional decline over the next year. Since the annual incidence of functional decline in this group is estimated to be 48 %, it is probable that the great majority of subjects selected in this way will contact the socio-health network during the two years of the study. After being informed of the study and agreeing to participate, the subjects were evaluated at pretest (T0) and will be reassessed annually over a two-year period (T1, T2). The variables measured are: functional autonomy (SMAF), satisfaction in regard to the services received, client empowerment, caregivers’ burden, utilisation of health services and social services, and drug use. An economic analysis is also being performed.

Conclusion
PRISMA is an innovative coordination type ISD model. Since it is embedded within the usual health care and social services system, this model could be more appropriate to the Canadian universal and publicly funded health care system than the fully integrated models tested so far. However, it requires a shift from the traditional institution-based approach to a client-centred approach and tremendous efforts in coordination at all levels of the organisations. The on-going studies will show if the model could be generalised to other areas with different characteristics and show data on its impact on clienteles and cost. Other studies
are planned to focus on specific aspects of the model: an evaluation of the CCC to describe its perceived usefulness by the older people and the clinicians and its real use; a socio-political analysis of the different roles played by the provincial, regional and local levels to facilitate or constrain the implementation of integrated care; and the development of a conceptual framework to assess quality of health care and social services in an integrated care model.

The next step will be to test the model elsewhere in Canada and in other countries. In other health system contexts, the mechanisms and tools will probably have to be adapted. For example, in multi-payer systems, the management tool (Iso-SMAF profiles) could be used for funding or in the capitation payment calculation.

Finally, the PRISMA group is also a unique partnership experience between researchers, managers and policy-makers. Representatives of the managers and decision-makers form an integral part of the research team and are participating at every stage in the studies, i.e., developing the protocol, finding funding, conducting the studies and analysing and presenting the results. This exceptional partnership is possible because of the close links developed over the last few years between the researchers, managers and decision-makers. These productive experiences are proof of the value of the links between these different groups. In addition to periodical general meetings where all the projects are discussed, the researchers and managers are divided into mixed project teams to develop and conduct the various studies. Representatives of the managers and decision-makers and members of the research team also participate in discussions with the Regional Health and Social Services Boards involved in implementing the mechanisms and tools used in the research programme. Seminars and colloquia are organized to present and discuss the results of the studies or to review methodological questions. This partnership ensures the relevancy of the research projects and fosters the quick translation of research findings into better interventions, services and policies.

References


Introduction

In Canada, the elderly are rapidly increasing in terms of numbers and percentage due to the combined effects of the baby boom that followed the Second World War and the plummeting birth rate of the last several years. Several additional factors may also influence supply and demand for health care and services: a sharp increase in life expectancy without similar improvements in life expectancy in good health; family disintegration through separation or divorce; children moving to follow the job market; the precarious financial situation of elderly women living alone; overcrowded emergency rooms; critical care hospital beds occupied by those who require long-term care, etc. All of the above have a marked impact on the perceived and expressed needs of frail elders. One of the solutions implemented by the health care and services network over the past few years to address this situation was to develop an array of services such as Day Centres, Short-Term Geriatric Units (Unité de courte durée gériatrique, UCDG), Outpatient Geriatric Services (Services ambulatoires gériatriques, SAG) Intensive Functional Rehabilitation Units (Unité de réadaptation fonctionnelle intensive, URFI), Day Programs, etc. However, several authors have identified gaps in service coordination, the fragmented nature of the health care system and the need to ensure better integration of care and services.

Bois-Francs Integrated Services Delivery (ISD)

Aware of a lack of integration in the organization of services for frail elders, as evidenced by redundant evaluations, inadequate screening of at-risk patients, multiple entry points and the lack of inter-departmental liaison mechanisms, the territory of Bois-Francs in Quebec through the auspices of the Joint Governing Board (Table de concertation des services de santé et de services sociaux des Bois Francs [TCBF]) comprised of managers of public institutions and community organizations...
created in 1997, after over a year of planning, a new coordination model, now known as the Bois-Francs Integrated Services Delivery system (ISD). This semi-urban territory has 90,530 residents, close to 13% of whom are 65 and older. Located 150 km east of Montréal on the south shore of the St. Lawrence River, it has a 170-bed hospital, a Long-Term Care Centre (Centre d’hébergement et de soins de longue durée, CHSLD), a Local Community Services Centre (Centre local de services communautaires, CLSC), a CLSC merged with a CHSLD and 45 first-line physicians.

A more detailed description of the ISD system appears in other articles. Generally, the Bois-Francs ISD system (Table 2.1) is based – and this is one of its essential components – on the interdependency of inter-sectoral, joint-action mechanisms at the three main decision-making levels for services planning: strategic, tactical and clinical. The strategic level is comprised of the TCBF, where members determine joint-action initiatives and decide upon adequate resource allocation. The tactical level is made up of department heads from public institutions and community organizations plus a case management team coordinator and representatives for the elderly. Their mission is to

<table>
<thead>
<tr>
<th>Joint-action level</th>
<th>Mechanisms</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic</td>
<td>Bois-Francs Joint Governing Board: public/community network managers</td>
<td>Joint-action on resource allocation for services for frail elders</td>
</tr>
<tr>
<td>Tactical</td>
<td>Bois-Francs Geronto-Geriatric Services Coordination Committee</td>
<td>• Recommendations on optimal continuity of services • Coordination tracking mechanism</td>
</tr>
<tr>
<td>Clinical</td>
<td>Different levels of coordination for clinical services at varying levels of intensity • All service providers • Inter-institutional case management team</td>
<td>• Intake, evaluation and streaming (AEO) of frail elders and Screening of frail elders at risk • Triage of references, screening of frail elders at risk • Case management (ISP): for frail elders</td>
</tr>
</tbody>
</table>

Table 2.1 The Three Joint-Action Levels of the Bois-Francs Integrated Services Delivery System
monitor the ISD system, promote continuity of services, ensure implementation of patient-tracking systems and make pertinent recommendations to the strategic committee to assist decision-making in terms of resource allocation. At the clinical level, a team of 10 case managers (college diploma or university degree in social services) from four different institutions handle case management. This case management team was formed by recruiting those with social services experience who had previously worked in each of the institutions. It was not possible to form a team of representatives from different disciplines, even though many of the people who helped conceptualize this model had this objective in mind.

The Bois-Francs ISD system (Figure 2.1) combines many of the 10 best practices for organizing continuity of health care suggested by Hollander & Prince. In addition to the administrative coordination level, it has a clear mandate from the Boards of all of the institutions. It includes single entry point, case management and the individualised service plans. All partners use identical tools to evaluate the client’s situation, from a physical/psychosocial health standpoint as well as a social/functional autonomy standpoint. A Geronto-Geriatric Computer System (Système d’information géronto-gériatrique, SIGG) (enabling the exchange of medical information via computerized clinical chart [CCC] that can be shared by institutions and health workers from different disciplines) has supported this network since the fall of 1998 (see description in section 2). This ISD system is also designed to process requests for home and long-term care, unlike the rest of Québec, which uses a separate mechanism for evaluating long-term care requests. It can also integrate all geronto-geriatric services within a given territory, from promotion and prevention to diagnosis, treatment, rehabilitation, home/long-term and palliative care. The Bois-Francs ISD system is based on a coordination or embedded model, not the full integration or nested model described by Hébert.

The typical ISD client is any frail elderly person in the Bois-Francs area experiencing loss of autonomy. These individuals have difficulty with activities of daily living (ADL) and instrumental activities of daily living (IADL) and require assistance from the formal service delivery system. Particular attention is paid to those experiencing cognitive difficulties and those whose support system may be near collapse. While the single entry point and ISP are common to all existing geronto-geriatric services users, case management is reserved for those requiring more
complex service coordination due to severe loss of autonomy, physical/psychological health or the social circumstances of the person or caregivers. Clients targeted for case management are generally in a very precarious situation and are at greater risk of biological/psychological deterioration, which demands major support in terms of care and services from the formal or informal network.

The functions performed by the Bois-Francs case managers include those described in the literature: (1) the initial screening/classification contact. The process for screening patients and identifying loss of autonomy is based on the handicap creation process and this role...
is shared by all health care workers providing a continuity of services to the elderly in Bois-Francs. Triage involves intake, evaluation and forwarding of service requests to the triage/information system, then ensuring that the clientele is streamed into the services network when required; (2) conducting an overall bio-psychosocial assessment; (3) planning services according to identified needs and priority objectives; (4) implementing a process to ensure adequate service provisioning; (5) monitoring services, regularly following up on them and determining their impact on the client; and (6) re-evaluating services at regular intervals and making appropriate adjustments to reflect changing needs.

Each case manager is responsible for all frail elders in a specific geographic sector, regardless of the cause, nature or seriousness of their loss of autonomy. This is primarily a mixed model, combining the functions of case management and psychosocial intervention. The case managers intervene in crisis situations, collaborate with the multidisciplinary teams from various services and work in the community. The clinical team holds biweekly meetings to make the required functional and organizational adjustments and discuss the cases with a geriatrics expert. The case management team is available to frail elders and their families (and to community or municipal organizations, professionals, pharmacies or medical clinics) twelve hours a day, five days a week. A backup system is provided outside of these hours.

**Geronto-Geriatric Computer System (SIGG)**

In the Bois-Francs ISD system, where inter-professional contacts are more frequent, the field workers required better communication and exchange methods. In an effort to respond to this need and support interdisciplinary initiatives and inter-institutional clinical exchanges throughout the care process, a computerized clinical chart was developed and tested. It can be accessed by workers from various disciplines (nursing, social services, medical services, pharmacy, rehabilitation, nutrition) and by all of the institutions or services in the continuity of care and services system (Hospital Centres, CLSC, URFI, SAG, etc.). Introduced in 1998, this computerized clinical chart, known as the geronto-geriatric computer system (SIGG), is currently being used in Bois-Francs by roughly 200 health care workers with over 8,000 users, both adults and elderly persons. But the main objective of the SIGG is to support interdisciplinary and ISD system work by enabling real-time clinical exchanges. In order to pursue joint development, in the winter of
INTEGRATED SERVICE DELIVERY TO ENSURE PERSONS' FUNCTIONAL AUTONOMY

2000, the SIGG Partnership was set up and currently counts the following members: Regional Health and Social Services Boards (Mauricie-Centre-du-Québec, Estrie, Montérégie, Québec City and Outaouais); the Joint Governing Board (Bois-Francs); Sherbrooke Geriatric University Institute (Institut universitaire de gériatrie de Sherbrooke, IUGS) and the IUGS expertise centre (Centre d’expertise en gérontologie et gériatrie [CEGG]). Version 3 of the SIGG has been deployed in Estrie as well, and version 3.5, now in the final testing phase, have been deployed in the four regions of the partnership in March 2004.

Description of the geronto-geriatric computer system

A computerized, inter-institutional/inter-disciplinary clinical record that includes:

| Customer ID validation measure (health insurance number, or NAM) | Service request management system with standardized form |
| Security and confidentiality measures | Data system with data extractor |
| Consent management system | System for managing dates for IP/ISP reviews |
| System for managing dates for IP/ISP reviews | Interface established with the I-CLSC patient information system and ready for SICHELD interfaces and hospital patient registries. |

The SIGG differs from other computer programs described in scientifc literature that are specific to a discipline (i.e. medicine, nursing care) or institutional category (i.e. hospital medical practice). The SIGG is highly flexible and able to keep pace with ISD system deployment. It is also designed to evolve with the needs of patients and professionals and adapt to various clinical environments: home care, care units, emergency services, doctors’ offices and community organizations. The SIGG boasts several security programs that ensure data confidentiality. As such, in order to access the computerized clinical chart, all professionals must have a personal identification number and an authorized access profile in the SIGG security database according to their specific clinical responsibilities.

The SIGG supports real-time clinical exchanges and the clinical streaming of users between the various public services and, in the near
future, between medical clinics. It is a shareable record that is ideally suited to patients who require an interdisciplinary approach and who use several services in the continuum of services. Developed for an elderly clientele, the SIGG is now used in Bois-Francs for patients of all ages (notably all inter-departmental electronic references, medication profiles, etc.) It is therefore easy to adapt to other patients and can be transferred to other regions. The SIGG integrates the Multiclientele Assessment Tool (Outil d’évaluation multiclientèle, OEMC, 2002 version), which has been deployed throughout the province.

Professionals and managers operating in the continuum of services met to determine the clinical information to be stored. The following table summarizes the content and clinical functions of the various SIGG forms:

**SIGG components and information**

<table>
<thead>
<tr>
<th>Forms</th>
<th>Main information</th>
</tr>
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</table>
| Patient identification and consent (first page of the green OEMC intervention form) | • Socio-demographic information about the patient, spouse and informal caregivers: first name and family name, date of birth, age, gender, NAM, occupation, marital status, addresses, email address, cultural community, living environment, type of residence, residential services available, services included in the lease/contract, etc.  
  • Identification of the case manager, user profile and an identification of the services received.  
  • Consent to an exchange of clinical information: date of signature, name of signatory. The name of the professional and department requesting the consent provides information as to the location of the original consent form. The patient may revoke his/her consent at any time, which would prevent inter-institutional exchanges of clinical information.  
  • Reasons for cessation of service for all services provided.  
  • Previous addresses. |
| Service request (central portion of the green OEMC intervention form) | • Standard form used by all public, community and private services.  
  • The “refer to” function is used to activate the patient file in the department(s) requested.  
  • Reasons for the request; diagnosis/main problems, past records; reason for admittance or type of surgical intervention; follow-up and family physician; medication and allergies; summary of functional autonomy and psycho-social condition; services and resources of the current natural network; insurance coverage; additional information, etc. |
Decision and evaluation priority
(last page of the green OEMC intervention form)

- The department that received the service request decides on the client's eligibility and intervention priority.
- Should the department decide not to take action, it must provide reasons for this decision.
- If intervention is recommended, the professional in charge and evaluation priority are included. Recommended intervention may be immediately, in less than 24 hours, less than 48 hours or less than two weeks.

Multiclientele Autonomy Evaluation
(section with the reference guide)
The following elements appear on the blue OEMC form:
- Health
- Lifestyle
- Psychosocial situation
- Economic status
- Physical environment
- Summary

Bio-psychosocial and environmental evaluation that includes:
- **Health**: Personal and family health history; current diagnoses; current physical health according to vital signs; current mental health; special care; current health services.
- **Lifestyle**: Diet, sleep; tobacco, alcohol or drug consumption; personal activities and recreation.
- **Psychosocial situation**: Social history; home surroundings; main caregivers; social network; community; public/private resources; emotional state; user's perceptions; sexuality; beliefs; personal, cultural and spiritual values.
- **Economic status**:
- **Physical environment**: Living arrangements; personal and environmental safety; accessibility; service proximity.

**Summary with the sections**: 1- Risk and disability factors; 2- Main disabilities; 3- Environment; 4- Summary of handicap situations or needs expressed; 5- Expectations of the patients, family and network; 6- Evaluation background, professional opinion and recommended action.

Functional autonomy measurement system (SMAF)
ISO-SMAF profiles
(central portion of the blue OEMC intervention form)

- SMAF with scores for the 29 questions on the disability/handicap section for ADL; mobility; communication; mental functions; IADL.
- ISO-SMAF profiles make up a management system defining groups of subjects with similar disability profiles, and requiring overall similar services (Resources Utilization Groups). These profiles range from a slight loss of autonomy (profile 1) to a severe loss of autonomy (profile 14). There are 5 profile groups. The ISO-SMAF is automatically calculated when the health worker indicates that the SMAF has been completed.
- Access to the SMAF user guide in the SIGG.
- Statistics and summary sections.
Medication profile

- Current and previous medication profile, tool developed in cooperation with the Integrated Services for the Elderly (SIPA) team in the Montréal area.
- Automatic update of the list of prescription and non-prescription drugs: name of medication; strength; dosage; administration route; starting date; prescribed yes/no; reason given by the user, physician, pharmacy.
- Medication history; evaluation of medication consumption and management; screening/treatment for problems associated with taking the medication: side effects, toxic effects, intolerances, interactions (medication/medication, medication/food, medication/alcohol), non-compliance, inappropriate prescriptions, etc.
- Information about drug allergies and the help system used.
- Background of drug cessation and reasons.
- Access to the medical profile user guide.

Progressive profile (replaces the salmon coloured OEMC)

- A functional autonomy profile is automatically generated chronologically from the SMAF to monitor any changes to the patient's functional autonomy over time, continuously, from one care intervention to the next, regardless of the service delivery facility (community, day program, UCDG, URFI, hospital care unit, CHSLD).
- Progressive profile of any indication of physical/psychosocial health problems and how they have changed since the last evaluation automatically generated, chronologically, as soon as a multiclientele autonomy evaluation (reference guide) and medication profile have been completed by the health care workers.

Notes on progressive changes to the patient's condition

- Notes on any changes to the patient's condition that the health care workers have been in the habit of making in their own files; these notes are designed to inform other professionals involved.
- Various sections that make it easier for the nurses to collect daily data (vital signs, follow-up on care of lesions, day surgery) nutritionists (types of diets, BMI) and respiratory therapists (respiratory functions, etc.).

Intervention plan (pink form, OEMC intervention and service allocation plan)

- Goal of the IP and intervention profile.
- Tool outlining specific objectives, methods to be used and frequency of interventions based on a specific situation and on the client's ISP.
- Interdisciplinary or single discipline: summary of interventions by a department's team of professionals, or a single discipline that responds to an identified need (single discipline intervention plan, for example: home nursing care).
- Review date management; name of the person responsible for completing, applying and reviewing the IP.
Eventually, systematic follow-ups, or the standard clinical routing which is currently in paper format, will be integrated into the SIGG along with the specific diagnostic tools that are needed as the patient’s condition changes. Changes to the patient’s autonomy and ISP/IP reviews for each department, and progressive clinical notes are available in real time to the various health care workers involved. All of this information was previously written up in the clinical file in each institution or department and was rarely available to health workers in other institutions or departments. With the deployment of the SIGG, this constraint no longer exists. In fact, health workers (providing home or institutional care) with access to a computer (laptops for home visits) can enter information in the clinical file or consult it while in the presence of the patient or elsewhere. The clinical documents are archived but are available at all times to health workers from all services who have the proper access code. They advise each other, via semi-urgent email, to consult the clinical file for service requests, clinical or treatment changes. Health workers appreciate the “Copy” feature, which enables them to obtain a copy of a form that has already been written up in order to avoid duplication during an IP/IP re-evaluation/review. The SIGG contains a wealth of monitoring information on the consumption of services: patient profile and inter-departmental, inter-service or inter-territory clinical streaming. The system can also provide the desired statistics without requiring the professionals to code the interventions with another administrative tool. The SIGG interfaces with the CLSC patient information system (SIC-CLSC) and is parameterized to interface with SICHELD and CH patient registries. The application is programmed by module. It is possible to use certain models that are common to all patients (service requests, medication profiles, for example) and to add other models according to specific patient program needs (intervention plans, individualised services plans, SMAF), thereby ensuring harmonized profes-
sional practices. This means that each territory can choose how it will progressively integrate this application. In fact, the application can be used inter-institutionally or with inter-institutional replication in the ISD system.

Clinico-administrative decisions, notably managing access to clinical data, regulations and confidentiality, archival storage and consent procedures, etc. are handled by an inter-institutional committee made up of clinical authorities from the public and community network. The replication device runs on Lotus Notes workflow software, which supports the SIGG. The SIGG provides the added advantage of being part of the Québec health information highway.

Servers have been installed in a number of institutions: the head office of the CLSC-CHSLD de l’Érable and at the Place Bourque entry point (Plessisville), the CH Hôtel-Dieu d’Arthabaska, which serves the CH, CLSC Suzor-Coté and CHSLD Ermitage. Other servers are TCR 04 MCQ (backup) and TCR 04 MCQ (agents from the Ministry of Health and Social Services data transmission network, RTSS). This network structure enables the replication of server data and ensures that clinical file information in all institutions is regularly updated. Workstation distribution will be examined later on.

Here is a practical example that illustrates how the SIGG can be used. A frail elder’s physician refers the client to the triage system, which recommends he be placed under case management. He lives at home with his wife, needs help for activities of daily living and household chores, takes a number of medications, must follow a diet to control diabetes and hypertension, is often hospitalized and receives care from the CLSC, day program, and community organizations (Meals on Wheels). The care manager meets with the client, uses the OEMC to complete an evaluation that includes an assessment of physical health and social well-being and uses the SMAF to measure functional autonomy. The case manager then completes a medication profile, develops an ISP with other continuity of services partners, meets with the frail elder several times, keeps notes on the patient’s changing condition and conducts additional evaluations. Health care workers from other departments draw up an intervention plan (IP) to meet the needs of the frail elder and keep a running log of the patient’s condition. In the event of the elder’s hospitalization, the SMAF can be redone according changes in the patient’s clinical profile, and the medication profile will be updated. Changes to the patient’s functional autonomy (from the onset of inter-
departmental interventions, before, during and after hospitalization) can be viewed on the progressive profile form that is automatically generated whenever an SMAF is completed. Each department’s ISP/IP reviews are available in real time. Previously, all of this information was consigned to the elderly patient’s clinical file in each institution or department and was rarely available to health workers in other institutions or departments. The SIGG has removed this roadblock. In fact, health workers visiting the elderly in their homes or in institutions with access to a computer (laptops for home visits) can enter information or read the patient’s clinical file while in the presence of the client or elsewhere. The clinical documents are archived on a common server, do not travel between the various departments, and are available at all times to any health worker with an access code. Health care workers advise their colleagues via email to consult the patient file in the event of a service request or clinical or treatment modifications.

Conclusion

The Bois-Francs sub-region has consistently strived to find the best method for responding to the needs of its elderly population. Institutional directors, managers and health workers are equally committed to evaluating the changes they introduce. Results of the two research projects are presented as follows: (1) the evaluation of the deployment of the ISD system in Bois-Francs; (2) the evaluation of the effectiveness of the ISD system in Bois-Francs. Funding for these evaluations was provided by various sources: Conseil Québécois de la Recherche Sociale (CQRS), Fonds de Recherche en Santé du Québec (FRSQ), Canadian Institutes of Health Research (CIHR), The Health Transition Fund (HTF), Regional Health and Social Services Board of Mauricie–Centre-du-Québec, Joint Governing Board of Bois-Francs, Laval University Geriatrics Chair.

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3. Evaluation of the Implementation of the Bois-Francs Sub-Region Integrated Service Delivery (ISD)

André Tourigny, Michèle Paradis, Lucie Bonin, Any Bussière, Pierre-J. Durand

Introduction

From the outset, both the directors serving on the Joint Governing Board and the members of the Service Coordination Committee were concerned with evaluating the new model that had been implemented, which is why the present team of researchers was contacted. Meetings with the members of the Service Coordination Committee helped to clarify concerns regarding the evaluation. All the players were convinced that the model developed was useful in solving the problems identified and that there was a link between improved coordination and achieving the established objectives, which justified their initial choice to extend it to the entire territory rather than to just part of it. They sought to determine whether the model was being implemented as planned, in order to make any necessary adjustments, and how the teams in the field were responding to the changes brought about by the model.

The goal of evaluating the implementation and the process was to document the major activities and functions of Integrated Service Delivery (ISD) in order to determine to what extent the implemented model and its operations approximated the target model and thus make any necessary adjustments. The main results regarding the elderly persons reached, the functions assumed by the case management team and the organization of the work will be addressed in this chapter. The overall results are presented in the research report.  

Methodology

Evaluating the implementation and the process involves analyzing both the quantitative and qualitative data for the first 24 months of implementation (1997-1998, 1998-1999). The quantitative data covers the entire ISD clientele and are drawn from the triage system, the Local Community Services Center (Centre local de services communautaires, CLSC),
Client Information System (Système d’information sur la clientèle, SIC) and the Computerized Clinical Chart (CCC). The research report\textsuperscript{18} includes a description of each source. Frequency tables, averages and medians were used to draw a portrait of the clientele and the use of the mechanism. The qualitative data was collected from several sources: case file consultation, direct observation, individual and group interviews, committee reports. The examination of clinical files made it possible to document service planning in greater detail. Direct observation, carried out by a member of the research team, involved accompanying six case managers one at a time for three-day periods during their regular rounds at the persons’ homes (for evaluation or re-evaluation) and at hospitals (for discharge planning and service implementation) and other geriatric services in the continuum (to discuss cases during multidisciplinary team meetings, among other things). Recorded semi-structured interviews were conducted once a year with those responsible for providing services to the elderly. Group interviews were conducted with members of the Clinical Case Management Team, the elderly Services Coordination Committee, the Joint Governing Board on health care and social services of Bois-Francs (Table de concertation des services de santé et de services sociaux des Bois-Francs, TCBF) and the physicians working in the territory when the implementation began. All the collected information was reduced, represented and reported, which helped identify the main themes that emerged\textsuperscript{16}. The triangulation of collection methods, data sources and analysts (researchers), as well as the exchange of information on preliminary results, helped improve the validity of the results\textsuperscript{19}. Evaluation of the implementation and the process covered the period from 1997-1998 to 1998-1999.

**Outcomes**

**Clientele reached and referral sources**

The clientele reached is consistent with the initial target group. It is primarily made up of women whose average age is 80. There are physical health problems in eight out of 10 cases and social problems in one out of three cases. According to the DCI data, elderly clients have 2.7 diagnoses on average. Most elderly clients suffer from cardiovascular diseases, followed by musculoskeletal and respiratory diseases and neurological and cognitive pathologies. The average SMAF (Système de mesure de l’autonomie fonctionnelle – Functional Autonomy Measure-
ment System) score of patients who have undergone a comprehensive assessment in the DCI is 25.1.

On an annual basis, the ISD reached approximately 1,000 seniors over the first two years of operation, which is 10% of seniors in the territory. Elderly referrals to ISD come from many sources in the continuum of care and services for seniors. The natural network provides a larger share of referrals (66%) coded in the SIC than other sources such as emergency services, various hospital departments, geriatric outpatient services, first-line physicians, private residences and community and intersectoral partners (33%).

**Triage**

Triage professionals receive about 3,000 calls per year. The volume of calls fell from 12 to 10 calls per day from 1997-1998 to 1999-2000. Increasingly, the elderly and families are contacting their case managers directly. While calls to triage from the elderly and their families are decreasing, those from physicians and others professionals are on the rise. Evening calls account for 10% of the total volume. The reasons for the calls mainly concern service requests (30%), a need for information (30%) or a request concerning follow-up on a case (30%).

**Overall assessment of service needs**

According to Geronto-Geriatric Computer System data (Système d’information géronto-gériatrique, SIGG), half of the cases have benefited from an overall assessment, but significant variations are noted from one CLSC to the next, doubling in some instances (32% and 63%). In addition, these assessments are not always complete. In the sample of SIGG cases, 40% benefited from an overall assessment (Outil d’évaluation multiclientèle - Multiclientele Assessment Tool [OEMC] and one SMAF) in their case file. However, an overall assessment would appear to be used more systematically for new cases. Bear in mind that approximately 30% of referrals to case managers stem from Intensive Functional Rehabilitation Units (Unité de réadaptation fonctionnelle intensive, URFI), Geriatric Outpatient Services (Services ambulatoires gériatiques, SAG) and Short-Term Geriatric Units (Unité de courte durée gériatrique, UCDG) where patients have already been assessed. It was also noted that the section in the SMAF for measuring disabilities is not widely used.
Service planning and coordination
Coded activities related to service planning and coordination occur often, in two out of three cases. The most frequent activities are making moves for the clients, case discussions with outpatient services, multidisciplinary team meetings and meetings with families. While the number of Individualised Service Plans (ISP) completed with the form is increasing, it is still not widely used (25% of cases in 1999). However, ISP reviews appear to occur fairly frequently, as 40% of cases with an ISP have undergone a review. Completed ISPs often have information that is too general in nature to clearly identify existing problems and potential solutions, or to correctly assess the desired outcomes and track changing service needs and the contribution of the natural network in order to prevent exhaustion.

Case managers systematically take part in multidisciplinary team meetings when their clients go to the UCDG and URFI. The frequency of contacts, in person or over the phone, with the elderly themselves and their support network is high and shows a high level of involvement in the planning and coordination of services. However, at present, the elderly and their families are not highly involved in multidisciplinary team meetings. Contacts made by case managers with other health workers are also frequent. The large number of shared cases between case managers and other services, such as home support, rehabilitation and home nursing care, point to the benefits of multidisciplinary intervention. In addition, the data indicates that there are coded referrals to the family physician in one out of five cases.

Follow-up and re-evaluation
Activities associated with this function occur in one out of two cases only, which leads us to question the validity of the data. It is likely that not all follow-ups are coded, particularly those conducted over the phone, meaning the SIC data underestimates the volume of follow-ups carried out.

Psychosocial interventions
The case-management model in the Bois-Francs sub-region is mixed. It combines both service-brokering activities and those linked to clinical interventions with the elderly (psychosocial interventions). Psychosocial intervention (preventative and therapeutic) is the second most important case-management function in terms of proportion of cases
and interventions. Therapeutic psychosocial interventions (family, individual, marital and mental-health therapies as well as network interventions) occur in 20% of cases according to the SIC data. The frequency of social problems observed using the Multiclientele Assessment Tool completed in the SIGG is also about 20%. The case managers who were interviewed have doubts as to their ability to respond to their clients’ psychosocial needs with the necessary intensity.

**Consensus mechanisms for the various levels of planning**

According to professionals, health workers and managers, implementing the three levels of consensus is key to the success of the coordination mechanism. They believe the strategic level helps to break down the borders between institutions and organizations and promotes a horizontal management of the available resources. In addition, it facilitates joint decision-making in order to better adapt the offer to different needs, although adjustments for optimal operations are still desired. In addition, the presence at the Service Coordination Committee of a case sponsor in the “Integrated Services Delivery system” responsible for maintaining the link with the Gerontology-Geriatrics Services Coordination Committee is considered an asset and an excellent communications tool between the various levels. Those who were interviewed indicated that the tactical level is the most relevant source of information and updates on how the continuum of services is evolving. Lastly, for them, the clinical level makes it possible to build a single team that works with all the institutions and organizations responsible for case management and the development of individualized service plans.

Case managers and other health workers report certain difficulties: the lack of financial resources to provide the intensity of services that is required for the home support of frail elderly people, the importance of clients’ psychosocial needs and the management of waiting lists for residential care. The continuous flow and updating of information on the continuum of services was of concern to all stakeholders interviewed.

**Operational procedures and case management**

Case management in the Bois-Francs sub-region is mixed and features a single discipline clinical team made up of 10 psychosocial health workers operating in two districts under the clinical supervision of a single coordinator. Each case manager is responsible for a designated geographical area. Their case load averages between 50 and 60 cases. There
is usually a single case manager involved in a case (61%), which promotes the continuity of care and services.

The main case-management functions are integrated into the case managers’ daily practices. Case managers’ time is allocated as follows: clinical interventions carried out directly or indirectly (multidisciplinary meetings, informal exchanges between health workers, etc.) with the elderly, their families or loved ones accounts for 65%; file management accounts for 25%; travel accounts for 10%. However, there is little available data to estimate in any precise manner the time allocated to the different case-management functions. The intensity of the intervention required during a service episode is also difficult to measure with the available data. Furthermore, there is little data on intervention time within the ISD system. Aside from regularly taking part in the various departments’ multidisciplinary meetings, case managers frequently interact with other professionals and health workers on an informal basis. Little contact is noted with intersectoral partners. The number of team meetings and the time allotted to examining cases have decreased over the two years of implementation, which can limit the joint integration and harmonization of case-management practices. The use of different tools has improved over the years, particularly since the introduction of the SIGG. Limited information is available time frames, but it seems to indicate that the anticipated time frames are being respected. In addition, there are few waiting lists for the various services of the continuum, with the exception of the SAG, during the first two years of implementation. Unlike other projects that set up overnight care systems, there is nothing to indicate a current need to develop such a system in the Bois-Francs sub-region to supplement the existing care services.

Discussion

The clientele reached by ISD is totally consistent with the elderly people originally targeted for their age, number of social and health problems, complex issues and functional autonomy. Moreover, the 25.1 SMAF score is higher than the score reported by the Hébert study for people living at home and benefiting from government services, which was 20.2. In fact, this average score is closer to that of people living in residential care facilities and wards whose respective average scores are 32.1 and 26.7.
When the model was originally introduced, 1,000 seniors in case management were expected to be reached, including 400 in a more in-depth manner, based on an estimate of the home support traffic and the annual number of people in residential care facilities. The number of people reached on an annual basis (approximately 1,100) is therefore in line with this estimate. The proportion of the population aged 65 and over currently reached on an annual basis (10%) is similar to that found in the literature, i.e. 7% to 10%. However, since the mechanism reaches 17% of seniors aged 75 and over and the estimates based on the 1992-1993 data suggest a prevalence of 26% of moderate to severe loss of autonomy for this age group, two out of three individuals aged 75 and over would be reached by this mechanism.

Easy access to ISD in the Bois-Francs sub-region is definitely an asset. The fact that the elderly themselves and their support network can refer directly to the ISD single entry point is a strong point in the model that favours the empowerment of seniors and early screening of risk situations. However, referrals from general medical services still require improvement. Indeed, the literature on case management recognizes that a close link with first-line physicians is an essential condition for success. Aside from the fact that establishing a good relationship with a physician takes time and that informal communications are important, the research indicates that patient comments on the work done by case managers are the greatest factor in convincing physicians of the importance of working with the latter.

**Components of case management**

The complete multidimensional assessment of frail elders is generally recognized in geriatric literature as an effective approach, particularly if it is followed by appropriate recommendations and interventions supported by the presence of multidisciplinary teams. As observed in the field, the evaluation stage needs to be perfected, both in terms of the proportion of assessments to be completed and in how they are done in order to ensure that the different sections of the tool are as complete as possible. Even though the part that measures disabilities helps inform clinical decision-making in that it assesses the balance between elderly clients and their surroundings and the elderly’s assistance requirements, it is still not widely used in the SMAF section. Changes over time in the level of incapacity in each of the SMAF dimensions and in the disability measurement are very important for client follow-up.
The information available on service planning is indicative of the strong involvement of case managers in this specific function and that of service coordination. However, this stage also requires adjustments. In four out of five cases, the absence of contact with the family physician identified when examining the case files or the coded referrals raises questions about the value of the coded information, on how easy it is to reach family physicians and on the case managers’ practices. In addition, there are numerous elements in the current clinical structure of the ISP form that limit its usefulness.

As for follow-up and re-evaluation, these functions have been identified as being crucial in adapting the services to the needs of seniors and their support network as much as possible. Accordingly, efforts need to be made to clearly identify the various activities in this stage, including the follow-ups that are currently underestimated.

To date, although there is no conclusive study indicating that using the mixed model for all case-management functions is more efficient than another model that uses only service brokering, the mixed model is very widespread and seems to produce positive effects for patients and use of services. However, there are questions regarding the extent to which seniors’ psychosocial needs are being met in the current context, given that case managers divide their time between psychosocial interventions and service coordination.

The case management models described in the literature vary depending on the clinical functions assumed, the workload, the number and type of health workers carrying them out (professional or non-professional, a loved one or the persons themselves), if it is done by an individual or a single disciplinary or multidisciplinary team, and the degree of clinical supervision provided. The case managers’ case load is slightly heavier than what is usually seen in the literature for models emphasizing frequent interaction with the elderly and their support network and on clinical intervention (mixed model). Among the benefits reported for this model are the personal satisfaction associated with constant interaction with clients over time and theacknowledgment and maintenance of the skills associated with their basic profession. Another element favouring the mixed model is the greater ease in establishing trust with clients as reported by the SIPA project case managers. The literature identifies conditions facilitating improved service continuity as being: a lighter case load (45-50) and the presence of the same case manager or the same team as well as a territorial respon-
sibility to develop an in-depth knowledge of the territory’s needs and resources.

In its report entitled “Best Practices in Coordinated Care,” a team of researchers from Mathematica Policy Research identified several features associated with the coordination models that seem to present positive results. The coordination mechanism for care and services in the Bois-Francs sub-region shares most of the features specific to the American coordination experiments that demonstrated positive effects on patients and the use of services. However, other aspects require improvement, in particular the use of the individualized service plan, as mentioned earlier. In addition, the extent and diversity of training provided to seniors and their caregivers must be increased in order to foster their empowerment as much as possible. The links between case managers and first-line physicians must be strengthened, the interdisciplinary approach must be further developed and the evaluation, planning and re-evaluation practices must be harmonized and consolidated. The presence of trained nursing staff within the clinical team seems justified to ensure greater interdisciplinarity. This staff could be actively involved in screening and tracking elderly clients, in health education activities and in activities related to self-care. In addition, they could act as case managers within the existing team.

Organizational procedures

The Bois-Francs model was designed to be a truly integrated service network. It extends far beyond case management alone because it is based on the interdependence of the intersectoral consensus mechanisms at three decision-making levels in service planning and it covers the entire continuum of care and services. It is acknowledged that an integrated care system for the frail elderly includes an approach centred around people and their needs, a single access point, the screening of individuals at risk, a facilitated transition between organizations, a constant longitudinal coordination over time, relevant information on the client that is accessible to all and an interdisciplinary service plan, all closely aligned with the primary medical care services. To achieve this, certain changes regarding organizational practices and the continuum of services are needed. According to the nine essential components of an integrated geriatric service program published by a workgroup on American HMOs, the coordination mechanism in the Bois-Francs sub-region has most of these components. However, some of the ele-
ments initially planned were not fully implemented and others were not integrated to the same degree in the practices during the first two years of implementation (screening, systematic tracking, integration of first-line physicians). Other elements could be added to the mechanism to eventually improve its efficiency (disease management, interdisciplinary clinical practice guides, self-care approach, health promotion officer).

Another feature of the current model is that it covers the entire continuum of care and services for the elderly, from promotion/prevention to curative care, rehabilitation, palliative and residential care. Access to an integrated service network and a wide continuum of services adapted to the needs of elderly people is essential to support case managers’ duties if the goals of continuity of care and access to services are to be achieved. The case-management models described in the literature vary according to the type of institution providing the service (hospitals, private agencies, other institutions). The Bois-Francs sub-region has innovated in this field by grouping the case managers into a single team under the clinical supervision of a single coordinator, even if two districts are involved. This team is the administrative responsibility of the Service Coordination Committee. The roles of the clinical coordinator and the coordinator of the Gerontology-Geriatrics Services Coordination Committee are pivotal in that they continually interact with all the partners in the continuum of services for the elderly.

Conclusion

The ISD of the Bois-Francs sub-region is an excellent example of an integrated service network in action. It is the result of the health workers’ dedication, and initially did not involve any additional input in terms of human or financial resources or any major changes to the current structures. This coordination model goes beyond case management alone and includes a planning approach that involves all the major managers responsible for adapting the continuum of care and services to seniors’ needs as much as possible, from prevention to end-of-life care. This model required two years of thought and discussion before being implemented in February 1997. It resulted in many innovations and changes in practice and management procedures and in attitudes and ways of thinking. This ISD led to the development of a computerized clinical chart that provides many opportunities for improving the exchange of clinical information. The addition of clinical practice
guides represents one of these opportunities. The existence of the inter-institution and inter-partner SIGG is an excellent way of supporting this ISD.

The ISD was implemented successfully. It reaches the right persons and receives referrals from all the main partners. The screening function appears to be working well. The case managers assume all the usual functions of case management and psychosocial intervention. They devote most of their time to clinical intervention, and the rest to updating case files and travelling. In addition, only one case manager is present in most case files, which is in line with improved continuity. The three levels of consensus are here to stay and no one questions the mechanism.

The ISD has successfully passed through the development and implementation stages and has now reached a maturation and consolidation phase. While the number and scope of the contemplated changes are smaller than initially expected, certain adjustments are still needed to increase the model’s effectiveness and efficiency, particularly with respect to the use of services and costs. Among others, additional efforts will be required to reach a larger proportion of frail individuals, to increase clinical and interdisciplinary exchanges, particularly with first-line physicians, and to improve the navigators’ disease-management tools. First-line physicians are very enthusiastic about participating in Integrated Service Delivery, but they are hindered by the fact that they are unable to connect to computerized clinical chart. The ISD developed in the Bois-Francs sub-region cannot be fully duplicated in other areas or with other clienteles since, as has been observed, such a model must be adapted to the clientele and the environment. However, many of its components appear to be exportable and represent conditions that facilitate success. Indeed, the presence of a team of case managers responsible for a given geographical area and made up of people from different institutional backgrounds demonstrates the partners’ commitment and their determination to adapt the services as quickly as possible to clients’ needs. This same approach was implemented in the Bois-Francs sub-region for adults and younger people. The establishment and maintenance of three planning levels are instrumental in the development of new decision-making dynamics. However, the budget allocation and financial management processes are not yet sufficiently adapted to appropriately support these new dynamics. The ISD mission to cover the continuum of care and services from prevention to end-of-life care is part of the design of the Integrated Service Delivery system as recom-
mended in the recent report produced by the *Commission d'étude sur les services de santé et les services sociaux*. The evaluation of ISD implementation in the Bois-Francs sub-region will have made it possible to specify the various components, determine the extent to which its implementation was in line with what was initially planned and identify its strong points and limitations under current practice and management conditions. Lastly, it will have provided information to other territories or regions interested in developing ISD for the frail elderly or other clientele.

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4. Evaluation of the Effectiveness of an Integrated Service Delivery (ISD) Network for Frail Elderly

André Tourigny, Pierre J. Durand, Lucie Bonin, Réjean Hébert, Louis Rochette

Study objective
The study’s general objective was to determine the impact of the Integrated Service Delivery (ISD) network on the frail elderly and their support network and on the utilization of health and social services.

Methodology
This is a quasi-experimental study with measures 12 months before implementation and every 12 months after implementation over a three-year period. The study area was Bois-Francs (BF), where the ISD network was implemented, and the control area was Drummondville (D), where there is no ISD network. The data were collected between February 1997 and June 2000.

Two strategies were used to ensure that the study and control environments were as comparable as possible and to minimize selection bias. Firstly several criteria guided the choice of the control area. As we were in a service organization dynamic where a new model of health care services had been developed and implemented, we thought it was essential for the control area to be in the same socio-health region so the same dynamics applied. Also, the control area had to be independent of the hospital and Local Community Services Centre (Centre local de services communautaires, CLSC) resources in the intervention area. Finally, both study and control areas had to be comparable on the variables of table 4.1. Of all the territories in the Mauricie/Centre-du-Quebec socio-health region, the one containing the city of Drummondville compared best with the Bois-Francs area. The second strategy employed to ensure the greatest comparability between the two groups was to do an aggregate matching on the clienteles followed throughout the study using specific selection criteria, namely: persons aged 75 years and over who had used home care, day care, rehabilitation or geriatric
outpatient services during 1996, and (1) who needed help with at least two ADL (Activities of Daily Living), or (2) needed help with at least one ADL and had one of the following diagnoses: Parkinson’s disease, stroke or dementia. The subjects were recruited following review of files from the services concerned. A total of 482 elders participated in the study at T0: 272 in the study group and 210 in the control group.

**Instruments used and data sources**

The sociodemographic data and other personal characteristics of the elders and their caregivers were obtained from a questionnaire administered during the initial interview. The functional autonomy was evaluated using the Functional Autonomy Measurement System (Système de
EVALUATION OF THE EFFECTIVENESS OF AN INTEGRATED SERVICE DELIVERY (ISD) NETWORK FOR...

**mesure de l’autonomie fonctionnelle, SMAF**\(^1\). This 29-item scale measures functional ability in five areas: ADL, mobility, communication, mental functions and IADL (Instrumental Activities of Daily Living). The score varies from 0 to –87. However, scores were reversed for the analyses so higher scores indicate a greater loss of autonomy. Validity and reliability studies have been done on this instrument\(^7,10\) showing good construct validity in its ability to discriminate between subjects receiving services of different intensity. A difference of 5 points on the SMAF global score is considered metrically and clinically significant\(^12\).

The desire to be institutionalized was measured using four questions from the Canadian Study of Health and Aging\(^4\). Elders who answered yes to any of these questions or who were institutionalized at the time of the interview were considered as wishing to be institutionalized. Caregivers’ burden was measured with the *Inventaire du fardeau*, the French version of Zarit’s *Burden Interview*\(^30\). This inventory comprises 22 statements answered on a scale from never (0) to almost always (4). The global score can vary from 0 to 88. Cronbach’s alpha coefficient for the internal consistency of the French translation of the instrument was 0.85, and test-retest reliability at an eight-week interval was considered good, with a Pearson coefficient of 0.90\(^11\). The main caregiver was defined as the person who helped the elder on the most regular basis.

Service utilization data were taken from the administrative files of the Quebec Health Insurance Board for medical procedures and drug use, from Med-Echo for hospitalizations and day surgery, from the CLSC information system for the number and type of interventions, from the regional register for long-term care institutions, and from the files of the individuals who received rehabilitation, day care or geriatric ambulatory services. The mortality data were obtained at the time of data collection each year.

**Timeline**

Before the model was implemented, a research assistant contacted each of the subjects to invite them to participate in the study. She met with them at their home to obtain their consent. Consent forms were given to everyone approached to take part in the study and to their caregivers. They were also asked for permission to consult their hospital and CLSC files. The information was then collected by research assistants at T0 before the ISD network was implemented (spring 1997) and 12, 24 and 36 months after implementation concurrently for both study and control
groups. All the data collected were kept under lock and key at the Université Laval Geriatric Research Unit. This study was approved by the Université Laval Ethics Committee.

Data analysis
All analyses were based on which group the subjects belonged to, study or control, with the significance level set at 0.05. The distribution of all characteristics and variables between the two groups were compared using the chi-square test or Fisher’s exact test for proportions, Student’s t-test for mean scores and the Wilcoxon test to compare data that were not normally distributed. When necessary, potential confounding variables were controlled by multivariate modeling. The survival tables, where the events considered were death or institutionalization, were constructed using the actuarial method and adjustment for initial autonomy at T0 was performed using a Cox regression model. Data from subjects loss to follow-up were censored from the month they were lost for survival analyses, as well as those from subjects who died which were censored from the survival analysis at institutionalization. The proportion of elderly who did not experience any deterioration in autonomy, defined as the absence of death and institutionalization or a loss of five or more points on the SMAF scale, was analyzed using a logistic regression model to adjust for the level of initial autonomy at T0. Using a design where many elders or caregivers are observed during different periods results in interdependence between observations. To take this into account, analyses were done using a generalized linear model for repeated longitudinal analyses (generalized estimating equation (GEE) model) (data on the elders) or repeated transversal analyses (data on the caregivers)18. Use of the generalized linear model with repeated measures allowed adjustment for the level of autonomy at T0 and assessment of variability in the dependent variable over time and from one group to the other. The dependent variables examined were desire to be institutionalized, burden, and utilization of services. Depending on the distribution of the dependent variables examined, Poisson’s GEE (number of hospital days), binomial (proportion with at least one visit or one hospitalization) or log normal model (average duration of hospitalization) was used. Data from service utilization were analyzed by comparing the two groups for each year and weighting by person-years exposed. Exposition to prescribed drugs was defined as the time before dying, or being institutionalized since after that drug prescriptions do
not figure in the RAMQ administrative files. All statistical analyses were done using the Université Laval Geriatric Research Unit’s SAS software (SAS Institute, Cary, NC, version 8.0).

**Results**

**Sociodemographic characteristics of the elderly at T0**

Files from home care services (CLSC), day care centres, geriatric assessment units and geriatric rehabilitation units were consulted to constitute the sample at T0: 1,305 files were consulted in the Bois-Francs (study) area and 1,321 in the control area (Drummondville). Of these files, 29 percent and 23 percent respectively met the selection criteria described above. At the first contact, some files were excluded because of death or institutionalization or because the person had moved. A similar proportion of potential subjects in the two groups refused to participate in the study. The sociodemographic characteristics of the elders’ study and control group cohorts at T0 are presented in Table 4.2. Two-thirds of the elderly in both groups were women. The average age was high (83) and comparable in the two groups. Two-thirds of the subjects lived at home and one-third in private seniors’ residences.

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**Table 4.2**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Study cohort N = 272</th>
<th>Control cohort N = 210</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>190 (69.9%)</td>
<td>139 (66.2%)</td>
<td>0.39*</td>
</tr>
<tr>
<td>Men</td>
<td>82 (30.2%)</td>
<td>71 (33.8%)</td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average (years)</td>
<td>83.1</td>
<td>82.9</td>
<td>0.87**</td>
</tr>
<tr>
<td><strong>Functional autonomy</strong></td>
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<tr>
<td>SMAF median</td>
<td>20.0</td>
<td>25.0</td>
<td>0.05***</td>
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<tr>
<td>SMAF average</td>
<td>23.1</td>
<td>25.6</td>
<td>0.08**</td>
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<tr>
<td><strong>Living environment</strong></td>
<td></td>
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</tr>
<tr>
<td>Own home</td>
<td>182 (66.9%)</td>
<td>139 (66.2%)</td>
<td></td>
</tr>
<tr>
<td>Private seniors’ residence</td>
<td>90 (33.1%)</td>
<td>71 (33.8%)</td>
<td>0.10*</td>
</tr>
</tbody>
</table>

* X² test  
** Student’s t-test  
*** Wilcoxon test
The groups differed, however, in regard to their functional autonomy. The median was high in both groups but showed a clinically and statistically significant difference (Wilcoxon test, \( p=0.05 \)) of five points in favour of the study group (more autonomous). This difference was taken into account in all subsequent analyses.

**Changes in the elders’ cohort from T0 to T3**

The elderly adults in this study were selected on the basis of criteria identifying them initially as frail. This selection was made because the literature tends to show that an intervention like this can be more effective with a frail clientele. However, this had an impact on the evolution of the two cohorts (Figure 4.1). Of the 482 subjects initially present at T0 (272 in the study cohort and 210 in the control cohort), 345 (72\%) remained at T1, 259 (54\%) at T2 and 218 (45\%) at T3 (138 in the study cohort and 80 in the control cohort). The proportion of subjects who refused to continue in the study was low and similar in the two groups (less than 5\%).

**Probability of survival and without being institutionalized**

The probabilities of survival were compared using an actuarial method and Cox’s regression model. The ISD network did not have any effect on the survival of those exposed \( (p = 0.37) \). The probabilities of not being institutionalized, considering institutionalization as an event marking the end of follow-up, and censoring those who died, are presented in Figure 4.2. The relative risk obtained with Cox’s regression model after adjustment for the level of autonomy on the SMAF at T0 is 1.44 \( (p = 0.06) \), which means that the risk of institutionalization is 44 percent higher in the control group.

**Desire to be institutionalized**

The desire to be institutionalized was comparable in the two cohorts at T0, with 24 percent of the study group expressing this desire and 25 percent of the control group (Table 4.3). The ISD network had an effect on the desire to be institutionalized up to T2 since the proportion remained stable in the study group from T0 to T2 and increased at T3 \( (25\% \ T1, 28\% \ T2 \text{ and } 39\% \ T3) \), while in the control group it increased to 39.8 percent at T1, 43.9 percent at T2 and 58.1 percent at T3. The repeated measures analyses adjusted for the level of functional autonomy on the SMAF at T0 using the GEE regression model showed that this effect is
Figure 4.1
Flow chart of elderly cohorts in the study and control areas

<table>
<thead>
<tr>
<th></th>
<th>Study area</th>
<th>Control area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elders who used home care, day care, geriatric assessment or rehabilitation services in 1996</td>
<td>1,305 files consulted</td>
<td>1,321 files consulted</td>
</tr>
<tr>
<td>884 excluded</td>
<td>↓ 379</td>
<td>↓ 303</td>
</tr>
<tr>
<td>42 duplications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 died</td>
<td></td>
<td>28 died</td>
</tr>
<tr>
<td>26 institutionalized</td>
<td></td>
<td>30 institutionalized</td>
</tr>
<tr>
<td>9 outside the area</td>
<td></td>
<td>3 outside the area</td>
</tr>
<tr>
<td>3 not eligible</td>
<td></td>
<td>2 not eligible</td>
</tr>
<tr>
<td>2 not reached</td>
<td></td>
<td>2 not reached</td>
</tr>
<tr>
<td>49 refused</td>
<td></td>
<td>28 refused</td>
</tr>
</tbody>
</table>

T0 →
38 died
24 institutionalized
4 refused
2 outside the area
1 changed area

T1 →
203 → 142
25 died
11 institutionalized
4 refused
1 outside the area

T2 →
162 → 97
17 died
6 institutionalized
1 refused

T3 →
138 → 80

...statistically significant from T0 to T1 (p = 0.02) and from T0 to T2 (p = 0.04) but not from T0 to T3 (p = 0.08). Thus the ISD network had a positive and marked effect on the desire to be institutionalized in the first two years after its implementation.
No deterioration at follow-up

The proportions of subjects who did not show any deterioration (defined as death, institutionalization or a loss of 5 or more points on the SMAF) at T1, T2 and T3 are presented in Table 4.4 for all subjects and for two groups. The first group (“more autonomous”) comprises the first third of the SMAF score distribution, representing more autonomous individuals, i.e., those with a SMAF score of 0 to 15.5 at T0. The second group (“less autonomous”) comprises the other two-thirds of the distribution and represents those who are less autonomous, with a SMAF score above 15.5 at T0. For all subjects at T1, odds ratio (OR) adjusted for autonomy is 1.50 with p = 0.04, which means that the proportion of elders who deteriorated was 50 percent higher in the control group than the study group. However, this effect disappeared at T2 and T3 where the p values of the ORs were > 0.05. For the more autonomous subjects (0 to 15.5 on the SMAF at T0), no effect was found at T1, T2 and T3.
However, for those with a moderate to severe loss of autonomy (over 15.5 on the SMAF at T0), 49 percent of the study group subjects versus 31 percent in the control group did not show any deterioration (p = 0.002) at T1. Furthermore, this effect tended to be maintained at T2, where 36 percent of the study group and 26 percent of the control group (p = 0.07) did not show any deterioration, but was not maintained at T3. The smaller number of subjects studied because of the stratification by level of autonomy may have contributed to the inability to find a statistically significant difference at T2.

**Sociodemographic characteristics of the caregivers at T0**

The sociodemographic characteristics of the caregivers from study and control cohorts at T0 are presented in Table 4.5. Like the elders, two-thirds of the caregivers in both groups were women (p = 0.79). The average age was high (65) and comparable in both groups (p = 0.92). The majority, namely 76 percent in the study group and 69 percent in the control group, lived with the elder (p = 0.18). The two groups were also
Table 4.4  
Proportion of subjects with no deterioration at follow-up  
(death, institutionalization or increase ≥ 5 on the SMAF since T0)  
based on level of autonomy at T0; study and control cohorts

<table>
<thead>
<tr>
<th>Group</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>n/N</td>
<td>OR*</td>
</tr>
<tr>
<td>All subjects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Con.</td>
<td>49.8</td>
<td>132/265</td>
<td>35.0</td>
</tr>
<tr>
<td></td>
<td>38.5</td>
<td>77/200</td>
<td>29.4</td>
</tr>
<tr>
<td>Group</td>
<td>%</td>
<td>n/N</td>
<td>p***</td>
</tr>
<tr>
<td>More autonomous (1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>51.1</td>
<td>48/94</td>
<td>35.5</td>
</tr>
<tr>
<td>Con.</td>
<td>57.1</td>
<td>32/56</td>
<td>45.1</td>
</tr>
<tr>
<td>Less autonomous (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>49.1</td>
<td>84/171</td>
<td>35.9</td>
</tr>
<tr>
<td>Con.</td>
<td>31.3</td>
<td>45/144</td>
<td>25.9</td>
</tr>
</tbody>
</table>

* Odds ratio (OR) adjusted for SMAF score at T0; reference value is the study group  
** p ≤ 0.005  
*** p value, Fisher's exact test  
(1) (0 ≤ SMAF ≤ 15.5)  
(2) (SMAF > 15.5)
comparable on the median and average score on the burden inventory with scores around 20 at T0.

**Changes in the caregivers’ cohort from T0 to T3**

Since there were deaths and institutionalizations among the elders during the study and some new caregivers became involved, changes in the number of caregivers were observed. Therefore, the same caregivers were not involved throughout the study. Figure 4.3 shows the changes in the number of caregivers, which went from 264 at T0 to 91 at T3 (60 in the study group and 31 in the control group).

**Caregivers’ burden**

Table 4.6 shows the changes in burden according to the median score obtained on the burden inventory. The initial scores at T0 were similar: 17.5 in the study cohort and 19 in the control cohort (p = 0.23). It subsequently declined in the study group to 13.0 at T1, 12 at T2 and 13 at T3, whereas in the control group it increased to 21.5 at T1 and then dropped to 18.5 at T2 and 15.0 at T3, but always remained above the median score of the study group. Once the repeated measures analyses adjusted for the SMAF score at T0 were done, the change in the scores of the two groups in the first 24 months (T2) is statistically different, showing that the ISD network had a positive effect on caregivers’ burden.
Utilization of services

Table 4.7 compares utilization of health services between the study and control cohorts. Overall, the ISD network had little effect on the use of services. For visits to emergency, the change in utilization profiles from 1995-1996 to 1999-2000 is statistically different mainly because the two groups had different rates before implementation (1995-1997) but not after implementation (1997-2000). The same phenomenon was observed for the prevalence of subjects who had at least one visit to emergency in the year. However, the situation is slightly different when the prevalence (%) of those who had at least one return visit to emergency within 10 days is compared between the two groups. The proportion of subjects returning to emergency within ten days of a first visit was lower in the study group than the control group (16.3% versus 27.4%, p = 0.04) in 1997-1998 and also in 1998-1999 (9.3% versus
The change in hospital days between the two groups differed \((p = 0.02)\) over the five years, mainly because of a decline in the years preceding the study. No difference after ISD network implementation was observed in the prevalence of subjects who had at least one hospitalization in the year. Mean hospital stay did not show any statistically significant differences over the five-year period. There was also no change in the rate of prescriptions dispensed after the ISD network was implemented. However, there were statistically significant differences between the two cohorts \((p = 0.0002)\) in the use of medical services. The rate of visits, which was slightly higher in the study cohort, was higher in each ISD network post-implementation year \((p < 0.0002)\). Finally, a significant drop in the CLSC intervention rate for all programs combined occurred in the study group after ISD network implementation \((p < 0.0001)\), especially in 1998-1999. Additional analyses showed that this decline was particularly evident in home care. However, it did not seem to be at the expense of the help provided by the main caregiver (overburdening them) since the proportion of caregivers seeking help with ADL did not increase in the study cohort.

### Table 4.6

Median caregivers’ burden score\(^1\) from T0 to T3; study and control cohorts

<table>
<thead>
<tr>
<th>Time</th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>T0</td>
<td>17.5</td>
<td>19.0</td>
</tr>
<tr>
<td>(p*) = 0.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>13.0</td>
<td>21.5</td>
</tr>
<tr>
<td>(p* = 0.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2</td>
<td>12.0</td>
<td>18.5</td>
</tr>
<tr>
<td>(p* = 0.04)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>13.0</td>
<td>15.0</td>
</tr>
<tr>
<td>(p* = 0.60)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Measured with Zarit’s burden inventory

\(^*\) p value, Wilcoxon test

Repeated measures transversal analysis

Repeated measures analyses adjusted for functional autonomy at T0

T1 = “group X time” effect, \(p = 0.19\)

T2 = “group X time” effect, \(p = 0.05\)

T3 = “group X time” effect, \(p = 0.13\)
Table 4.7
Changes in utilization of care and services, study and control cohorts, 1995-1996 to 1999-2000

<table>
<thead>
<tr>
<th>Care or services</th>
<th>Gr.</th>
<th>95-96</th>
<th>96-97</th>
<th>97-98</th>
<th>98-99</th>
<th>99-00</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of visits (number of visits/person-year)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to emergency in the year</td>
<td>Study</td>
<td>0.77</td>
<td>1.11</td>
<td>1.15</td>
<td>0.94</td>
<td>1.14</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>1.23</td>
<td>1.51</td>
<td>1.16</td>
<td>1.01</td>
<td>1.02</td>
<td></td>
</tr>
<tr>
<td>p value of comparisons, Poisson regression</td>
<td></td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td>0.93</td>
<td>0.51</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td>Prevalence (%) of subjects who had at least 1 visit to emergency in the year (person-year/person-year)</td>
<td>Study</td>
<td>39.3</td>
<td>47.1</td>
<td>49.8</td>
<td>41.2</td>
<td>44.3</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>53.3</td>
<td>63.3</td>
<td>47.2</td>
<td>44.8</td>
<td>39.8</td>
<td></td>
</tr>
<tr>
<td>p value, chi-square test</td>
<td></td>
<td>0.002</td>
<td>0.0004</td>
<td>0.58</td>
<td>0.49</td>
<td>0.41</td>
<td></td>
</tr>
<tr>
<td>Proportion (%) of subjects who had at least 1 return visit to emergency within 10 days among those who had at least 1 visit to emergency</td>
<td>Study</td>
<td>19.6</td>
<td>22.7</td>
<td>16.3</td>
<td>9.3</td>
<td>18.8</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>23.2</td>
<td>21.1</td>
<td>27.4</td>
<td>22.1</td>
<td>30.1</td>
<td></td>
</tr>
<tr>
<td>p value, chi-square test</td>
<td></td>
<td>0.52</td>
<td>0.75</td>
<td>0.04</td>
<td>0.02</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>Rate of hospital days (number of hospital days/number of person-years) in the year</td>
<td>Study</td>
<td>8.47</td>
<td>12.28</td>
<td>12.11</td>
<td>8.75</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>12.33</td>
<td>15.66</td>
<td>9.48</td>
<td>9.71</td>
<td>8.60</td>
<td>0.02</td>
</tr>
<tr>
<td>p value of comparisons, Poisson regression</td>
<td></td>
<td>0.09</td>
<td>0.13</td>
<td>0.60</td>
<td>0.60</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>Prevalence (%) of subjects who had at least 1 hospitalization (including day surgeries) (person-years/person-years)</td>
<td>Study</td>
<td>36.4</td>
<td>46.7</td>
<td>43.1</td>
<td>39.6</td>
<td>40.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>43.3</td>
<td>56.7</td>
<td>41.1</td>
<td>38.9</td>
<td>34.5</td>
<td></td>
</tr>
<tr>
<td>p value, chi-square test</td>
<td></td>
<td>0.12</td>
<td>0.03</td>
<td>0.68</td>
<td>0.88</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Average hospitalization duration (number of hospital days/number of hospitalizations)</td>
<td>Study</td>
<td>13.7</td>
<td>15.2</td>
<td>14.4</td>
<td>11.7</td>
<td>13.6</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>16.5</td>
<td>16.7</td>
<td>12.0</td>
<td>13.8</td>
<td>13.6</td>
<td></td>
</tr>
<tr>
<td>p value, Student's test</td>
<td></td>
<td>0.04</td>
<td>0.15</td>
<td>0.40</td>
<td>0.70</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td>Rate of prescriptions dispensed (number of prescriptions dispensed/ person-years) (excluding institutionalized subjects)</td>
<td>Study</td>
<td>51.9</td>
<td>56.2</td>
<td>58.7</td>
<td>65.6</td>
<td>70.5</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>51.5</td>
<td>55.1</td>
<td>65.1</td>
<td>75.5</td>
<td>72.2</td>
<td></td>
</tr>
<tr>
<td>p value, negative binomial regression</td>
<td></td>
<td>0.92</td>
<td>0.83</td>
<td>0.28</td>
<td>0.60</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>Rate of medical visits (general practitioners)</td>
<td>Study</td>
<td>11.4</td>
<td>14.0</td>
<td>14.2</td>
<td>12.7</td>
<td>13.1</td>
<td>0.0002</td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>11.4</td>
<td>13.4</td>
<td>12.9</td>
<td>11.1</td>
<td>11.0</td>
<td></td>
</tr>
<tr>
<td>Comparison, Poisson regression</td>
<td></td>
<td>0.91</td>
<td>0.11</td>
<td>0.0002</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td></td>
</tr>
<tr>
<td>Rate of CLSC interventions (number of interventions/person-years), all programs combined</td>
<td>Study</td>
<td>43.2</td>
<td>43.7</td>
<td>34.1</td>
<td>34.1</td>
<td>—</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>40.0</td>
<td>46.3</td>
<td>44.6</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Comparison, Poisson regression</td>
<td></td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Comparison of change profiles, Poisson regression
* Comparison of change profiles, GEE model, “group X time” effect
* Comparison of change profiles, GEE model, binomial, “group X time” effect
* Medical visits: medical procedures provided by the same physician on the same day and at the same place
Discussion

The Bois-Francs ISD network did not have any effect on mortality (survival). However, a declining trend in institutionalization was observed and the desire to be institutionalized was lower in the study group. Another effect of the ISD network was that a higher percentage of individuals in the study group at T1 than in the control group did not deteriorate. In addition, when follow-up without deterioration was analyzed in terms of the level of autonomy, the ISD network produced positive effects on the frailer clientele at T1, which tended to be maintained at T2. In regard to caregivers’ burden, the ISD network seemed to have been effective, with caregivers’ burden being less at T1 and T2 although the effect disappeared at T3. The ISD network did not have a marked effect on the utilization of services. There was no difference between the two cohorts in regard to visits to emergency, hospitalization and drug use, apart from a smaller proportion in the study group returning to emergency within ten days of a first visit. The rate of medical visits declined more in the control group. A significant difference in favour of less use of CLSC resources was also observed in the study cohort.

The design used was quasi-experimental, because it met many of Black’s criteria\(^3\) for this type of study, including the difficulty to randomize in a context where the managers originally wanted to expand the ISD network to the entire population in the territory. This type of design is still valid when a randomized study is not feasible, provided there is tight control over potential biases\(^17\). Two different strategies were used to ensure that the two cohorts were as comparable as possible. One of the differences that could have had an impact on the results – the level of functional autonomy at T0 – was taken into account in the analyses. Other limits on internal validity, such as the presence of differing events in the two areas or differing maturation, were minimized by the fact that both groups belonged to the same socio-health region and were thus subject to the same political and administrative constraints. As for the attrition and refusal rates, they were the same in the two cohorts and the number of refusals was very low. A contamination bias, where the control area might have developed an ISD network similar to that in Bois-Francs, is unlikely since measures describing the operations in each area were taken annually and nothing indicated that this was the case. However, even without a formal network being put in place, coordination efforts were increased in the control area as a result of regional health board requirements applicable to all areas. This could have reduced the
differences observed between study and control groups. Since this study targeted a specific clientele and a single geographic region, the generalizability of the results is limited. Replicating and evaluating the ISD network in different contexts could be the best way to ensure good external validity of the results.

The lack of effect on mortality is not surprising. Few studies have shown evidence of any such effects; group size, combined with the relatively rarity of the event, often makes it difficult to find significant differences. On the other hand, although the p value (p = 0.06) is slightly above the chosen significance threshold, the survival curves at institutionalization in Figure 4.2 show a tendency to increase over time, which implies that the ISD network had a positive impact on institutionalization, an effect that has been documented in the past. Using a combined indicator called “no deterioration at follow-up”, where deterioration includes death, institutionalization and a loss of five or more points on the SMAF score, seemed to be an interesting way to compare study and control groups. The positive results of the ISD network observed for this indicator, especially among frailer subjects, is consistent with the work done by other researchers, some of whom emphasized the importance of targeting clienteles properly if one hopes to have an impact. Some effects of ISD networks on functional autonomy have been observed in the past. The fact that the Bois-Francs ISD network produced effects that wore off after two years could mean that it succeeded in delaying the loss of autonomy.

Very few studies have measured caregivers’ burden as a measure of the effect of ISD networks and contrary to this study, no change was reported. In a recent study where burden was one of the main outcome variables measured, the coordination mechanism put in place for a demented clientele (who comprised only a part of the clientele in the present study) did not modify caregivers’ perceived burden. Contrary to some studies but like early U.S. studies regarding similar approaches the Bois-Francs ISD network had little effect on the utilization of health services. Other studies that examined interventions that included some of the elements of ISD networks found marked effects on the use of hospital, emergency, institutional and physician services. One aspect they often had in common was an approach combining case management and disease management or relatively intensive follow-up and the use of well-established care protocols. The disease management approach has become very popular in
recent years and it requires an excellent information system integrating care protocols and evidence-based clinical guides (evidence-based medicine). However, a study done in Montreal in 1999 that included many of these points did not produce similar effects. The authors attributed this, first, to a possible contamination bias in the unexposed group due to the fact that, in the meantime, coordination had become a concern in the Quebec health network and, second, to the short follow-up period (10 months) which was not long enough to observe any impact. The Bois-Francs ISD network focuses more on social interventions than medical-nursing interventions. All the case managers were social workers by training, and there were no nurses on the case management team. Although they increased, the case managers’ contacts with physicians were not as formalized as in the studies mentioned above. Therefore, we had reason to expect effects that were more consistent with the proposed intervention: effect on burden, institutionalization and the desire to be institutionalized, and no deterioration at follow-up. Since the medical and nursing aspect was less developed and a disease management mechanism with care protocols and clinical guides was not included, it should not be surprising that there was no effect on the use of hospitals, emergency rooms and drugs. However, this component should be added to the Bois-Francs ISD network in the coming months. Also, understanding of the role an ISD network should play and the skills it requires developed more slowly than expected, which might have contributed to the observed absence of effect on the utilization of certain services.

The smaller proportion of subjects in the study group returning to emergency within ten days of a first visit might be related to better coordination by the case managers. The effects observed on the use of medical services could reflect better identification of problems in an ISD network that could result in more visits to physicians, or more consistent and increased commitment from primary care physicians in the study area than the control area. Also, since Bois-Francs has one of the lowest physician/population ratios in Quebec, perhaps the commitment of primary care physicians there was greater than in the control area. Changes in the cohorts of primary care physicians were comparable in the two areas, with the study area consistently having a lower ratio of general practitioners.

The effect observed in regard to the lower utilization of CLSC services in the study group could be related to the logic of the ISD network
that attempts to draw upon all formal and informal resources available to clients, which could result in less use of CLSCs. The fact that the proportion of caregivers seeking help for ADL did not increase could mean that this decline was not at their expense. However, other changes might have been partly responsible for the difference observed. One of these modifications is using private “social economy” agencies that have the two-fold objective of creating jobs and providing home care. The implementation evaluation done in 1997-1998 and 1998-1999 showed that help for some elders was transferred to such agencies. Differences in service delivery because of more limited financial resources (e.g., budget constraints) in one area than the other could also have contributed to the significant decline in CLSC interventions.

The lack of power to demonstrate effects on the utilization of services could limit the generalizability of the results. In fact, a posteriori analyses showed that a decline or an increase in hospitalizations of at least 13 percent would have been necessary to see a statistically significant difference between the two groups with 80 percent power. This limit has also been observed in other studies2, 9. However, it is interesting to note that the Bois-Francs ISD network shares many characteristics of similar interventions in the literature that had an effect and were highlighted in the report “Best practices in coordinated care6.”

The ISD network did in fact produce some effects, which should be seen as important for the elderly population. Research to date seems to indicate that such networks can produce positive results but these various trials have not yet been implemented in an entire province or state, so one of the challenges is to apply these service delivery models on a larger scale14. Future research should therefore be oriented in this direction.

References


This chapter focuses on the implementation of mechanisms and tools that promote the integration of services provided to the elderly and that are identified as part of a continuum. We are particularly interested in the process, i.e. how environments changed with respect to Integrated Service Delivery (ISD). A review of the literature and the experiments carried out in the Bois-Francs (Mauricie-Centre-du-Québec) region during the 90s aroused interest in six integration elements: coordination, single entry point, case management, a comprehensive evaluation and classification tool (SMAF [Système de mesure de l’autonomie fonctionnelle – Functional Autonomy Measurement System] and ISO-SMAF), the real-time clinical communication tool (CCC [Computerized Clinical Chart] - SIGG [Système d’information géronto-gériatique - Geronto-Geriatric Computer System]) and the Individualized Service Plan (ISP). The results of experiments in the Bois-Francs region showed sufficient potential to justify a second round of testing, this time in the Eastern Townships region, along with a research project on the implementation and impact of mechanisms and tools that specifically promote the integration of services to help maintain the autonomy of frail elders. Although ISD for the elderly is established throughout the Eastern Townships region, three of the seven sub-regions are involved in a study on the implementation of these mechanisms and tools and a large-scale assessment of the real impact on the autonomy of the elderly living in the community, based on quasi-experimental estimates with “twin” subregions identified in a control area elsewhere in Québec.

As indicated in Figure 5.1, the implementation environments were very different. In this sense, they represent the reality of Québec’s socio-medical network. While rural areas have to organize their resources on
Figure 5.1
Characteristics of the 3 sub-regions

<table>
<thead>
<tr>
<th></th>
<th>Estrie</th>
<th>Sherbr.</th>
<th>Granit</th>
<th>Coaticook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pop. total (1)</td>
<td>291 359</td>
<td>144 709</td>
<td>21 980</td>
<td>16 445</td>
</tr>
<tr>
<td>Pop. &gt; 65 (2)</td>
<td>40 438</td>
<td>18 482</td>
<td>3 281</td>
<td>2 280</td>
</tr>
<tr>
<td>Institutions (incidence) (2)</td>
<td>1.4% (552 pers.)</td>
<td>1.7% (314 pers.)</td>
<td>1.6% (53 pers.)</td>
<td>1.5% (35 pers.)</td>
</tr>
<tr>
<td>Rates Institutions in CHSLD (per year) (2)</td>
<td>3.5% (1 401)</td>
<td>4% (745)</td>
<td>3.2% (106)</td>
<td>3.9% (88)</td>
</tr>
<tr>
<td>Rates Institutions RI-RTF and CHSLD (per year) (2)</td>
<td>3.9% (1 593)</td>
<td>4.4% (815)</td>
<td>4.5% (149)</td>
<td>4% (90)</td>
</tr>
</tbody>
</table>

(1) Estrie Regional Board
(2) Santé publique de l’Estrie, 2001
the basis of a widespread geography typical of areas where the economy is based on agricultural and forest activities, Sherbrooke is a city with a service-based economy that has to accommodate a sizeable inflow of cases. There were also marked differences in populations over 65 years of age.

The portrait of services available in these three sub-regions at the time the implementation was under evaluation demonstrates that the rural environment can already enjoy the benefits that accrue from the consolidation of the various missions. In the Granit area, there was only one institution assuming hospital, CLSC (Centre local de services communautaires - Local Community Services Center), day program and CHSLD (Centre d’hébergement et de soins de longue durée - long-term care centre) missions. In Coaticook, its sole institution provides emergency 24/7 services, a CLSC with a day program and a CHSLD, all under a single administration. Three community-sector organizations provide volunteer services and transportation as well as social economy agencies in the two rural areas. In Sherbrooke, on the other hand, the various services provided to the elderly are delivered by five institutions, three of which are teaching institutions (CHUS, IUGS and CLSC). Some of them are responsible for delivering specialized services throughout the region, i.e. the University Hospital Centre (Centre hospitalier universitaire de Sherbrooke, CHUS), the Sherbrooke Geriatric University Institute (Institut universitaire de gériatrie de Sherbrooke, IUGS) and the Eastern Townships Rehabilitation Centre (Centre de réadaptation de l’Estrie, CRE). Lastly, the community sector includes some fifteen organizations. The integration challenge is therefore not the same in the three sub-regions.

This chapter provides the main interim outcomes of the implementation study. In its formative phase, the implementation study helps to measure the extent to which the integration mechanisms and tools were established and if they were implemented as originally planned. It also helps to compare the degree of implementation in the sub-regions of the testing area.

The main goal of an Integrated Service Delivery (ISD) system is to help improve the continuity of services, the first milestone being access to health care, services and resources within reasonable time frames. Bear in mind that for frail elderly persons experiencing a loss of autonomy (frail elders), hospitalization can mean the onset of institutionalization if the required services for their return home or alternate living
arrangements are not available at the right time. Accordingly, integration must focus on the care and services for vulnerable or frail cases, which are more likely to feel the impact of the absence of coordination between service providers. That is why, over the last few years in Québec, we have seen the development of various networks: the network for severe chronic obstructive lung disease (SCOLD), the oncology network, the mental health network and lastly the network for the frail elderly.

In the sector of services provided to the elderly, practitioners are increasingly called on to use evaluation tools that must be used by various professional health workers (family physicians, social workers, nurses, occupational therapists, nutritionists, physiotherapists, etc.) working in various practice frameworks (single discipline, multidisciplinary or interdisciplinary) who must be able to understand each other to better coordinate their actions. The integration of care and services has nothing to do with administrative consolidation. It does not exclude it, but it is not a condition of it. The proposed model demonstrates that it may be possible to integrate ways of doing things, i.e. to agree on a common direction with respect to frail elderly patients, while minimizing the obstacles to efficient coordination. Once the decision-makers adopt the model and take into account inter-institutional features and dynamics, this part of the problem concerns practices and, as such, is essentially the responsibility of clinicians in all fields who care for the elderly and the managers of these services. At issue is changing clinical practices according to a geriatric overview, which requires consolidating the intervention of all clinicians who work with a single patient, in his or her best interest.

Accordingly, with this presentation of the main outcomes of the research activities, we will attempt to shed some light on the implementation process of the components: what was achieved, what was difficult to achieve, facilitating elements and limitations. Since the description of the model being tested in the Eastern Townships region was already examined in chapter 1 of this book, we will not dwell on it.

Methodology

The implementation study on the model’s six components was conducted as a multiple-case study (three cases) with embedded units of analysis\(^1\) based on a mixed methodology (quantitative and qualitative). Case studies help to explain changing and complex realities and track
the progress of the stakeholders during the process of ownership of the changes expected in a given context. In our study, the main context is the local organization providing care and services to the elderly. Case studies are a useful method for enquiring about the conditions of a context, something other investigation methods either fail to carry out or accomplish in a very limited way. With regard to multiple cases, Yin points out: “Each case must be carefully selected so that it either (a) predicts similar results (a literal replication) or (b) produces contrasting results but for predictable reasons (a theoretical replication).” (p. 46)

As for the implementation evaluation, it refers to a data collection process carried out systematically on the different program elements leading to an analysis that will help guide later decisions with respect to this program. That is why we opted for a mixed methodology by combining the use of questionnaires, document reviews (clinical files, performance statistics, proceedings, etc.), semi-structured interviews (individual and group) and participant observations. The advantage of carrying out an implementation study is to counter the “black box” effect associated with impact studies when insufficient consideration is given to the process, which could produce a “third type of error,” i.e. falsely attributing the measured effects of a given program while other context factors come into play, or to measure no effect when the program is only partially implemented and thus incapable of generating effects. As for its intrinsic value, it is entirely possible, even with short-term outcomes, that an implementation study will help raise awareness on the influence of some external factors, identifying certain aspects of the program that need improving or even changing the stakeholders’ perception of the implementation program, once some “keys” to understanding are made clear. The systematic follow-up of the implementation process and regular disclosure of its outcomes will allow the stakeholders to monitor their progress and the emergence of unusual or unexpected effects, recognize the deviations from what had been anticipated and, as a result, correct its weaker aspects.

In the implementation study carried out in the Eastern Townships region, the group of targeted stakeholders are: the network leaders and managers (institutions and community organizations), case managers, family physicians and geriatricians, all professionals who interact with the case managers and use the computerized clinical chart (CCC-SIGG) as well as the elderly accompanied by their family caregivers. Most of these people had to interviewed twice, once at the beginning of the
implementation of case management and single entry point (completed stage) and again after the implementation of all the components (current stage).

The research methods used were matched to the questions we had to answer. So, to determine coordination, we used a quantitative tool (an evaluation grid of the degree of implementation), focused mainly on the structure itself and the way it worked. Semi-structured individual interviews with leaders, managers and members of the Service Coordination Committee were conducted. A second series is to be conducted with the same people in 2004. The evaluation grid was completed at six-month intervals, which made it possible to track the deployment of many components: coordination, single entry point, case management and the SIGG computerized clinical chart.

To answer the questions on the two SMAF and ISP tools, we carried out a review of clinical files of all the elderly involved in case management in the three sub-regions. Administrative data from the I-CLSC also called SIC (Système d’informations clienteles - Clientele Information System) was included in the study, which also made possible a systematic follow-up of case management activities through an analysis of the SIC intervention codes. A phone inquiry confirmed the use of the SMAF by all partners in each department likely to provide services to a significant number of seniors. The use of ISO-SMAF profiles as a resource management tool (funding) and decision-support tool for referring elders was observed in the two pertinent locations: the regional entity in charge of funding and the local entity in charge of referrals to institutionalization resources for the elderly. The follow-up on the deployment of the DCI-SIGG (in terms of software availability and adequate quantity of equipment) was largely achieved by approaching those in charge of implementing the DCI in the institutions and the Regional Health and Social Services Boards. What remains is to document more precisely the extent to which the patients registered in the system actually received an SMAF-OEMC (a functional autonomy measurement system coupled with a multiclientele assessment tool) and an ISP, whose results are available for all the other health workers, what categories of health workers use the CCC-SIGG and to what purpose, and to which institutions they report (current stage).

Given that the facility’s degree of responsiveness (the clinical setting) would be important for the development of the case manager’s role, we set up focus group interviews with professionals from several
practice environments. The transcripts of the interviews are being analyzed for their content. The intentional sample was developed based on a list that case managers made of health workers with whom professional contacts had been established (first selection criterion). The second selection criterion dealt with the representativeness of the various services (hospital, UCDG [Unité de courte durée gériatrique - Short-Term Geriatric Units], URFI [Unité de réadaptation fonctionnelle intensive - Intensive Functional Rehabilitation Units], day program, CLSC home support services, community organizations, housekeeping services, etc.). The case managers also participated in a focus group, which was preceded by a self-administered questionnaire. The second series of interviews is slated for the fall of 2004, i.e. once the degree of implementation for all the components is adequate. In addition, to explore the clinical level, family physicians were asked to answer two questionnaires made up before and after the case managers began working. One of the chapters in this book describes its outcomes. A third questionnaire is planned for the fall of 2004, at the request of the study partners at the time the short-term outcomes were released. They were also interested in gathering the opinions of geriatricians, which the research team agreed to do. Lastly, the interviews with the elderly in case management and the family caregivers were carried out. The data is being analyzed.

Implementation outcomes

Although our chosen presentation allows a comparison between the three sub-regions, the goal is mainly to demonstrate the variability of the implemented systems. As the state of the research did not make it possible to establish the superior efficiency of one specific model, this variability was therefore desirable and helped link the mechanisms and tools to the specific service organization already working in each sub-region with its opportunities and limitations. The three sub-regions in the Eastern Townships region contrasted in many respects (size, population density, sociomedical organizations, absolute number of seniors, available local resources, coordination or concerted action?? background, etc.). This is the spirit in which the main results are delivered.

Coordination: structures and representation

In Sherbrooke, the existing organization of services provided to the elderly was complex: several institutions with independent management, some fifteen community organizations involved in home support
for the elderly, many services or service units reporting to institutions with little or no coordination overall. The original structure is in itself very complex and the issues that were discussed often focused on changing the managers’ perceptions as to the criteria guiding the necessary choices and decisions if a real transformation of the service offering to seniors is to be made. The issues often cover decision-making autonomy prerogatives developed in the services: in the network, they are asked to adapt their operations to what is established by the coordination structure. This process was not carried out without incident… at times, some people experienced interference whenever questions on the agenda affected the way their organization provided services. A complete and detailed description of the structure and its operations was published in the Rapport de recherche intérimaire (interim research report)2. During the 18 months or so (from Sept. 2000 to March 2002) of activities preceding and accompanying the official implementation of case management and the single entry point, various committees of the Service Coordination Committee held regular meetings in order to agree on the goals, direction to be taken and procedures. During this time, a total of 67 meetings were held in Sherbrooke, which accounts for 642 participations.

When needed, the Service Coordination Committee (Comité local de concertation – CLC) was able to engage outside consultant services to carry out the research and conceptualization work. The Table also benefited from a budget for supporting community initiatives through allowances for the elderly or budgets for developing innovative projects submitted by community organizations (for instance alternatives to institutionalization). These means, managed by the Table, gave it the power to adjust the service offer to the needs deemed a priority for the location.

In Sherbrooke, the representation is not limited solely to institutions funded by the “elderly” allowance but also extends to the CHUS, community organizations and the rehabilitation centre. The community organizations were regularly involved in decisions through two representatives, one of which acted as co-chair of the Table. Only one elderly person was able to keep pace with and handle the level of difficulty of the issues discussed during the entire implementation phase. During this crucial period, the managers (tactical level) took over much of the work. The senior management of the institutions was highly involved, working in committees (strategic level), reviewing integration and going so far as
to alter the governance structure, which led to the merging of two institutions providing long-term and residential care services, the transfer of certain services (e.g. the CLSC is the purview of the case managers, the day program and the management of the intermediate resources as well as the introduction of “new” players in the coordination structure, which was remodelled according to the priorities of the action plan agreed to by all the local and regional partners. As such, active involvement was requested of the Regional Health and Social Services Boards (which has since become the (local networks development agency), the pharmacists (vacant seat up to now), the physicians (present at the different levels since 2003), the private residences (present since 2003 through a representative of the emerging association), the municipality (vacant seat up to now). Following the research team’s findings, which revealed that the clinical level was under-represented during the initial stage (a ratio of three managers per health worker), improvements were made to the representation of the clinical level, especially in the committees where the targeted changes affected clinical practices or changed the way in which a service was offered (e.g. eligibility criteria, patient progress between 1st and 2nd line services, etc.).

Table 5.1 lists the representatives who were sitting on the Sherbrooke Service Coordination Committee for seniors during the pre-implementation stage of the ISD system. The coordination structures in Sherbrooke included a managing Joint Governing Board (strategic level), the local Service Coordination Committee and various selective ad hoc or quasi-permanent subcommittees (operational or clinical level). The representation shown in the table does only include the members of the local Service Coordination Committee (by definition a management level).

In Granit, the coordination structure was already set up, before interest was shown in ISD. This structure focused mainly on Granit’s PLOS-PA (Plan local d’organisation de services aux personnes âgées - Local Organizational Plan for Elderly Services) goals. The Service Coordination Committee was actively involved in the pre-implementation stage. Later, when single entry point and case management were established, an advisory committee was set up and at least one of its members was responsible for relaying its discussions and the outcomes of its work to the Service Coordination Committee for seniors. The coordination structure was and remains simple, but the addition of an ISD project led to a reallocation so that new responsibilities could be taken
Meeting times were rescheduled in order for specific meetings to be exclusively reserved for the implementation of ISD with the “expanded” committee while the “regular” committee continued its work on the PLOS-PA. Stakeholders absent from the “regular” Table (e.g. pharmacists, physicians) were targeted to make up the “expanded” Table and invited to participate in the meetings aimed at setting up ISD.

To complete follow-ups or carry out conceptualization work, a certain number of resource persons were hired at different times jointly by the Table and the Granit institution. Once single entry point and case management were implemented, a formal advisory committee was set up and its mission was to follow the progress of the implementation of the various ISD components. Between September 2000 and March 2002.

Table 5.1

Sherbrooke Service Coordination Committee

<table>
<thead>
<tr>
<th>Institution Representatives</th>
<th>Community organizations and other representatives (private residences, seniors, associations, etc.)</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director of nursing services (DNS) of CHSLD Sherbrooke</td>
<td>Two representatives of the Sherbrooke Community Organizations Committee, directors of their organization (+ 1 co-opted)</td>
<td>Community pharmacies</td>
</tr>
<tr>
<td>DNS of CHSLD Estrie</td>
<td>M.D. representing the DRMG (regional department of general medicine) who arrived at the end of the pre-implementation stage (January 2002)</td>
<td>SED (Services d’entretien domestique - housekeeping services) – social economy organization</td>
</tr>
<tr>
<td>DNS of CHUS</td>
<td>Seniors’ representative</td>
<td>Private residences</td>
</tr>
<tr>
<td>DNS of Sherbrooke Geriatric University Institute (IUGS)</td>
<td>Person in charge of the seniors programs at the (Regional Health and Social Services Boards)</td>
<td>Professionals from the health-care, social-services and geriatrics-team sector</td>
</tr>
<tr>
<td>Director of professional services (DPS) of Sherbrooke Geriatric University Institute</td>
<td></td>
<td>Paratransit and municipalities</td>
</tr>
<tr>
<td>Assistant DPS at CHUS</td>
<td></td>
<td>Representatives of associations working with seniors</td>
</tr>
<tr>
<td>CRE health worker</td>
<td></td>
<td>Records managers</td>
</tr>
<tr>
<td>Local Service Coordination Committee coordinator</td>
<td></td>
<td>Human resource and professional union management</td>
</tr>
<tr>
<td>Director of services to seniors and handicapped at the CLSC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CHSLD : Centre d’hébergement et de soins de longue durée
CLSC : Centre local de services communautaires
CHUS : Centre hospitalier universitaire de Sherbrooke
IUGS : Institut universitaire de gériatrie de Sherbrooke
CRE : Centre de réadaptation de l’Estrie
SED : Services d’entretien domestique
DRMG : Département régional de médecine générale
In 2002, some ten meetings were held involving a turnout of 116 on the implementation of the Granit integrated network.

In the Granit Service Coordination Committee (Table 5.2) representation list, please note that many members sit in an individual capacity rather than as representatives, often because they cannot do otherwise as these are sectors without any group structure (family physicians and private residences for instance). Without representative status, the political weight and requirements that go along with the role are less official and seem less of an obligation. As a result, despite significant absentees in the health care sector, the structure that was set up proved to be effective in terms of the short-term goal to be reached: establishing structures, new roles and tools.

The coordination structures in Granit included the Granit Service Coordination Committee for seniors and the advisory committee. For a one-year period, there was also an in-house single entry point committee, made up of representatives of the various missions of the institution. The representation shown in Table 5.2 does only include the members of the Service Coordination Committee.

In Coaticook, as in Granit, the Service Coordination Committee for seniors was long established and actively involved in many programs for seniors in their community (e.g. Tournée Santé Bel-Âge, training projects, community dinners, etc.). The coordination structure was simple and no changes were made to the usual operations of the Table for the ISD program. When needed, throughout implementation of the various components, the providers were invited to take part in the meetings on the implementation follow-up, on specific aspects that required a consensus from the partners. For instance, the implementation of the Prisma-7 questionnaire in the community organizations required information meetings on the usage standards for the tool. No preset schedule was established for the ad hoc meetings. Between September 2000 to March 2002, the Table held 15 meetings that involved a turnout of 219.

Coaticook is the sub-region with the most longstanding coordination structure for seniors in the three sub-regions monitored. Its participation base is very broad, but real participation in meetings is approximately fifteen people. Throughout the pre-implementation process, the Coaticook Service Coordination Committee for Seniors tracked the changes occurring in the institution, but were not involved in the decision process. Moreover, changes were largely related to organizational matters, namely in the institution. Participants did not have to
Table 5.2
Granit Service Coordination Committee

<table>
<thead>
<tr>
<th>Institution representatives</th>
<th>Community organizations and other representatives (private residences, seniors, associations, etc.)</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Director of programs of the CLSC mission</td>
<td>• Director of paratransit</td>
<td>• Community pharmacists</td>
</tr>
<tr>
<td>• Chief of administration of the home support services of the CLSC mission</td>
<td>• Director of housekeeping services</td>
<td>• General practitioners practicing in private medical clinics</td>
</tr>
<tr>
<td>• Head of long-term residential services and liaison nurse in the hospital</td>
<td>• Director of volunteer action in Granit</td>
<td>• Municipality</td>
</tr>
<tr>
<td>• Director of the CHSLD mission</td>
<td>• Two (2) owners of private residences for seniors (on an individual basis, as there is no representative structure for private residences)</td>
<td>• Rehabilitation professionals</td>
</tr>
<tr>
<td>• Community organizer</td>
<td>• Three (3) seniors’ representatives (on an individual basis, not as representatives of an association)</td>
<td></td>
</tr>
<tr>
<td>• Representative of the home support professionals in the CLSC</td>
<td>• Director of Les amis des petits frères des pauvres (community organization)</td>
<td></td>
</tr>
<tr>
<td>• General practitioner for the hospital mission, among others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

decide upon these issues. However, when implementation of a change required cooperation (e.g. the introduction of Prisma-7), meetings were organized for those in charge of services (community organizations, private residences, community pharmacies, institutions providing regional services, etc.) and attendance was satisfactory. During these ad hoc meetings, participants were able to report on work progress. This structure was less formal than in the two other regions and the institution representation was minimal (but consistent). Its main role was essentially to coordinate the various activities that were initiated in the sub-region and organize training sessions for volunteers/attendants in private residences and workers in the housekeeping service. As a Table, members were often able to state their position or support; it also focused on finding additional funding, as it had a limited budget.
The coordination structure in Coaticook included the Coaticook Service Coordination Committee for Seniors and an informal ad hoc committee on implementation follow-up. Due to the fact that the physicians practiced in all of the environments (medical clinics, CHSLD, CLSC, emergency) and were all members of the institution’s CMDP (council of physicians, dentists and pharmacists), it was easier to hold meetings with them, and enabled information exchanges. So, despite their absence from the Table, an operational link existed and was used if required. The representation shown in Table 5.3 includes only the members of the (Coordination Committee) during the pre-implementation phase.

**Single entry point**

In Sherbrooke, the original project developed by the Local Service Coordination Committee featured an important information/computer-ization project that included a Web site and links to all local and regional partners. However, due to budgetary restraints, the project was limited to a single role, that of Orientation, Information and Referral, but without the scope that was originally planned. During the pre-implementation analysis process, those in charge identified two very distinct segments for the single entry point: seniors and family caregivers on the one hand, and health workers from the entire health care and social services network on the other hand. The volume of requests received by the CLSC and those that are routed directly to the other services (day hospital, day program, URFI, UCDG, geriatric out-patient clinics, etc.) had to be considered. So, it was agreed to set up two “access points,” one for the general population to be located at the CLSC reception desk, and the other for health workers via phone, fax and, soon, a computer link, located at the CLSC de Sherbrooke home-support service. In both cases, professionals process the requests and evaluate them, before referring them to the appropriate service, i.e. the home support service, case management or another service. In the three regions, a phone switchover and a referral procedure were set up with the Info-Santé service to refer elderly cases brought to its attention in the evening, at night or on weekends when offices are closed. The tracking tool used is Prisma-7.
In terms of results, we currently have data on utilization and referring parties from the SIC (or I-CLSC) (Table 5.4). Generally speaking, close to 2,500 service requests for people 65 and over were processed during a six-month period in Sherbrooke, and 75% of these cases involved seniors 75 and over. Approximately 65% of service requests were made by the medical sector (medical clinics and hospitals).
Table 5.4
Single entry point outcomes after six months of operation (three sub-regions)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sherbrooke</th>
<th>Le Granit</th>
<th>Coaticook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of service requests (65 years and over)</td>
<td>2478</td>
<td>536</td>
<td>529</td>
</tr>
<tr>
<td>Sex (women)</td>
<td>1675 (67.6%)</td>
<td>317 (59.1%)</td>
<td>358 (67.7%)</td>
</tr>
<tr>
<td>Age:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-74 years</td>
<td>605 (24.4%)</td>
<td>94 (17.5%)</td>
<td>96 (18.1%)</td>
</tr>
<tr>
<td>75-84 years</td>
<td>1099 (44.4%)</td>
<td>291 (54.3%)</td>
<td>271 (51.2%)</td>
</tr>
<tr>
<td>85 years and over</td>
<td>774 (31.2%)</td>
<td>151 (28.2%)</td>
<td>162 (30.6%)</td>
</tr>
<tr>
<td>Referring party:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Med. clin.¹</td>
<td>410 (16.5%)</td>
<td>131 (24.4%)</td>
<td>149 (28.4%)</td>
</tr>
<tr>
<td>Hosp.²</td>
<td>1210 (48.8%)</td>
<td>270 (50.4%)</td>
<td>214 (40.5%)</td>
</tr>
<tr>
<td>N/f ref.³</td>
<td>527 (21.3%)</td>
<td>110 (20.5%)</td>
<td>123 (23.5%)</td>
</tr>
<tr>
<td>Other⁴</td>
<td>331 (13.4%)</td>
<td>25 (4.7%)</td>
<td>43 (8.1%)</td>
</tr>
<tr>
<td>Requests allocated to case management during the period</td>
<td>136 individuals</td>
<td>28 individuals</td>
<td>22 individuals</td>
</tr>
<tr>
<td>Requests allocated to:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing⁵</td>
<td>Data</td>
<td>328 (47.5%)</td>
<td>278 (51.2%)</td>
</tr>
<tr>
<td>Psychosocial⁶</td>
<td>unavailable</td>
<td>194 (28.1%)</td>
<td>175 (28.1%)</td>
</tr>
<tr>
<td>Occupational⁷</td>
<td>106 (15.3%)</td>
<td>90 (16.6%)</td>
<td></td>
</tr>
<tr>
<td>Other⁸</td>
<td>63 (9.1%)</td>
<td>–</td>
<td></td>
</tr>
</tbody>
</table>

1. Med. clin.: medical clinics
2. Hosp.: hospitals
3. N/f ref.: non-formal references, i.e. users, spouses, relatives, neighbours, etc.
4. Other: Info-Santé, Urgence détresse, curatorship, specialized rehabilitation centres, drug addiction, etc.
5. Nursing: Home nursing services
6. Psychosocial: psychosocial services. Note: the number of cases allocated to psychosocial services includes case management.
7. Occupational: home occupational therapy services
8. Other: other services such as physiotherapy, respiratory therapy, nutrition.
Sherbrooke’s medical clinics proportionately refer the fewest number of people, with 16.5% of referrals made, as compared to 24.4% in Granit and 28.4% in Coaticook. It must be noted that in the three sub-regions, roughly 20% of the requests are not made by health workers, rather they are made by the families or the neighbours or by seniors themselves. This data confirms the importance of single entry point tracking. The three main sources of referrals (medical clinics, hospitals and community references) account for over 86% of all requests involving seniors in Sherbrooke, 95% in all Granit and 92% in Coaticook.

**Granit** already had a help desk for home service requests located in the home support area of the CLSC in the Carrefour de la santé du Granit and there was already a nurse organizing all the work. As there was no clerical support staff in this department, individuals and health workers sometimes had to work through voice mail, which seniors disliked. So, a toll-free number was set up on a cell phone, which enabled the nurse to answer these calls on a priority basis, regardless of where she was at the time. This was not a practical solution for the individual taking the calls, so it was abandoned, and there was talk of hiring someone to answer the calls when the nurse was busy.

The traffic results in Granit during the first six months (May to November 2002) showed that 82.5% of the 536 seniors service requests concerned individuals 75 and over. These individuals were directed largely to nursing care in 47.5% of cases and psychosocial services (including case management) in 28.1% of cases. Similar to Sherbrooke, the main referring parties are medical environments (medical clinics and hospital departments) that refer 75% of requests concerning seniors. During this period, only 12 Prisma-7 questionnaires were completed and recorded in the SIC (I-CLSC), a result that demonstrates the poor performance of the single entry point process for tracking frail elders.

**In Coaticook**, the history of the implementation of the single entry point is characterized by the negotiation of a position when the Info-Santé service was transferred to Sherbrooke. As there was no implementation budget in either region, the search for opportunities helped create the current set-up. Three nursing care professionals receive and follow up on service requests for the elderly. Physically, the office is located next to the emergency department, near the reception area.

Traffic results indicate that, for the same period as in Granit (May to November 2002), there were 529 service requests made in Coaticook, the same number as in Granit, while the elderly population in Coaticook
is 30% lower than in Granit. The individuals referred were mostly women (67.7%), 82% of whom fell into the 75 and older category, which is exactly the same percentage as in Granit. Similar to the two other regions, medical partners were key: 70% of the elderly are referred by medical clinics or the hospital sector. The elderly themselves and their relatives or acquaintances account for 23.5% of referrals.

**Case management**

Greater importance is given to the body of data that directly relates to case management since it involves the introduction of a new service for the elderly (service coordination through case management), efficiency hinges on the use of common tools and the degree of co-operation between the case managers and other clinical workers and partners in the network (physicians, nurses, occupational therapists, nutritionists, social workers, physiotherapists, etc.). That being the case, after describing case management, the following section will examine the results of a focus group with health workers who deal with case managers.

In order to take into account the new case management mechanism implemented, we had to identify a series of variables: 1) the actual intervention defined essentially through professional activities; 2) the resources used, professional, material, information, i.e. the tools made available to case managers to do their work (CCC), which includes namely the SMAF and the ISP); 3) the population reached, i.e. to what extent the characteristics of the population served are in line with the pre-set access criteria. To do this, a self-administered questionnaire was given to a focus group of case managers followed by an interview (after the trial period). Data was collected from the clinical files of patients under case management at six-month intervals. We also used information collected in the SIC (or I-CLSC). Bear in mind that the objective was not to evaluate the quality of the case manager’s work, but rather to appreciate function’s implementation process. Consequently, the collection was done transversally.

The position of case manager was introduced a bit earlier in Sherbrooke (October 2001 vs. January and February 2002), but in all three regions, we noted a slowdown in the process granting the funding needed to provide the sub-regions with an adequate number of case managers. After the first nine months of operations, Sherbrooke had five full-time case managers (of the 19 needed), i.e. 26% of deployment, Granit had
two full-time case managers of the 3.5 needed, which is 57% of deployment, while in Coaticook, three social workers worked the equivalent of one day a week, i.e. 0.6 full-time equivalent of the 2.4 needed, which meant 25% of the expected deployment. Only Granit implemented wide scale set up of caseloads from the very beginning on the basis of patients already receiving home support services; in Sherbrooke and Coaticook, the caseloads were still not optimal after nine months.

As a result of the very different ISD implementation environment and due to the fact that the sub-regions enjoyed a degree of latitude in terms of organizing the new case manager position, it was introduced by drawing on the existing structure, as well as the strengths and dynamics already in play locally. No limitations were imposed in this respect; the sub-regions evaluated their own resources and restrictions, which resulted in different models.

During the implementation process, it became evident that the three sub-regions had organized the case manager function differently. In Sherbrooke, the consensus among the partners was to set up a new case manager team, which would report administratively to the Service Coordination Committee rather than to a specific institution. The rationale behind this choice was that the partners wanted to focus on the case managers’ inter-institutional role. The image that was most often evoked to describe the team’s position among the partners was that of “UN peacekeepers.” Since the stated objective is to track patients wherever they may be, the case manager does not report to any specific institution and is fully authorized to intervene in the various organizations. This team was initially made up of five women: three social workers or human relations officers, one nurse and one psychologist. These case managers have been working full time on case management since October 2001. New case managers gradually joined the team, bringing its number to 14 health workers in the beginning of 2004, of whom 11 are professionals from the psychosocial services and three are nurses.

In Granit and Coaticook, working professionals are largely those who become case managers: three have been appointed to do so (including two in Coaticook). In Granit, of the two case manager positions, one is a human relations officer converted to case manager, the other was specifically created for case management. The two case managers chosen are human relations officers or social workers. Later in 2003, a four-day position was opened and filled by a psychologist, which is a move towards multi-disciplinarity. In Coaticook, no position was created and
responsibility is shared by the two most experienced social workers on
the home-support team. Single discipline (social work) is the direction
favoured for this role. Later in 2003, an interest on the part of the other
social workers in the team became evident and case management was
shared among all the outreach workers in the team. However, others
have reservations about the efficiency of the mixed model. Develop-
ments on this point are expected in 2004. Table 5.5 summarizes the var-
ious case management models.

It is important to note that if the case management component is not
fully deployed, a whole series of elements are compromised as they
depend on it: fewer elderly individuals than anticipated will benefit from
an overall evaluation of their situation (multiclientele assessment tool
including SMAF) and service coordination. Theoretically, fewer users
will benefit from an Individualized Service Plan (ISP). In addition to the
case manager deployment criterion, the second aspect to be considered
concerns the primary condition that will enable optimized interventions,
i.e. the caseload. The average caseload recommended by the research
team was 45 cases per full-time equivalent (FTE).

After nine months of operation, Sherbrooke had provided service to
195 seniors with 25.4% of the personnel required (five FTE case manag-
ers of the 19.7 needed) in a single-role model. Le Granit had provided
service to 83 cases in a hybrid case-management model with 57.1% of
the personnel needed (two FTEs of the 3.5 needed) while Coaticook
reached 30 patients with 57.9% of the personnel needed, i.e. with 1.4
FTEs in case management of the 2.42 FTEs needed.

The development of the three sub-regions through these models
leads us increasingly to favour the hybrid model, which appears to
encourage the accommodation of the role of case manager with that of
other home support professionals in CLSC environments and particu-
larly with that of navigator. However, regardless of the model chosen,
the true value of the function will always depend on the role assigned to
these health workers among partners from all sectors (1st line, 2nd line,
3rd line, medical partners and pharmacies, private residences, commu-
nity organizations, etc.) in their role as “peacekeeper.”
Table 5.5
Case management models and practice characteristics

<table>
<thead>
<tr>
<th>Implemented case-management models</th>
<th>Sherbrooke</th>
<th>Le Granit</th>
<th>Coaticook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-role model:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Full-time case management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>playing a service-coordination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>role</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Undifferentiated patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i.e. eligible for case management)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hybrid model:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Full-time case management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>playing a service-coordination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>role and a professional role</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(but in a minor way)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Undifferentiated patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i.e. eligible for case management)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed model:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Part-time case management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>taking on multiple roles:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>service coordination and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>professional role</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Differentiated population:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>regular patients and patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eligible for case management</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Makeup</th>
<th>Multidisciplinary</th>
<th>Multidisciplinary</th>
<th>Unidisciplinary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case management team</td>
<td>Creation of a new team made up of 11 professionals from psychosocial services and 3 nurses.</td>
<td>Working as a case management sub-team within the CLSC home support team. Makeup: 2 professionals from social services and 1 psychologist</td>
<td>2 professionals from the social services of the home support team become case managers on an individual working basis.</td>
</tr>
<tr>
<td>Organizational ties</td>
<td>From 2001 to 2003: ties to an inter-organizational committee made up of the management of the CHUS, CLSC, CHSLDs and IUGS as well as community organizations sitting on the local Service Coordination Committee. Since 2003: the case managers brought into the CLSC</td>
<td>To the CLSC mission of the Granit institution</td>
<td>To the CLSC mission of the Coaticook institution</td>
</tr>
</tbody>
</table>
1. The adjustments are made on an annual basis according to ISQ projections based on data stretched from the 1996 census.
2. FTE: full time equivalent

<table>
<thead>
<tr>
<th>Composition</th>
<th>Sherbrooke</th>
<th>Granit</th>
<th>Coaticook</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of case managers</strong></td>
<td>From 5 full-time case managers (5 FTE)(^2) in 2002 to 14 FTE (since spring 2004) on needs evaluated at 19.4 FTE (in 2001), adjusted to 20.3 in 2003(^1).</td>
<td>From 2 full-time case managers (2 FTE) in 2002 to 2.4 FTE (since the fall of 2003) on needs evaluated at 3.5 FTE (in 2001). The number of case managers needed has been adjusted to 3.54 since 2003(^1).</td>
<td>From an equivalent of 0.6 FTE to 1.4 FTE on 2.42 FTE. The number of case managers has been adjusted to 2.7 FTE since 2003(^1).</td>
</tr>
<tr>
<td><strong>Model development</strong></td>
<td>Single-role model in the beginning evolving into a hybrid model in 2003.</td>
<td>Hybrid model from the start.</td>
<td>Mixed model currently in question.</td>
</tr>
</tbody>
</table>
Professional case-management activities

Before deploying the ISD system, an outside consultant conducted a survey of the literature on the role of the case manager in Sherbrooke. The essential elements were incorporated into a document produced by the local Service Coordination Committee of Sherbrooke. It states that case management is a means of making health workers accountable with respect to a responsibility to develop an ISP in conjunction with an overall needs assessment, ensuring that the services are provided correctly and readjusted as the patient’s condition changes, and protecting the interests of the patient and his/her family. In short, the emphasis on adapting services to needs rather than adapting people to the current services. The duties of the case managers are categorized as direct interventions (overall assessment, service planning, emergency interventions) and indirect interventions (service coordination and termination activities). These activities are coded in the SIC (or I-CLSC). Tables 5.6 and 5.7 show the results of the first two data collections in the three sub-regions as to professional activities (procedures) and the use of tools (SMAF and ISP) by case managers.

While the clinical consensus procedures account for between 43% and 58% of the intervention codifications in the SIC in Sherbrooke and Coaticook, Granit collected only 14% of procedures on average in this same activity category. Granit’s case managers coded 52% of case follow-ups on average while in Sherbrooke, no more than about 14% of this type of intervention was coded. The reason for these differences is more a reflection of the rules of codification of an intervention in the SIC than the actual procedure. With the advent of case managers, the research team asked to provide codification for service coordination (which is generally not considered an intervention), identify the partners with which the coordination work would be carried out and add a biennial or annual re-evaluation code. The outcomes following this request were poor to good. The interpretation of the data was also influenced by another factor: because of the grouping of the missions in the institutions in rural environments, the service coordination could only be determined in the SIC if it was carried out with outside partners (community organizations, for instance) while in Sherbrooke, all partners were considered outside partners since services were provided by several institutions. This experience leads us to believe that given the amount of time allotted by the various health workers, managers and record managers to the SIC data, it would have been interesting to be
Table 5.6  
Case-management outcomes: professional activities (data collected in the SIC)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of procedures</td>
<td>• Total number of procedures</td>
<td>274</td>
<td>1551</td>
<td>256</td>
<td>507</td>
<td>51</td>
<td>300</td>
</tr>
<tr>
<td>Assessment of patient needs</td>
<td>• Assessment of patient needs</td>
<td>55 (20.1%)</td>
<td>170 (11%)</td>
<td>21 (8.2%)</td>
<td>27 (5.1%)</td>
<td>–</td>
<td>23 (7.6%)</td>
</tr>
<tr>
<td>Ongoing assessment</td>
<td>• Ongoing assessment</td>
<td>17 (6.2%)</td>
<td>89 (5.7%)</td>
<td>–</td>
<td>1 (0.2%)</td>
<td>1 (2.0%)</td>
<td>1 (0.3%)</td>
</tr>
<tr>
<td>Re-assessment (annual or biennial)</td>
<td>• Re-assessment (annual or biennial)</td>
<td>–</td>
<td>7 (0.5%)</td>
<td>1 (0.4%)</td>
<td>4 (0.8%)</td>
<td>6 (11.8%)</td>
<td>–</td>
</tr>
</tbody>
</table>
Table 5.6 (suite)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sherbrooke</th>
<th>Le Granit</th>
<th>Coaticook</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 59)</td>
<td>(n = 136)</td>
<td>(n = 52)</td>
</tr>
<tr>
<td><strong>Rôles-Actions (actes)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Clinical consensus</td>
<td>127 (46.3%)</td>
<td>754 (48.6%)</td>
<td>42 (16.4%)</td>
</tr>
<tr>
<td>(in line with service planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and coordination)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Follow-up</td>
<td>38 (13.9%)</td>
<td>239 (15.4%)</td>
<td>137 (53.5%)</td>
</tr>
<tr>
<td>• Psychosocial</td>
<td>37 (13.5%)</td>
<td>55 (21.5%)</td>
<td>11 (2.1%)</td>
</tr>
<tr>
<td>and educational intervention</td>
<td>26 (1.7%)</td>
<td>57 (10.8%)</td>
<td>89 (16.9%)</td>
</tr>
<tr>
<td>• Steps</td>
<td>258 (16.6%)</td>
<td></td>
<td>89 (16.9%)</td>
</tr>
<tr>
<td>• Support to caregivers</td>
<td>8 (0.5%)</td>
<td>1 (0.2%)</td>
<td></td>
</tr>
<tr>
<td>• Emergency situation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average number of procedures</strong></td>
<td>4.9 procedures</td>
<td>11.4 procedures</td>
<td>4.2 procedures</td>
</tr>
</tbody>
</table>

a Frequency (percentage)
Table 5.7
Case-management outcomes: the use of tools (SMAF and ISP) – data collected in the case files

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Sherbrooke</th>
<th>Le Granit</th>
<th>Coaticook</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Collection #1 (Jan. 11, 2002) (n = 59)</td>
<td>Collection #2 (June 29, 2002) (n = 136)</td>
<td>Collection #1 (May 6, 02) (n = 52)</td>
</tr>
<tr>
<td>SMAF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total SMAFs</td>
<td>57/59 (96.6%)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>95/136 (69.9%)</td>
<td>46/52 (88.5%)</td>
</tr>
<tr>
<td>Done by a case manager</td>
<td>18/57 (31.6%)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>52/95 (54.7%)</td>
<td>17/46 (36.9%)</td>
</tr>
<tr>
<td>ISP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of an IP-ISP</td>
<td>48/59 (81.4%)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>64/136 (47.0%)</td>
<td>34/52 (65.4%)</td>
</tr>
<tr>
<td>Done by a case manager</td>
<td>36/48 (75.0%)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>39/64 (60.9%)</td>
<td>20/34 (58.8%)</td>
</tr>
<tr>
<td>Services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average number of planned services in the IP-ISP ± standard deviation</td>
<td>4.6 ± 1.97&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.44 ± 2.19</td>
<td>2.3 ± 1</td>
</tr>
<tr>
<td>(Spread)</td>
<td>(0 to 10)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>(0 to 12)</td>
<td>(0 to 4)</td>
</tr>
<tr>
<td>No service recorded</td>
<td>4/48 (8.3%)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2/64 (3.1%)</td>
<td>1/34 (2.9%)</td>
</tr>
<tr>
<td>1-2</td>
<td>7/48 (14.6%)</td>
<td>25/64 (39.1%)</td>
<td>18/34 (53%)</td>
</tr>
<tr>
<td>3-4-5</td>
<td>23/48 (47.9%)</td>
<td>28/64 (44.1%)</td>
<td>15/34 (44.1%)</td>
</tr>
<tr>
<td>6-7-8</td>
<td>13/48 (27.1%)</td>
<td>7/64 (10.9%)</td>
<td>–</td>
</tr>
<tr>
<td>9 and up</td>
<td>1/48 (2.1%)</td>
<td>2/64 (3.1%)</td>
<td>–</td>
</tr>
</tbody>
</table>

<sup>a</sup> Frequency (percentage)  
<sup>b</sup> Average ± Standard deviation  
<sup>c</sup> (Spread)
able to rely on this information system to provide reliable data on the new case-management function. Unfortunately, this was only partly possible. Considerations of accountability at the national level put pressure on the various stakeholders to make the codifications more reliable. In so doing, part of the case management role was not considered as an intervention and the SIC (in its current version) will not be able to account for all professional activities.

The proportion of needs assessments in role-action codifications account for the number of multiclientele assessments (including SMAF) administered by case managers for patients who had not yet been assessed or for whom the assessment had to be redone. As such, between 5% and 20% of cases received an assessment codification while 70% to 97% of client cases had an assessment in their clinical case file. We noted that a greater proportion of ISPs was done by case managers. However, the greater the caseload, the fewer written ISPs in the case files. In the three sub-regions, we noted that interventions arranged with family caregivers were equivalent in significance, since 16% of interventions on average are arranged with caregivers.

**Computerized clinical chart (CCC)**

When the data collection was done the second time, the CCC was in the pre-implementation stage, which did not facilitate the work of the case managers or the adaptation of the other professionals in the network, especially in urban environments. Indeed, to successfully obtain all the relevant information on the person tracked, case files had to be dealt with on an individual basis with all the institutions. This element limited efficiency not only for case managers, but also for the health workers who use case management and had to rely on phone communications (often through voice mail) and faxes to be informed on the progress of the various elements in the shared clients case files. This created dissatisfaction on both sides. This dissatisfaction came to light during the focus group interviews with network health workers.

**Patients benefiting from case management**

Each sub-region appropriated the area of case management by determining the access criteria based on the general guidelines stemming from the recent experiments and research carried out in Québec during the 90s. The central idea is to reach the elderly persons experiencing medium to serious loss of autonomy in need of service coordination,
which implies that there are at least two services to be coordinated. The formulation of the access criteria by each sub-region helped introduce them according to a gradual deployment of case management workers and the updating of the single entry point responsible for tracking frail individuals and for referring them to the right place. The criteria were essentially the same (i.e. having a medium loss of autonomy typified by an SMAF score over 15), but some procedures were different. For instance, making case management available to the elderly with psychological (or psychiatric) problems (like Granit) or to exclude them specifically (like Sherbrooke). The Granit and Coaticook sub-regions chose to make patients under 65 with a geriatric profile eligible, which Sherbrooke did not choose to do, mostly due to case-manager understaffing.

Table 5.8 shows the main characteristics of the patients who benefited from the service during the case managers’ first nine months in operation in the three study sub-regions. Overall, male and female patients in rural environments were divided more or less equally, but there were more female patients (66.2%) in Sherbrooke. The average age is between 78 and 80 years old, varying from 61 to 102. At the time case management began for the patients, between 75% and 88% of them were living at home while 10% to 16% made their home in private residences. In the three sub-regions, 75 to 84 year-olds represented approximately half of the patients. Between 36% and 54% live as couples and, depending on the sub-regions, between 16% and 26% of patients live alone. The main referring parties for case management remain the CLSC (particularly home support services). Second line specialized services (hospitals and the Geriatric Institute) also make some of the referrals. Granit is where physicians do the least amount of referrals to case management, which is in line with the results of our physician questionnaire. It is also the sub-region where patients and relatives do the greatest number of referrals (18.2% in Granit, 1.5% in Sherbrooke and 6.7% in Coaticook).

As for loss of autonomy of people under case management, Granit stood out in terms of average SMAF score: 20.3 in Granit while Sherbrooke and Coaticook respectively scored an average of 31.2 and 32.4. We noted a lot of missing data and SMAF scores under 15. Among the main health problems, dementia (cognitive disabilities) is the most common diagnostic, along with cardiac and respiratory diseases in the three sub-regions. Psychological and psychiatric problems also accounted for a significant share. Cancer and stroke are often noted in Coaticook and
Table 5.8
Description of patients in case management after 9 months of operation in the three sub-regions

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Sherbrooke After 9 months As of June 29, 2002 (n = 195)</th>
<th>Granit After 9 months As of Nov.1, 2002 (n = 83)</th>
<th>Coaticook After 9 months As of Nov. 9, 2002 (n = 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| • Women               | 129 (66.2%)
a       | 45 (54.2%)
a     | 15 (50%)
a       |
| **Age**               |                                                        |                                                 |                                                   |
| • Overall average age | 80.6 ± 7 b                                 | 78.8 ± 7.5 b                                   | 78.7 ± 8.3 b                                    |
| • < 65 years          | 2 (1%)                                   | 5 (6%)                                         | 1 (3.3%)                                         |
| • 65-74 years         | 36 (18.4%)                                 | 15 (18.1%)                                     | 6 (20%)                                          |
| • 75-84 years         | 96 (49.2%)                                 | 46 (55.4%)                                     | 17 (56.7%)                                       |
| • 85 years and over   | 57 (29.2%)                                 | 17 (20.5%)                                     | 6 (20%)                                          |
| • Missing data        | 4 (2.2%)                                   | –                                              | –                                                 |
| **Referring parties** |                                                        |                                                 |                                                   |
| • CLSC referrals      | 141 (72.3%)                                 | 54 (65.1%)                                     | 20 (66.7%)                                       |
| • Hospitals           | 17 (8.7%)                                   | 8 (9.6%)                                       | 2 (6.6%)*                                        |
| • Sherbrooke Geriatric University Institute | 18 (9.2%) | 2 (2.4%) | – |
| • Private medical clinics | 14 (7.2%) | 2 (2.4%) | 2 (6.7%) |
| • Patients themselves or their relatives | 3 (1.5%) | 15 (18.2%) | 2 (6.7%) |
| • Other stakeholders (curator, banker etc.) | 1 (0.6%) | 2 (2.4%) | 4 (13.3%) |
| • Missing data        | 1 (0.6%)                                   | –                                              | –                                                 |

a Frequency (percentage)
b Average ± standard deviation
* Accounts for the referrals from the emergency in Coaticook and the CHUS
### Indicators

<table>
<thead>
<tr>
<th>Case-management eligibility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Not eligible</td>
</tr>
<tr>
<td>10 (5.1%)</td>
</tr>
<tr>
<td>• Refusal by patient or caregiver</td>
</tr>
<tr>
<td>17 (8.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SMAF Score:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average ± standard deviation of the SMAF score</td>
</tr>
<tr>
<td>31.2 ± 13.1 b</td>
</tr>
<tr>
<td>20.3 ± 11.1 b</td>
</tr>
<tr>
<td>32.4 ± 14.1 b</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Missing Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>43 (22.1%)</td>
</tr>
<tr>
<td>12 (14.5%)</td>
</tr>
<tr>
<td>5 (16.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt; 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 (8.2%)</td>
</tr>
<tr>
<td>21 (25.3%)</td>
</tr>
<tr>
<td>3 (10%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>15-25</th>
</tr>
</thead>
<tbody>
<tr>
<td>39 (20.0%)</td>
</tr>
<tr>
<td>29 (34.9%)</td>
</tr>
<tr>
<td>5 (16.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>26-35</th>
</tr>
</thead>
<tbody>
<tr>
<td>43 (22.1%)</td>
</tr>
<tr>
<td>10 (12%)</td>
</tr>
<tr>
<td>5 (16.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>36-45</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 (15.4%)</td>
</tr>
<tr>
<td>11 (13.3%)</td>
</tr>
<tr>
<td>7 (23.3%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>46-55</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 (10.7%)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>4 (13.3%)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>&gt;55</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 (1.5%)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1 (3.3%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main health problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strokes and TCI*</td>
</tr>
<tr>
<td>46 (23.6%)</td>
</tr>
<tr>
<td>9 (10.8%)</td>
</tr>
<tr>
<td>8 (26.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dementia and cognitive disabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>86 (44.1%)</td>
</tr>
<tr>
<td>23 (27.7%)</td>
</tr>
<tr>
<td>11 (36.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parkinson’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 (4.6%)</td>
</tr>
<tr>
<td>4 (4.8%)</td>
</tr>
<tr>
<td>1 (3.3%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diabetes (1 and 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 (15.9%)</td>
</tr>
<tr>
<td>2 (2.4%)</td>
</tr>
<tr>
<td>9 (30%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ASVD-ASCD*</th>
</tr>
</thead>
<tbody>
<tr>
<td>38 (19.5%)</td>
</tr>
<tr>
<td>25 (30%)</td>
</tr>
<tr>
<td>12 (40%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SCOLD*</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 (16.4%)</td>
</tr>
<tr>
<td>17 (20.5%)</td>
</tr>
<tr>
<td>4 (13.3%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cancers</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 (6.2%)</td>
</tr>
<tr>
<td>8 (9.6%)</td>
</tr>
<tr>
<td>6 (20%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fractures (hips, arms, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 (14.4%)</td>
</tr>
<tr>
<td>3 (3.6%)</td>
</tr>
<tr>
<td>5 (16.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensory problems:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deafness</td>
</tr>
<tr>
<td>17 (8.7%)</td>
</tr>
<tr>
<td>2 (2.4%)</td>
</tr>
<tr>
<td>3 (10%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visual disturbances</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 (14.4%)</td>
</tr>
<tr>
<td>14 (16.9%)</td>
</tr>
<tr>
<td>6 (20%)</td>
</tr>
</tbody>
</table>
**INTEGRATED SERVICE DELIVERY TO ENSURE PERSONS’ FUNCTIONAL AUTONOMY**

- Psychological or psychiatric problems | 36 (18.5%) | 21 (25.3%) | 6 (23.3%)
- Cognitive impairment | 4 (2.1%) | – | –

*a Frequency [percentage]*

*b Average ± standard deviation*

* TCI: Transitory cerebral ischemia

* ICT: Ischémie cérébrale transitoire

* ASVD-ASCD: Arteriosclerosis vascular/cardiac disease

* SCOLD: Severe chronic obstructive lung disease

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Sherbrooke As of June 29, 2002 (n = 195)</th>
<th>Granit As of Nov. 1, 2002 (n = 83)</th>
<th>Coaticook As of Nov. 9, 2002 (n = 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Family physicians:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Patients with family physicians</td>
<td>186/195 (95.4%)</td>
<td>78/83 (94%)</td>
<td>30/30 (100%)</td>
</tr>
<tr>
<td>• Number of family physicians involved in case management</td>
<td>90/177 (50.8%)¹</td>
<td>14/20 (70%)¹</td>
<td>10/10 (100%)¹</td>
</tr>
<tr>
<td><strong>Residence:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Home</td>
<td>156 (80.0%)</td>
<td>73 (88%)</td>
<td>23/30 (76.7%)</td>
</tr>
<tr>
<td>• Lives in a private residence</td>
<td>31 (15.9%)</td>
<td>8 (9.6%)</td>
<td>3/30 (10%)</td>
</tr>
<tr>
<td>• Other</td>
<td>3 (1.5%)</td>
<td>2 (2.4%)</td>
<td>4/30 (13.3%)</td>
</tr>
<tr>
<td>• Missing data</td>
<td>5 (2.6%)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Lifestyle:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lives alone</td>
<td>41 (21.0%)</td>
<td>22 (26.5%)</td>
<td>5 (16.6%)</td>
</tr>
<tr>
<td>• Lives with a spouse</td>
<td>70 (36.0%)</td>
<td>45 (54.2%)</td>
<td>11 (36.7%)</td>
</tr>
<tr>
<td>• Lives with a child or sibling</td>
<td>40 (20.5%)</td>
<td>5 (6.1%)</td>
<td>5 (16.7%)</td>
</tr>
<tr>
<td>• Lives with someone else</td>
<td>41 (21.0%)</td>
<td>8 (9.6%)</td>
<td>8 (26.7%)</td>
</tr>
<tr>
<td>• Other</td>
<td>3 (1.5%)</td>
<td>3 (3.6%)</td>
<td>1 (3.3%)</td>
</tr>
</tbody>
</table>

¹ There are 10 family physicians in Coaticook, 20 in Le Granit and 177 in Sherbrooke.
Sherbrooke but not in Granit, which has a greater number of elderly individuals with psychological or psychiatric problems.

Lastly, we noted that almost all case management patients have a family physician. However, this does not mean that medical follow-up and case management overlap. In Sherbrooke, case managers systematically write a letter to family physicians as soon as a patient is assigned with a case manager, which represents a level of contact much closer to reality. And the share of family physicians involved in case management through their patients varies depending on the regions. All family physicians in Coaticook practice both in private clinics, at the CHSLD and at the emergency in Coaticook, which means they are highly involved with elderly patients, wherever they may be. So, after only nine months, all family physicians had at least one of their patients under case management. The situation is different in Granit, where most physicians practice only in individual offices throughout the sub-region. After nine months, 70% of them had at least one patient in case management. Lastly, Sherbrooke reached no more than 50.8% of physicians after nine months, but bear in mind that this sub-region had only 25.4% of the staff needed during the period. In addition, patients are divided among a large number of physicians: 90 different physicians monitored 195 patients, which accounts for an average of 2.2 patients per physician. In comparison, Granit’s average was six patients per physician and Coaticook’s was three patients per physician.

The portrait of patients taken after nine months helped us to identify the elements that needed improvement in the identification process and management of the target patients for ISD. In Sherbrooke, the implementation of the single entry point was not completed, which did not promote the management of the patients already targeted. For some time, the case managers were the ones who assumed the single entry point role (assessment and triage), which created a misperception among partners. Indeed, the partners believed that the patients under case management were not serious enough. In fact, among the patients under management, only 8% of the case files showed an SMAF score under 15. In Granit, it was the loss of autonomy as evaluated by the SMAF that was insufficient since a quarter of the cases showed scores below 15. In this region, a significant proportion of patients under case management during the first nine months were those who had functional autonomy, but demonstrated little social integration due to psychiatric problems. The research team had to identify this element as requiring
realignment. Lastly, in Coaticook, the weak point was that few people were reached. Indeed, if Coaticook had reached a proportionately equivalent number of elderly individuals to the ones reached in Granit, they would have had to record 58 elderly individuals in case management rather than 30. In the three sub-regions, we identified the lack of participation of family physicians in tracking and referring elderly persons whose condition and degree of loss of autonomy they are very familiar with. Two other institutions (IUGS and CHUS) referred relatively few patients considering the high number of frail elderly people using their services. It is, however, important to underline that in Sherbrooke, during this initial period, the local agents did not want to involve all partners on a large scale for fear that the five case managers working to meet all the needs would be instantly overloaded.

Outcomes of the focus group interviews conducted among health workers

The existence of a network hinges on the interaction of its members. For case management to update its inter-organizational goals, health workers must work together. With this in mind, we asked institutions and organizations for permission to conduct focus group interviews with health workers with case management experience. Six interviews were conducted at the time the sub-regions were approximately in their ninth month of case management operations: four interviews were held in Sherbrooke, one in Granit and one in Coaticook. The interviews were recorded, transcribed and analyzed. The interview plan was based on specific themes and announced before the meeting. Based on it, we wanted to shed light on the health workers’ experience with case managers. Accordingly, we addressed the participants’ understanding of the ISD system model and their support for it, the organizational context at the time of the interview, actual co-operation, the added value of case management for the elderly, the health workers and their teams and, lastly, their expectations.

To make sure that we brought together health workers who had significant interaction with case managers (inclusion criterion) while excluding people already interviewed as part of our research (exclusion criterion), we proceeded through case managers, whom we asked to identify, on an individual basis, 10 or so health workers whom they had often called on since beginning their work by ascending order of importance. No restrictions were applied with respect to professions, as this
identification met the secondary goal of identifying the interaction network of case managers. A second list was requested in order to identify those who had been important in fulfilling their role as case managers even if there were not many interactions. From the outset, we excluded family physicians and geriatricians, who were already participating in another data collection, as well as records managers.

Table 5.9 shows the characteristics of participants. In Sherbrooke, the majority are women, most of whom are over 30 with significant professional experience with the elderly (on average 13.9 years) and a high level of education (undergraduate or graduate degree for 82% of them). The portrait of the group in Granit shows that all the participants are women, most of them in the 30 and over age group. Four of them have three to four years of experience with the elderly while the other two have 19 to 24 years. Their level of education varied: two with high school diplomas, two with college diplomas and two with undergraduate degrees. The portrait of participants in Coaticook shows a majority of women, most of whom are over 30 years old. Their professional experience with the elderly varies: one individual has 29 years of experience, another has 15, three others have between five and eight years of experience and one young professional has been working for six months.

Sherbrooke is where the most serious problems involving coordination with case managers appeared. Apparently their role overlapped that of navigators and outreach workers. It likely would have been necessary to improve the planning for this implementation, for instance through better consensus work with clinicians, which was noted as being weak in the three sub-regions. In Sherbrooke, the interactions between case management and 1st line services (CLSC – home support) revealed overlapping roles, which forced professionals to clarify “who does what” on a case-by-case basis. This led to duplication, frustration, many telephone calls, etc. In short, people had to deal with conflicting roles. The more the role bordered on that of a case manager, the more it was necessary to negotiate the common task area. The CLSC navigators and the outreach workers in the day program were the ones who had the most difficulty in this situation, while those in the specialized services of the Geriatric University Institute mainly expressed concern and questions. Overall, the case managers were blamed for presenting the latter with a fait accompli (e.g. the assessment had been done by the case manager who asked them to negotiate the needed support services with the CLSC Comité d’allocation des services - Service Allocation Committee),
preventing them from exercising their professional judgment about a shared patient or demonstrating an attitude that reflected a position of authority over them. It was clear that at the CLSC, the ISD model was only partially understood, since the health workers were not invited to the preliminary consensus on the ISD implementation, which could have resulted in a biased understanding of the situations experienced. As for the other professionals (nurses, occupational therapists, physiotherapists), due to the fact that their roles were complementary, the co-operation revealed many positive elements.

Only the CHUS health workers seemed to have remembered accurate descriptions of ISD systems and case management, even though they had little contact with these elements. This lack of experience was

<table>
<thead>
<tr>
<th>Participation</th>
<th>Sherbrooke</th>
<th>Granit</th>
<th>Coaticook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of invitations</td>
<td>25 invitations</td>
<td>6 invitations</td>
<td>7 invitations</td>
</tr>
<tr>
<td>Number of participants</td>
<td>22 participants</td>
<td>6 participants</td>
<td>7 participants</td>
</tr>
<tr>
<td>Organizational ties of participants</td>
<td>CHUS: 8 participants</td>
<td>CH^2 Granit: 2 participants</td>
<td>CHUS: 2 participants</td>
</tr>
<tr>
<td></td>
<td>CLSC: 5 participants</td>
<td>Day program: 1 participant</td>
<td>IUGS (UCDG^3): 1 participant</td>
</tr>
<tr>
<td></td>
<td>IUGS: 5 participants</td>
<td>Volunteering centre: 1</td>
<td>CRE: 1 participant</td>
</tr>
<tr>
<td></td>
<td>CHSLD^1: 4 participants</td>
<td>Housekeeping service: 1</td>
<td>Day program: 1 participant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Volunteer centre: 1</td>
</tr>
</tbody>
</table>

Professional identity

<table>
<thead>
<tr>
<th>S. W. or h.r.a.:</th>
<th>7 participants</th>
<th>3 participants</th>
<th>4 participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse:</td>
<td>0</td>
<td>1 participant</td>
<td>0</td>
</tr>
<tr>
<td>Occup. &amp; Physiotherapist</td>
<td>5 participants</td>
<td>3 participants</td>
<td>0</td>
</tr>
<tr>
<td>Other (coord. or man.): 2 participants</td>
<td>3 participants</td>
<td>0</td>
<td>2 participants</td>
</tr>
</tbody>
</table>

Absent

| CRE | CLSC home service | Regional services (IUGS, CHUS, CRE) | CLSC home service |
| Transport adapté | Coop de services à domicile | Transport adapté | Paratransit |

| Organismes comm. | 1 participant | 0 |
| Coop de services à domicile | 1 participant | 2 participants |

1. CHSLD Estriade
2. UCDG: unité de courte durée gériatrique (short-term geriatric unit)
3. CH: Centre hospitalier (hospital centre)
mostly due to the fact that contacts with case managers were spread over a large number of different people in the CHUS, which “diluted” exposure to case management. The CHUS health workers expected a lot from the case management deployment in terms of improving patient information exchanges patients during hospitalization and post-hospitalization follow-up.

As for the various health care teams in the Geriatric University Institute, despite an accurate theoretical understanding of the model, the health workers felt they did not have a solid understanding of the manager’s role, their experience tended to indicate a social-support role while they believed it was limited to service coordination (brokering). They believed that case managers could not fill this coordination role if they were not on site to take advantage of the “momentum” that stems from managing in specialized care environments. Their major expectation with respect to case management was that this new health worker would be in a position to exert a real influence on waiting lists for the elderly, something that is not very realistic in their view.

In Granit, emphasis was on lack of cooperation among health workers from the community sector and institutions. Apparently, lack of communication is at the heart of what health workers experience, regardless of their sector. The elderly also experience this problem. They cannot deal with voice mail or automated responses, particularly as they do not know which type of professional or service they should turn to. The institution health workers felt they were less informed than those in the CLSC mission as to the various elements of the RISPA. Meanwhile, community services deplored an operating mode that was not specific to case managers but prevailed throughout the institution. Turnover among nursing and social professionals is high. Accordingly, they are hoping for the establishment of better case file follow-up with them so that they do not constantly have to look for the individual in charge of a patient. Since the SIGG is not deployed in community organizations, the only way to get information is over the phone. The other element mentioned related to the implementation of a real consensus (concertation) between health workers for the elderly, whatever their organizational tie. The community organizations felt they were unrecognized by institution professionals and they would like to avoid having to inform all contact persons on a case-by-case basis.

With regard to case management, people were on the whole favourable to the establishment of an inter-organizational monitoring role,
consistent over time, for their elderly patients. However, few people were able to make a distinction between the Prisma-7 risk factors and the case management access criteria. The message understood by the community sector was different than the one understood by institution health workers, which led to confusion during the interview. This confusion definitely stemmed from the fact that their respective roles were associated with a tool: the tracking role expected of the community sector was mainly associated with the Prisma-7 and the referent role expected of the internal sector was associated with the case management clinical access criteria. We were surprised to discover that hospital missions were the facilities in which Prisma-7 was best established. Indeed, referrals to home support now come with a Prisma-7, which allows the professional to lay emphasis on others elements of the service request. For instance, patients who are often hospitalized, who have a weak family network and score between 5 and 7 on Prisma-7 demonstrate a set of circumstances that justifies referring them to case management. The institution health workers would have liked to know what was expected of them with respect to the implementation of the network and would have appreciated an update on the information during deployment.

Comments also showed that part of the single entry point function was not updated. For instance, service requests for the day program come from different health workers and not from the single entry point. The information function for the general population regarding all elderly services is not assumed entirely by the single entry point. As a result, health workers cannot give seniors or their relatives the number for the single entry point that will allow them to find answers by talking to an actual person (not through voice mail). As they mentioned, “nobody knows that there is a single entry point.”

In Coaticook, similar to Granit, the “information” function of the single entry point for the general population with regard to elderly services was not fully updated either. In fact, the community organizations are the ones trying to document themselves better on all services (institutions, community organizations, private residences) to be able to correctly refer calls from seniors. Similar to Granit, health workers confuse Prisma-7 risk factors and case management access criteria. For CHUS health workers, Prisma-7 also appears to be a tool that is not adequately linked to the continuity record used by the CHUS in its dealings with all the CLSCs in the region. In general, health workers were not part of the consensus process prior to the RISPA implementation. Even when their
management was involved at the Service Coordination Committee, they were not informed of the content of discussions. This situation led to significant deficiencies in the case management implementation as described below.

Some health workers wonder if there is a rule concerning access to case management since, in their experience, there appears to be little clinical uniformity among the various case management patients. This element may be linked to the fact that there is no process for selecting eligible individuals for case management in Coaticook. It is the case managers who decide to put their client in case management after carrying out an evaluation or when they have a better understanding of the individual’s situation. So it is possible that, without a centralized admission process like a “multi” meeting for instance, cases do not have similar profiles that could be considered as case management, at least in the view of the partners. Short-term health workers also complain about inadequate coordination with case managers since duplication is observed. They try to be on the lookout for duplication in order to prevent it.

Another comment emphasizes that “the transition is not easily achievable for (case managers in) Coaticook, when you’re a social worker, and suddenly overnight you become a case manager, without knowing what more you are doing (...) issues arise, anyway I have questions.” The vague or ill-defined nature reflected by regional partners is also conveyed by Coaticook’s community sector since, after more than nine months of case-management implementation, the main community partners of the institution did not know who the case managers were. Nor did they know that Coaticook had established a mixed case-management model (plurality of roles with mixed patients, of which only a portion is in case management). They believed, incorrectly, that if they managed to identify the case managers, it would be easier to identify the patients in case management. Some felt that it would be interesting if the managers of the institutions involved discussed the linking mechanisms rather than "us, the health workers in the field, being forced (to do it)." They believe that they would need more detailed information on case management in particular and on the timing of the SIGG phase-in in Coaticook, as they did not know it had been completed. The level of co-operation requested by case managers on the part of the other health workers to establish an ISP seems minimal and is carried out over the phone: “I think that my involvement was strongest when I shared information. I suggested things to him, but he never mentioned what he planned to set up." Or
even: “Really participating in the (case) management per se, no, we don’t do that.” At the Institute, the rule is not to call case managers to multi meetings. The team’s outreach worker is the one who submits a report. Despite these coordination difficulties, participants say that they believe in case management and could recall situations where case management did add value.

On the whole, the main variables that come into play in the implementation of a service-integration model such as this one can be summarized as follows:

- In the three sub-regions, the state of the preliminary consensus with health workers (clinical level) was weak, as reflected by their understanding of the linkage between all the components into a coherent whole (they did not know the functional links between them) and their ability to fully participate. The state of knowledge of the case-management model and the single entry point was partial in most institutions. In Sherbrooke, the CLSC and the day program show a perception of the global model and case management deviating from the guidelines that all the organizations involved developed together. Accordingly, many believe that the PRISMA research project is the only promoter and that case management in an intervening role (and not as an exclusive broker) could not be viable given the many examples of duplication occurring with the CLSC navigators. In the other Sherbrooke institutions, the difference of opinion was not as marked. However, it was obvious that coordination with the health care teams needed to be improved and that clarifications on the designated areas of intervention were required. In the regions, the community sector had a hard time distinguishing between regular social workers and case managers. The fact that in the regions, outreach workers had become case managers, often through the transfer of their position, made things more difficult all the more so when case managers handled both “regular” cases and case management patients. Indeed, the mixed model does not readily allow the partners to make a clear distinction between the roles and the patients. As proof, bear in mind that none of the focus group participants knew the identities of the case managers in Coaticook. In Sherbrooke, the single entry point was not implemented at the time of the meetings with the groups, although it would have been better had it been in operation before the case management updating. In the regions, the single entry point was quickly implemented, building on what was already established, but the new
functions on centralizing information and service requests were not all operating.

- As for the tools (SMAF and ISO-SMAF, ISP, CCC-SIGG), the experience reported shows that:

  1. SMAF and ISO-SMAF profiles are well integrated into the institutions, but community organizations still do not know what these tools are.

  2. There is little integration of the ISP into practices in the three sub-regions.

  3. In Sherbrooke, the SIGG was only deployed in the regional services when the focus groups met. We noted that it had been a challenge for Granit's health workers who had to deal with the inconveniences of being designated a test site. The SIGG was operational in Coaticook at the time of the interview, but most health workers were not aware of it. The only person who had seen a demonstration of it (in Sherbrooke) spoke about the SIGG advantages and qualified the experience as “fascinating.”

  4. Despite the fact that the original model had only identified the three previously mentioned tools to support interventions across and among organizations, we introduced the Prisma-7 questionnaire as a tool of considerable interest in supporting the continuity of services, particularly as health workers mentioned it spontaneously. Its impact was twofold. On the one hand, it was very useful in the referral process for home support and case management from the hospital sector (in Granit). On the other hand, in the three sub-regions, there was confusion between the Prisma-7 questions and the case management access criteria, which shows the degree of ownership over the various components by the clinical sector. As for the use of Prisma-7 outside institutions, the first attempts carried out by community organizations were not very successful. The reasons mentioned for the lack of success relate to the uneasiness expressed by volunteers in using the questionnaire with seniors. Indeed, the latter tend to refuse to sign the consent needed to communicate the Prisma-7 information to the CLSC. In the three sub-regions, Prisma-7 seems associated with the role that the community sector can fill in tracking the frail elderly in the community because of its special position with relation to them, some
of whom are not known to the services. Despite the difficulties arising from the context of using the tool, their willingness to fully participate was felt.

- In general, the single entry point and case management had the support of health workers even though they were not fully acquainted with the model and its operating procedures and despite the linkage problems experienced, which were mainly due to role conflicts between outreach workers, navigators and case managers. When there had not been sufficient interaction to evaluate the quality of the coordination, support for case management was largely motivated by their observation of a need for tighter monitoring of the frail elderly who are hospitalized and by their understanding that this new health worker would have the latitude needed to track individuals wherever they may be, particularly after a stay in 2nd line services. In the regions, the institution workers (day programs, hospital missions) had an opportunity to note the positive repercussions following the implementation of case management, which legitimized unambiguous support on their part. For community organizations, establishing a real difference in the role was more difficult. Indeed, as (CLSC) case managers had no shared scope of concern, but rather a complementary role with community organizations, they could have established their difference through meetings called by them to agree on an ISP. However, since the process leading to an ISP is completed essentially through phone contacts, the community sector does not really have any way to distinguish between the outreach worker and the case manager, particularly as the community sector does not have access to the computerized clinical chart. Given the fairly mediocre conditions in which the community sector has had to develop to integrate case managers, we feel that the amount of support is favourable. The introduction of this new role no doubt meets a real need.

- The co-operative relationship and the ways of maintaining these relations are two key dimensions in the interaction with the new case managers. In Sherbrooke, the case managers were not easily integrated into the multidisciplinary teams of the different departments (CHUS geriatrics team, Institute “multi” teams), logistical coordination difficulties and duplication being mentioned. The co-operative relationship has been tense with the CLSC and the day program. The co-operative procedures (between individuals and between teams) were not adequately spelled out with all the teams involved, which
forced the professionals to establish guidelines on their own. In general, the role of nurses in 2nd line services is complementary to that of case managers, which helped establish a smooth co-operative relationship. In Granit, which was the first region to introduce SIGG, we noted that the commitment each individual demonstrated in keeping the progress notes for patients in case management was able to sustain (or undermine) the co-operative relationship between health workers and case managers. In Coaticook, the fact that case managers did not introduce themselves to the various local and regional partners helped maintain misperceptions about case management patients.

In Sherbrooke, in the opinion of the health workers, the added value provided by case management affects many elements. They see significant benefits for the elderly and their relatives, including the fact that case managers “will work hard to get the services the individual needs,” that they will follow up closely, thereby preventing the elderly person from “falling between the cracks.” For people living alone, without a network, case management is a support in that they “do not feel they are alone.” It is also a benefit as far as the protection of rights is concerned. In the case of a patient with Alzheimer’s disease, the case manager was able to accurately explain the situation and the patient’s condition to the spouse. In another case, the health worker expressed his desire to work co-operatively with the case managers because he “really felt his concern for the patient.”

In the context of hospital services, the health workers are aware of the deficiencies in the area “across and among institutions,” which brings them to value the “presence of a reference person for the elderly individual,” especially as the stay in hospital often put the patient in contact with many different health workers. According to health workers, the case managers are not biased in favour of any institution, their position “allowing them to have a wider, more open outlook,” which is much appreciated. Sometimes, case managers involve themselves in complex cases: “when the case manager stepped in, it speeded things up.” And again: (…) This way of working suited me, (…) because I felt that everything was in place.” Another experience shed light on the capacity of the case manager to find an appropriate alternate resource rather than putting the patient on a waiting list.

With these examples, it is clear that even though the role conflict was prevalent and upsetting for the health workers, many positive elements were mentioned. We find that they are in line with the role guidelines
that were determined by consensus. They have particular value since they were dictated by their actual experiences, even though their knowledge of the theoretical model was not optimal.

**In Granit**, since the distinctive role was more obvious to the institution workers, they made more comments about added value. They note that seniors benefit from closer monitoring, security, better follow-up, less stress for family caregivers or the ability help a family struggling to care for a relative whose health is deteriorating due to cancer, all of which brought the patient to the hospital. In another case, the health worker noted that case management helped improve the continuity of care in the sense that ensuring that an individual keeps his/her medical appointment helps maintain physical health and avoids readmission to hospital later on: “Having a case manager is like having someone who knows you, who knows what you need and makes sure that you get it.”

**In Coaticook**, the health workers feel that the elderly benefit from better long-term follow-up. Being in case management “brings a lot of people around the patient.” A better portrait is obtained before admission to a day program and better follow-up is ensured afterwards. “It works better” because workers feel they are part of a team with health workers in other organizations, “it is like a circle.” Before this, they worked alone. For the Meals on Wheels service, it seems there have been more contacts and referrals since case management was implemented.

Following the discharge of a frail elderly individual from hospital, it is reassuring to know that patients are not just dropped: “It is reassuring for the individual and the family and also for the health workers.” The feeling of the CHUS is shared by the rehabilitation centre; “(...) It prevents the anxiety that you can get when you close a file, maybe less in rehab, but it remains that, yes, sometimes you close a file and you’re not comfortable. There is not as much anxiety when you know that there is a case manager or a team at the CLSC.” “It is a good project that deserves our support,” but there are still improvements to be made with respect “to building relationships so that it works.”

**Discussion**

The dynamics of ownership of this innovation differed from one region to the next, reflecting local culture as well as the strengths and weaknesses already existing in each region prior to implementation. The broader context (regional, departmental) could always be sensed behind local decisions, which often limited decision making. Indeed, the local
facilities working together always mentioned inadequate resources to explain choices or the time it took for the implementation to progress. Despite these limitations, the managers were able to take advantage of opportunities and use them as a stepping-stone or a driver and move towards the complete establishment of ISD for the elderly.

The problems associated with implementing case management emerged due to the dynamics of a power relationship, primarily in Sherbrooke, which was caused by the overlapping of a portion of the case managers’ part of area of activity with that of the outreach workers or navigators. In the regions, the issue also arose somewhat in Coaticook, but not in Le Granit, since this sub-region had far fewer direct relationships with the health workers in regional services.

Furthermore, since the anticipated case management funding was lower than had been expected, local teams had to overcome this problem by taking funds from their own budgets. In addition, the health workers’ lack of involvement (clinical level) in implementation decisions may explain some of the reservations and objections expressed. If a new position in elderly services opens up, a “place” must be made for it, which means the team must reorganize their meeting schedules, duties and/or responsibilities. Not all teams agreed to do so during the first months of testing. Considering as well the confusion that exists between the roles of case manager and navigator in the CLSC, coupled with the fact that teams complain of inadequate staffing for the work that needs to be done, it is easy to understand the sluggish pace of the implementation. However, the debates that took place allowed health workers and managers to question their assumptions, deal at length with the question of roles, allocate patients and give thought to ownership. All in all, this was a positive phase.

References
6. Monitoring the Degree of Implementation of an Integrated Delivery System
Anne Veil, Réjean Hébert

Introduction
Integrated Service Delivery (ISD) systems has been proposed for improving efficacy and efficiency of health care system, particularly for patients with multiple needs and complex interactions of many professionals and organizations. It is hypothesised that ISD systems would improve continuity of care and the health and satisfaction of clients, together with decreasing the use of costly resources, like hospitals and institutions. While there is some indications of the efficacy of ISD systems for some clientele like frail older people, their real effectiveness at the population level remains to be demonstrated. Although many ISD systems have been well described and compared, those experimented so far have not reported much on the implementation of the components of the system, nor on its process and real functioning. The lack of implementation data limits the replication of studies and could explain some negative results about the impact of ISD systems. It also deprives policy makers of critical information for applying ISD in the health care system.

The implementation of ISD systems should be assessed and monitored in order to inform managers and policy-makers of how the project is evolving, to account for the use of resources, identify obstacles quickly and find strategies to foster full implementation. Such a process analysis is also helpful in evaluative research to describe facilitating factors and obstacles that future implementation will have to consider. When an outcome evaluation is performed, a process analysis is used to ensure that the intervention really has been implemented as planned. This assessment is usually qualitative, but it is also informative to generate some quantitative ratings, especially when an economic analysis is done. Ratings could then help policy-makers to evaluate the degree of implementation and extrapolate the effort and resources needed for full implementation. In an outcome evaluation study, such ratings can be

used to measure the “dosage” of the intervention and carry out dose-response analyses. The objective of this study was to develop a methodology to rate the degree of implementation and to monitor the implementation of an ISD system, the PRISMA (Program of Research to Integrate the Services for the Maintenance of Autonomy) model in three different areas of the Eastern Township in the Province of Quebec, Canada (the PRISMA-Estrie project).

The PRISMA model

According to Leutz, there are three levels of integration in health care: 1) linkage; 2) coordination; and 3) full integration. ISD refers to systems targeting either coordination or full integration. In full integration ISD systems, the integrated organisation is responsible for all services, either under one structure or by contracting some services with other organisations. Many examples of this level of ISD programmes have been developed. In the United States, the California On Lok project gave rise to the PACE (Program of All inclusive Care for the Elderly) projects. In Canada, the CHOICE (Comprehensive Home Option of Integrated Care for the Elderly) project in Edmonton is an adaptation of the PACE projects. These programmes are built around Day Centres where the members of the multidisciplinary team who evaluate and treat the clients are based. Clients are selected according to relatively strict inclusion (degree of disability compatible with admission to a nursing home) and exclusion (e.g., behavioural problems) criteria. These systems usually function in parallel with the socio-health structures in place. Services are delivered by structures operated by the system or by external structures linked through contracts (hospitals, specialised medical care, long-term care institutions). The Social HMO (Health Maintenance Organization) in the United States and the SIPA (Système de services intégrés pour personnes âgées en perte d’autonomie) project in Montreal are also integrated services but do not include a Day Centre. However, home care services are provided by personnel hired by or under contract with the organisation. All these fully integrated models are nested in the usual health and social services in a particular area but are run in parallel to them. They do not involve significant changes to the structure or processes of existing services, except for the negotiation of protocols for referring clients to ISD and the provision of some services not covered by ISD. Capitation budgeting is usually a key component of these programmes.
Although there were many attempts to design and implement full integration models, very few experiments of coordination models were implemented or tested. The PRISMA model is a new model of integrated care based on coordination. As opposed to full integration systems, this model includes all the public, private or voluntary health and social service organizations involved in caring for older people in a given area. Every organization keeps its own structure but agrees to participate within an “umbrella” system and to adapt its operations and resources to the agreed requirements and processes. At this level, the ISD system is not only nested in the health care and social services system (like the full integration models) but is also embedded within it.

The PRISMA model includes six components: 1) coordination between decision-makers and managers at the regional and local level, 2) a single entry point, 3) a case management process, 4) an individualized service plans, 5) a single assessment instrument coupled with a management system based, and 6) a computerized clinical chart (CCC). Coordination between institutions is at the core of the PRISMA model. Coordination must be established at every level of the organizations. First, at the strategic level (governance), by creating a Joint Governing Board of all health care and social services organizations and community agencies where the decision-makers agree on the policies and orientations and what resources to allocate to the integrated system. Second, at the tactical level (management), a Service Coordination Committee, mandated by the Board and comprising public and community service representatives together with older people, monitors the service coordination mechanism and facilitates adaptation of the service continuum. Finally, at the operational level (clinical), a multidisciplinary team of practitioners surrounding the case manager evaluates clients’ needs and delivers the required care.

The single entry point is the mechanism for accessing the services of all the health care institutions and community organizations in the area for the frail senior with complex needs. It is a unique gate which older people, family caregivers and professionals can access by telephone or written referral. A link is established with the Health Info Line available to the general population in Quebec seven days a week, 24 hours a day. Clients are referred to the ISD system after a brief needs assessment (triage) to ensure they meet the eligibility criteria for the integrated system. Otherwise, they are referred to the relevant service. ISD eligible clients are then referred to a case manager. The case man-
The case manager is responsible for doing a thorough evaluation of the client’s needs, planning the required services, arranging to admit the client to these services, organizing and coordinating support, directing the multidisciplinary team of practitioners involved in the case, and monitoring and re-evaluating the client. The case manager is legitimized to work in all institutions or services. The individualized service plan results from the overall assessment of the client and summarizes the prescribed services and target objectives. It is led by the case manager and established at a meeting of the multidisciplinary team including all the main practitioners involved in caring for the older person.

The single assessment instrument allows for evaluating the needs of clients in all organizations and by all the professionals working either in home care organizations or in hospitals and institutions. The instrument implemented in the PRISMA model is the Functional Autonomy Measurement System (Système de mesure de l’autonomie fonctionnelle – SMAF), a 29-item scale developed according to the WHO classification of disabilities. It measures functional ability in five areas: activities of daily living (ADL) [7 items], mobility [6 items], communication [3 items], mental functions [5 items] and instrumental activities of daily living (IADL) [8 items]. For each item, the disability is scored on a 5-point scale: 0 (independent), -0.5 (with difficulty), -1 (needs supervision), -2 (needs help), -3 (dependent). The resources available to compensate for the disability are also evaluated and a handicap score is deducted. A case-mix classification system based on the SMAF has also been developed. Fourteen ISO-SMAF profiles were generated using cluster analysis techniques in order to define groups that are homogeneous in regard to their profiles, but heterogeneous in other respects. These profiles are used to establish the admission criteria to the different services and to calculate the required budget of the organizations, given the autonomy of the clientele served. Finally, the PRISMA model includes a computerized clinical chart for facilitating communications between organizations and professionals. The Geronto-Geriatric Computer System (Système d’information géronto-gériatrique, SIGG) has been developed and implemented in a pilot project in Victoriaville (Quebec, Canada). This shareable clinical chart uses the Quebec Ministry of Health and Social Services Internet network and was developed from a Lotus Notes platform.
The PRISMA-Estrie Project

The study reported in this paper is part of a larger project assessing the implementation and impact of the PRISMA model. After piloting the model in a different area\(^5\), we extended the PRISMA model to three areas in another region (Eastern Townships of Quebec) that present different environments:

- Sherbrooke: an urban area (population 145,000; 13% > 65) with 3 university establishments (a tertiary care hospital, a geriatric institute and a primary care agency), two large public nursing homes (745 beds), several private and public residential facilities, a public home care agency and some voluntary agencies providing complementary services in home care;
- Granit: a rural area (population 22,000; 15% > 65) with one merged public establishment that includes a local hospital, a primary care program (including home care), a nursing home (106 beds), public and private residential facilities, and some voluntary agencies providing complementary services in home care;
- Coaticook: a rural area (population 16,000; 14% > 65) with one merged establishment that includes a primary care program, a nursing home (88 beds), an emergency service but no hospital beds, mostly private residential facilities and some voluntary agencies providing complementary services in home care.

The implementation evaluation focuses on the process of implementing the mechanisms and tools and how they function. One of the objectives is to explain the variations observed between the different implementation settings using a case study approach (multiple case study design) developed by Yin\(^16\). The questions that are documented try to define the extent to which the clientele using the services corresponds to the clientele initially targeted; if the services delivered correspond to those planned; if the resources planned were effectively made available; and if the delivery procedure corresponds to the one initially defined. Other questions focus on evaluating the process itself and identifying its strengths and weaknesses in order to reinforce or correct some of the elements comprising the new mechanisms and tools. There are three cases (each of the selected areas) analyzed using different perspectives (multiple units of analyses). Data are collected from policy-makers, managers and clinicians, as well as clients and informal caregivers using different methods (interviews, focus groups, surveys). Other data are
obtained from documentation analysis (minutes from the meetings),
participating observation, management data monitoring or clinical files
analysis.

Effectiveness is being evaluated using a quasi-experimental design
(pre-test, multiple post-tests with control group). A sample of frail older
people in the three study areas is followed for 5 years, as is a compara-
tive sample in three comparable areas elsewhere in the Province of Que-
bec. The variables measured are: functional autonomy, satisfaction in
regard to the services received, client empowerment, caregivers’ burden,
utilization of health and social services, and drug use. An economic
analysis is also being performed.

More information on the PRISMA model and the PRISMA-Estrie
Project can be found in a previous paper published in the Journal8. The
present paper reports on one of the study included in the implementation
analysis targeting the degree of implementation of the six components
of the PRISMA model.

Methods

Based on the PRISMA model, a set of objective and measurable indica-
tors of implementation were generated for each component. Those indi-
cators were fully discussed and approved by two committees acting as
focus groups meeting researchers, policy-makers, managers and clini-
cians involved in the PRISMA project. The first group is provincial
includes two teams of researchers coming from Laval and Sherbrooke
universities interested in ISD systems, policy-makers from the Quebec
Ministry of Health and Social Services, and managers from five
Regional Health and Social Services Authorities. The second is a local
group involved in the implementation of the Estrie Project. It includes
researchers from the Sherbrooke University, a policy-maker from the
Quebec Ministry of Health, managers from the Regional Health and
Social Services Boards (Estrie) and the health organizations of the three
experimental areas, and clinicians. The provincial group met once and
the local group twice for discussing this issue. The groups were also
asked to weight the relative importance of each indicator and the relative
importance of each component. For the latter, it was agreed to assign
20% each to coordination, the single entry point and case management,
15% each to the single assessment tool and computerized clinical chart,
and 10% to the individualized service plan. A description of the indica-
tors and their relative weights can be found in Table 6.1.
Table 6.1
List of indicators used to rate the implementation of the ISD system

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COORDINATION</strong></td>
<td>20 pts</td>
</tr>
<tr>
<td>1. Presence of a structure designed to enhance co-operation between partners</td>
<td>3 pts</td>
</tr>
<tr>
<td>2. All partners concerned represented</td>
<td>3 pts</td>
</tr>
<tr>
<td>3. Representatives stability over time</td>
<td>3 pts</td>
</tr>
<tr>
<td>4. Representatives participate regularly</td>
<td>3 pts</td>
</tr>
<tr>
<td>5. Partners informed of how services are changing (or not changing)</td>
<td>4 pts</td>
</tr>
<tr>
<td>6. Partners criticize the organization of the services change process</td>
<td>4 pts</td>
</tr>
<tr>
<td><strong>SINGLE ENTRY POINT</strong></td>
<td>20 pts</td>
</tr>
<tr>
<td>1. Presence of a single entry point in each local area</td>
<td>5 pts</td>
</tr>
<tr>
<td>2. Clearing functions done by dedicated professionals</td>
<td>5 pts</td>
</tr>
<tr>
<td>3. Professionals use a validated screening instrument to identify eligible frail elderly</td>
<td>5 pts</td>
</tr>
<tr>
<td>4. Follow-up with older people in the group at high risk of functional decline</td>
<td>5 pts</td>
</tr>
<tr>
<td><strong>CASE MANAGEMENT</strong></td>
<td>20 pts</td>
</tr>
<tr>
<td>1. Variation between actual number of case managers and number needed according to proportion of senior citizens in the area</td>
<td>10 pts</td>
</tr>
<tr>
<td>2. Variation (above or below) between actual average caseload and recommended caseload (45)</td>
<td>10 pts</td>
</tr>
<tr>
<td><strong>SINGLE ASSESSMENT TOOL &amp; CASE-MIX CLASSIFICATION</strong></td>
<td>15 pts</td>
</tr>
<tr>
<td>1. % of clients under case management evaluated with SMAF tool</td>
<td>5 pts</td>
</tr>
<tr>
<td>2. % of partners systematically using SMAF tool with their elderly patients</td>
<td>5 pts</td>
</tr>
<tr>
<td>3a. Use of the case-mix classification system (ISO-SMAF profiles) for efficient utilization of resources</td>
<td>5 pts</td>
</tr>
<tr>
<td>3b. Use of the ISO-SMAF profiles system as a new standard for financing services</td>
<td>5 pts</td>
</tr>
<tr>
<td><strong>COMPUTERIZED CLINICAL CHART</strong></td>
<td>15 pts</td>
</tr>
<tr>
<td>1. Availability of a computer program for sharing clinical information in real time</td>
<td>5 pts</td>
</tr>
<tr>
<td>2. Sufficient number of computers for all partners</td>
<td>5 pts</td>
</tr>
<tr>
<td>3. Utilization of the computerized computer chart by partners</td>
<td>5 pts</td>
</tr>
</tbody>
</table>
From the beginning of the implementation evaluation (July 2001), data were collected every six months to assess all the indicators. Coordination was rated according to two sources of data about the different meetings held by the Joint Governing Boards and the Service Coordination Committees. Formal minutes of those meetings were systematically reviewed and were complemented by the notes of one of the research assistant who attended all the meetings using participating observation strategy. The single entry point indicators were completed using statistics from the local agencies where they are based. The number and caseload of case-managers were collected from the coordinators responsible for the implementation of the ISD system in each area. These data were validated by financial information from the Regional Health and Social Services Authority. The charts of all clients involved in the ISD system and referred to case-managers were systematically reviewed to quantify the utilization of the SMAF tool and the individualized service plans. For the computerized clinical chart, we did a monitoring of the equipments in each area and we used data on the real utilization of the system.

**Results**

Table 5.2 shows the implementation degree for each of the six components and each area. At the beginning of the implementation evaluation study, the coordination process was already well underway in all three areas, especially Sherbrooke where the implementation degree for this component was over 90%. In Sherbrooke, however, there was a broad consultation process and a reform of the ISD governance model during the spring of 2003, which explains why the rate declined to 76% in July 2003. The implementation of the single entry point started in January 2002 in the two rural areas and later (July 2002) in Sherbrooke. The first case managers were hired in January 2002 in Sherbrooke, but there was a slight delay in the rural areas. Consequently, the individualized service plan use started at these times. Implementation of the SMAF tool began before the official start of the study, and the ISO-SMAF case-mix classification system was being used by the local agencies for admitting cli-
ents to institutions and by the regional board for financing by July 2002. Finally, the computerized clinical chart was piloted in the Granit Region in July 2002 and extended to the other areas in November 2002. Overall, in July 2003, the ISD system was implemented at the rate of 73%, 71% and 70% in Sherbrooke, Granit and Coaticook respectively.

Table 6.2
Evolution of the implementation degree (in %) for each component in each area under study from July 2001 to July 2003

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sherbrooke</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td>93</td>
<td>93</td>
<td>91</td>
<td>91</td>
<td>76</td>
</tr>
<tr>
<td>Single Entry Point</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Case Management</td>
<td>0</td>
<td>30.5</td>
<td>53</td>
<td>55</td>
<td>53</td>
</tr>
<tr>
<td>Individualized Service Plan</td>
<td>0</td>
<td>81</td>
<td>47</td>
<td>69</td>
<td>62</td>
</tr>
<tr>
<td>Single Assessment Tool</td>
<td>40.7</td>
<td>80</td>
<td>88.7</td>
<td>88.7</td>
<td>88.7</td>
</tr>
<tr>
<td>Computerized Clinical Chart</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>76.7</td>
</tr>
<tr>
<td>Total (%)</td>
<td>24.7</td>
<td>46.1</td>
<td>55.5</td>
<td>68.4</td>
<td>72.8</td>
</tr>
<tr>
<td>Granit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td>79</td>
<td>75</td>
<td>82.5</td>
<td>82.5</td>
<td>82.5</td>
</tr>
<tr>
<td>Single Entry Point</td>
<td>0</td>
<td>50</td>
<td>50</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Case Management</td>
<td>0</td>
<td>0</td>
<td>60.5</td>
<td>67.5</td>
<td>63</td>
</tr>
<tr>
<td>Individualized Service Plan</td>
<td>0</td>
<td>0</td>
<td>65</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Single Assessment Tool</td>
<td>36</td>
<td>52.7</td>
<td>80</td>
<td>75.3</td>
<td>74.7</td>
</tr>
<tr>
<td>Computerized Clinical Chart</td>
<td>0</td>
<td>0</td>
<td>33.3</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Total (%)</td>
<td>21.2</td>
<td>33.0</td>
<td>62.2</td>
<td>72.3</td>
<td>71.3</td>
</tr>
<tr>
<td>Coaticook</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td>79</td>
<td>72.5</td>
<td>72.5</td>
<td>86.5</td>
<td>86.5</td>
</tr>
<tr>
<td>Single Entry Point</td>
<td>0</td>
<td>50</td>
<td>50</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Case Management</td>
<td>0</td>
<td>0</td>
<td>17.5</td>
<td>33.5</td>
<td>50</td>
</tr>
<tr>
<td>Individualized Service Plan</td>
<td>0</td>
<td>0</td>
<td>62</td>
<td>59</td>
<td>53</td>
</tr>
<tr>
<td>Single Assessment Tool</td>
<td>35.3</td>
<td>52</td>
<td>77.3</td>
<td>80.7</td>
<td>76</td>
</tr>
<tr>
<td>Computerized Clinical Chart</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Total (%)</td>
<td>21.1</td>
<td>32.3</td>
<td>46.7</td>
<td>68.0</td>
<td>70.0</td>
</tr>
</tbody>
</table>

Discussion

In the literature on ISD systems, there are few data on the implementation process. Even when it is reported, implementation is mostly summarized very briefly within a paper focusing mainly on the outcome
of the intervention. In this study, we attempted to quantify the implementation in order to monitor the introduction of the components of the program under study.

The weighting of the components was arbitrary and based on the opinions of the researchers, clinicians, managers and policy-makers involved in the implementation. There is a hierarchy within these components: coordination is the base without which the other components cannot be implemented. Case management is also essential for implementation of the individualized service plan, the single assessment tool and computerized clinical chart. Therefore, coordination and case management are enabling factors that need to be weighted more than the others. The single entry point was also heavily weighted, because of its importance and the complexity of implementing it, especially in the urban area where multiple public, private and voluntary agencies are geographically scattered in town and must converge on a unique point.

The coordination element was already very highly rated at the beginning of the study and showed a ceiling effect. This suggests that more indicators should have been developed to illustrate higher level of coordination, particularly at the governance level. However, it must be said that discussions around coordination were already well engaged in the region for several years and that the suggested indicators could be appropriate and more modulated in other areas where the coordination process has to be initiated.

The PRISMA research group does not control the actual implementation. This is managed by the Regional Health and Social Services Authority and the local Governing Boards and agencies. Although the implementation of the PRISMA model was supported by a government policy working towards the integration of services for frail older people, it was implemented during a period of health and social services budget constraints. The implementation was delayed and has not yet been completed, mostly because of the slowness of the regional authority to provide funding to create new case manager positions. As noted by Leutz, “integration costs before it benefits”\textsuperscript{14}. The investment in ISD system should be significant enough to generate some impact and benefit by improving the efficacy and efficiency of the system. We originally expected that the implementation would be completed over an 18-month period. This period has now been extended to 30 months, which is more than double the time anticipated.
The major and most costly component of the PRISMA model is case management, the implementation of which was only half that expected in July 2003. The weighting of this element should probably have been even higher given its importance in the integration of services. Recently, new investments have been announced to complete the staffing of case managers and we anticipate that the implementation percentage of this component should be over 90% by July 2004. Such an improvement will push the overall implementation degree to over 80% in the three areas. It is probable, although there are no data to support this hypothesis so far, that there is a threshold over which ISD begins to have a significant impact on the health and social services delivery system.

In general, the individualized service plan implementation degree decreased as the caseload of the case managers increased and approached the planned objective of 45 cases. This probably means that this case number is too high and does not allow case managers to complete the plan properly for their clients within an appropriate timeframe. Because of this, and other indicators mentioned in the interviews with case managers, the coordinators are considering decreasing the caseload to 40.

This method of rating the implementation cannot be fully validated, since there is no concurrent method of assessing quantitatively the implementation of a program. The use of focus groups and a well defined theoretical model confers it a content validity. The relation of the implementation rating with the impact of the system on health services utilization and cost could be used in the future as construct validity. The data were collected and the rating was applied by only one person in the present study, so the inter-rater reliability is not an issue here. Since there were only three areas and the memory bias would have been very important, it was not possible to check the test-retest reliability of the method.

The data generated by this method have been very useful to managers and policy-makers. It gives them continuous information on the implementation process. It has been also a very powerful tool when arguing for more investments to complete the implementation. In our project, the implementation degree was a very strong incentive for investing more in the ISD system, for creating more case-manager positions, for financing the computerized clinical chart, and for implement-
ing the case-mix classification system. It provided also good evidence for adjusting the case load of case-managers.

This method could also be useful for quantifying the “dosage” of the intervention for the outcome study. We may then correlate the implementation degree with the outcome measures relating to the individual, the family or health care utilization. It will help to decrease the “black box” effect of health services intervention and to avoid a “type 3 error” in measuring the effect of an intervention that has not really been or was not sufficiently implemented. It will be interesting to check if there is a threshold in this percentage over which significant impact may be demonstrated.

Acknowledgments

PRISMA (Program of Research to Integrate Services for the Maintenance of Autonomy) is a partnership between two research teams (Research Centre on Aging in Sherbrooke and Laval University Geriatric Research Team in Quebec City) and several health organizations in the Province of Quebec: Ministry of Health and Social Services, five Regional Health and Social Services Boards (Estrie, Mauricie-Centre-du-Québec, Laval, Montérégie, Quebec City), and the Sherbrooke Geriatric University Institute. PRISMA is funded by the Canadian Health Services Research Foundation, the Fonds de la recherche en santé du Québec (FRSQ), and the partnering organizations. Many projects run by the PRISMA group are also funded by the Canadian Institutes of Health Research.

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15. Tousignant, M., Hébert, R., Dubuc, N., Simoneau, F. & Dieleman, L. «Application of a case-mix classification based on the functional auton-


7. Perceptions of Family Physicians Regarding the Introduction of Integrated Service Delivery (ISD) Networks for the Elderly

Linda Milette, Réjean Hébert, Anne Veil

Introduction

The demographic importance of older people is increasing quickly in Canada. Although older people are in generally better health than 20 years ago, a substantial proportion of them will become frail and need home care or a residential facility. This clientele has complex needs and requires more services to mitigate their impairments. In order to support them at home for as long as possible, services for frail older people must be easy to access, coordinated and delivered on a continuous basis. The purpose of establishing ISD networks offering case management services is to achieve this objective.

An ISD network is defined as a “network of organizations that provide or arrange to provide a continuum of services to a defined population”1. Its objectives are to improve continuity and increase the efficacy and efficiency of services. An ISD model based on coordinating all institutions, services and organizations in a particular area is being implemented in Quebec. This model called PRISMA (Program of Research to Integrate Services for the Maintenance of Autonomy) comprises six elements2: coordination between institutions; a single entry point; a case management system; individualized service plans; a single assessment tool with a case-mix classification system; and a continuous information system.

For an ISD network to be effective, the family physician, who is the elder’s main medical professional, must be actively involved in the network and work closely with the case manager3. The case manager is usually a social worker or nurse whose role is to do an overall assessment of the elder’s needs, plan the required services, negotiate and coordinate the required services with the service providers, and ensure that the services are delivered and modified as the situation evolves. The case man-

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ager needs the cooperation of family physicians because they are the hub around which specialized medical services are coordinated.

However, integrating case managers into medical practice requires changes in how physicians do things. To date, the participation of family physicians in ISD networks is less than was hoped\(^4\), \(^6\). Few studies have explored physicians’ perceptions regarding the introduction of ISD networks and case management. Therefore, our main objective was to document the perception of family physicians regarding ISD networks and case management prior to network implementation and six months after implementation.

**Methods**

This postal survey of family physicians is part of a much larger research project evaluating the implementation and impact of ISD networks for older people in three regional municipalities (MRC) in the Eastern Townships: Sherbrooke, Granit and Coaticook. These regions were chosen because of their contrasting characteristics, both sociodemographic and in terms of how socio-health services are organized. Sherbrooke is an urban area with numerous health institutions: Sherbrooke University Hospital (Centre hospitalier universitaire de Sherbrooke, CHUS), Geriatric University Institute (Institut universitaire de gériatrie de Sherbrooke, IUGS), Local Community Services Centre (Centre local de services communautaires, CLSC), Rehabilitation Centre (Centre de réadaptation de l’Estrie, CRE), two nursing homes and 16 community agencies. Coaticook is a rural area with a multi-function health centre comprising a CLSC, day centre, emergency room (no hospital beds) and a nursing home. Granit is also a rural area with a multi-function health care centre comprising a CLSC, acute care hospital and a nursing home.

All the family physicians in the three MRCs (n = 267) listed in the files of the Quebec Health Insurance Board (RAMQ) formed the sample frame. To be eligible for the study, the physician had to care for at least some older people. The first questionnaire was divided into four parts. Part 1 asked how the physicians felt about the forthcoming introduction of ISD networks for older people; Part 2 asked how receptive they were in regard to the new case management function and the physician’s role in the network; Part 3 comprised sociodemographic and socio-professional questions; and Part 4 gave the physicians an opportunity to freely express their opinions and concerns.
The second questionnaire was sent only to those physicians who had answered the first, in order to track the changes in their perceptions. It was divided into two parts. Part 1 was addressed to those physicians who knew that the case managers had been working for six months. Its purpose was to document the frequency with which the physicians had been in contact with the case managers, and to compare their opinions about the case managers’ work now that some of their patients had been managed by them. For comparison purposes, most of the statements in the first questionnaire relating to the perception of case management were repeated in the second. Part 2 was addressed to all the physicians and its purpose was to identify the obstacles to using case managers and to obtain the physicians’ comments.

A short explanatory covering letter signed by the director of the research project was sent with the two questionnaires and postal reminders. The questionnaires followed Dillman’s recommendations: easy-to-use format, short questions preceded by explanatory vignettes when necessary, presented in a logical order and arranged by type of response. To encourage maximum participation, the majority of the questions were closed questions with a dichotomous or a Likert scale response. In both questionnaires, positive and negative statements about case management were interspersed and the physicians were asked to indicate to what extent they agreed or disagreed with each statement on a Likert-type response scale: strongly agree, agree, disagree or strongly disagree.

The procedure for sending the questionnaires also followed Dillman’s recommendations: personalized letters, stamped pre-addressed return envelopes enclosed, and two postal reminders for each mailing (short reminder letter one week later, second reminder with another copy of the questionnaire three weeks after the initial mailing). For the analysis, the Likert-type responses were dichotomized between those who agreed and disagreed. McNemar tests (for dependent groups, categorical data) were carried out to verify if there was a statistically significant change in perceptions from before to during implementation. A logistic regression analysis was performed to determine the effect of certain variables on the physicians’ interest in using case managers.
Results

Of the 267 family physicians contacted with the first questionnaire, 61 were not eligible: they returned the questionnaire indicating that they did not have any older clients. Of the 206 who were eligible, 124 completed the questionnaire, for an overall response rate of 60.2%. For the second questionnaire, only three of the 124 physicians who were recontacted were no longer eligible and 104 responded, for a response rate of 86.0% (Figure 7.1).

The majority of the respondents worked in Sherbrooke (83.1%), had between 11 and 30 years of experience (69.1%) and worked between 35 and 54 hours per week (69.9%). Most of them practiced in group settings (82.1%) and 48.2% of their daily work consisted of private office surgery. Table 7.1 presents the sociodemographic characteristics of the respondents. The percentage of older people in the physicians’ clienteles averaged 42.2% (16.8% to 67.6%).
Table 7.1  
Sociodemographic characteristics of the physician respondents (n = 124)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>69 (55.6)</td>
</tr>
<tr>
<td><strong>MRC</strong></td>
<td></td>
</tr>
<tr>
<td>Sherbrooke</td>
<td>103 (83)</td>
</tr>
<tr>
<td>Coaticook</td>
<td>10 (8.1)</td>
</tr>
<tr>
<td>Granit</td>
<td>11 (8.9)</td>
</tr>
<tr>
<td><strong>University training</strong></td>
<td></td>
</tr>
<tr>
<td>Internship</td>
<td>29 (23.8)</td>
</tr>
<tr>
<td>Residency in family medicine</td>
<td>93 (76.2)</td>
</tr>
<tr>
<td><strong>Number of years in practice</strong></td>
<td></td>
</tr>
<tr>
<td>&lt; 5</td>
<td>13 (10.6)</td>
</tr>
<tr>
<td>5-10</td>
<td>22 (17.9)</td>
</tr>
<tr>
<td>11-20</td>
<td>41 (33.3)</td>
</tr>
<tr>
<td>21-30</td>
<td>44 (35.8)</td>
</tr>
<tr>
<td>&gt; 30</td>
<td>3 (2.4)</td>
</tr>
<tr>
<td><strong>Type of practice</strong></td>
<td></td>
</tr>
<tr>
<td>Solo</td>
<td>22 (17.9)</td>
</tr>
<tr>
<td>Group that does not share clients</td>
<td>8 (6.5)</td>
</tr>
<tr>
<td>Group that shares clients</td>
<td>93 (75.6)</td>
</tr>
<tr>
<td><strong>Number of hours worked/week</strong></td>
<td></td>
</tr>
<tr>
<td>&lt; 25</td>
<td>5 (4.1)</td>
</tr>
<tr>
<td>25-34</td>
<td>10 (8.1)</td>
</tr>
<tr>
<td>35-44</td>
<td>47 (38.2)</td>
</tr>
<tr>
<td>45-54</td>
<td>39 (31.7)</td>
</tr>
<tr>
<td>55-64</td>
<td>17 (13.8)</td>
</tr>
<tr>
<td>&gt;65</td>
<td>5 (4.1)</td>
</tr>
<tr>
<td><strong>Physicians’ outlook in 10 years, according to their skills and interests</strong></td>
<td></td>
</tr>
<tr>
<td>Still be a GP</td>
<td>72 (59)</td>
</tr>
<tr>
<td>Specialize in several areas</td>
<td>29 (23.8)</td>
</tr>
<tr>
<td>Specialize in one area</td>
<td>20 (16.4)</td>
</tr>
<tr>
<td>Retire</td>
<td>1 (0.8)</td>
</tr>
</tbody>
</table>
The pre-implementation questionnaire showed that 98% of the respondents believe that family physicians will increasingly have to belong to an ISD network. However, very few (8.2%) felt involved or consulted in the decisions relating to the development and implementation of these networks. More than one quarter (27%) did not know that an ISD network for older people was going to be established in their area in the coming weeks, and 84.3% did not feel sufficiently informed to be able to get involved. In addition, the use of case managers, which is the central element of an ISD network, seemed to be a real need since 86% of the family physicians said they were interested in using their services.

If we examine the results for each MRC, we see that the desire to use case managers varied considerably: the physicians in Coaticook showed the most interest (100%), followed by Sherbrooke (86.7%) and Granit (63.6%).

Two variables were related to the desire to use case managers: group practice (p < 0.001), and the percentage of elderly in the practice (p < 0.01). From the multivariate logistic regression analysis, taking into account indicator variables (dummies) for regional municipalities, the odds ratio for the two variables were for “group practice” with 8.23 (95% CI: 2.50 to 27.23) and for “having an older clientele” (for a 10% increase in elderly clients) 1.47 (95% CI: 1.096 to 1.973).

Prior to implementation, the opinion of the physicians regarding case management was very positive (Table 7.2). More than 85% of the respondents agreed with the majority of the positive statements about case management. The responses to two of the statements were almost unanimous: case manager’s and physician’s roles are complementary.
Table 7.2
Perception of family physicians regarding case management before implementation

<table>
<thead>
<tr>
<th>Positive statements about case management</th>
<th>Agree or strongly agree</th>
<th>Disagree or strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>...will have a <strong>role that complements</strong> mine.</td>
<td>118 [96.8]*</td>
<td>4 [3.3]</td>
</tr>
<tr>
<td>...will make it easier to <strong>collect information</strong> on new patients.</td>
<td>117 [95.9]</td>
<td>5 [4.1]</td>
</tr>
<tr>
<td>...will enable the frail elderly to <strong>remain at home</strong> longer.</td>
<td>111 [93.3]</td>
<td>8 [6.7]</td>
</tr>
<tr>
<td>...will <strong>make it easier to access services</strong> for the elderly.</td>
<td>111 [93.3]</td>
<td>8 [6.7]</td>
</tr>
<tr>
<td>...will <strong>make my job easier</strong>.</td>
<td>105 [92.9]</td>
<td>8 [7.1]</td>
</tr>
<tr>
<td>...will help with decision-making when <strong>hospitalized patients return home</strong>.</td>
<td>113 [92.6]</td>
<td>9 [7.4]</td>
</tr>
<tr>
<td>...will help to <strong>reduce the duplication of services</strong>.</td>
<td>100 [86.2]</td>
<td>16 [13.8]</td>
</tr>
<tr>
<td>...will give me a <strong>better understanding of the living situation</strong> of my patients.</td>
<td>101 [84.9]</td>
<td>18 [15.1]</td>
</tr>
<tr>
<td>...will avoid <strong>unnecessary hospitalizations</strong>.</td>
<td>94 [83.9]</td>
<td>18 [16.1]</td>
</tr>
<tr>
<td>...will <strong>reduce my administrative tasks</strong>.</td>
<td>78 [66.6]</td>
<td>39 [33.4]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Negative statements about case management</th>
<th>Agree or strongly agree</th>
<th>Disagree or strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>...should be <strong>nurse clinicians</strong> who deliver care directly to patients in addition to coordinating their services.</td>
<td>66 [57.9]</td>
<td>48 [42.1]</td>
</tr>
<tr>
<td>...will be an <strong>additional expense</strong> on the health care system.</td>
<td>51 [44]</td>
<td>65 [56]</td>
</tr>
<tr>
<td>...will make the existing <strong>health care system</strong> more cumbersome.</td>
<td>28 [23.9]</td>
<td>89 [76.1]</td>
</tr>
<tr>
<td>...will make <strong>my job more complicated</strong>.</td>
<td>28 [23.5]</td>
<td>91 [76.5]</td>
</tr>
<tr>
<td>...will <strong>interfere in my patient-physician relationship</strong>.</td>
<td>19 [16.4]</td>
<td>97 [83.8]</td>
</tr>
<tr>
<td>...won’t be very effective because <strong>resources are very limited</strong> in my area.</td>
<td>18 [15.3]</td>
<td>100 [84.7]</td>
</tr>
</tbody>
</table>

* Frequency [percentage]
(96.7%) and the case manager makes it easier to collect information on new patients (95.9%). Accordingly, most of the family physicians disagreed with the negative statements about case management. For example, 83.6% did not think that case managers would interfere in their patient-physician relationship. However, 57.9% agreed that case managers should be nurse practitioners who deliver services directly to patients in addition to coordinating their services.

Another objective of the pre-implementation questionnaire was to document family physicians’ interest in getting involved. Table 7.3

<table>
<thead>
<tr>
<th>As a family physician, I am interested in …</th>
<th>Agree or strongly agree</th>
<th>Disagree or strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>…participating in screening for elderly who might benefit from case management.</td>
<td>82 (69) *</td>
<td>36 (31)</td>
</tr>
<tr>
<td>…discussing with my frail patients the possibility of having a case manager.</td>
<td>110 (91.3)</td>
<td>10 (8.7)</td>
</tr>
<tr>
<td>…referring to a case manager my frail patients who want a referral.</td>
<td>115 (95.6)</td>
<td>5 (4.4)</td>
</tr>
<tr>
<td>…discussing with case managers patients that we are both following.</td>
<td>111 (92.9)</td>
<td>8 (7.1)</td>
</tr>
<tr>
<td>…being consulted to develop an individualized service plan (ISP) by the case manager.</td>
<td>107 (91.1)</td>
<td>10 (8.9)</td>
</tr>
<tr>
<td>…attending meetings of multidisciplinary teams about my patients if my compensation is adjusted accordingly.</td>
<td>87 (73.5)</td>
<td>31 (26.5)</td>
</tr>
<tr>
<td>…a capitation payment method, i.e., based on the number of patients on my “list” and how much care they require.</td>
<td>74 (64.8)</td>
<td>39 (35.2)</td>
</tr>
<tr>
<td>…putting in the necessary time and energy to use a shared computerized clinical chart (i.e., that can be consulted by different health professionals).</td>
<td>79 (66)</td>
<td>38 (34)</td>
</tr>
<tr>
<td>…delaying the use of the computerized clinical chart because I have concerns about control of the information.</td>
<td>33 (30.5)</td>
<td>80 (69.5)</td>
</tr>
</tbody>
</table>
shows they had a strong interest in participating in the network and working with case managers. For example, 95.6% said they were interested in referring frail patients to a case manager, 94% of the family physicians wanted more information about case management and the ISD network for older people, and 98% wanted to know specifically which patients could be referred to case management.

The second questionnaire, sent 6 months after implementation started, showed that 70.2% of the family physicians knew that case managers were available. However, the majority of those who did know (60.3%) had not discussed the possibility of having a case manager with their patients. Just over one third (35.6%) had referred a patient to case management and the majority had not referred more than two (65.4%). Nearly two thirds (60.3%) had been notified by the case manager that he was looking after one of their patients.

This post-implementation questionnaire reevaluated the physicians’ perceptions about case management. Of the 50 physicians who had had a patient managed by a case manager, 33 to 47 answered parts of this section of the questionnaire. The main reason for the missing answers was lack of contact with case managers since some of the physicians had had only one patient followed by a case manager when we sent the second questionnaire. Table 7.4 includes the answers of these physicians to the first questionnaire in order to compare the two. When we examine the changes in perception, we see that the number of physicians who agreed with the positive statements about case management dropped significantly ($p < 0.01$) for six of the ten statements. For the negative statements about case management, the physicians’ perceptions remained the same as before implementation.

All the physicians, regardless of whether or not they had had any patients followed by a case manager, were asked to indicate reasons that could influence a satisfactory and useful relationship with case managers,
or simply why they are not used. Five obstacles were identified by more than half the family physicians. The most important was forgetting to call the case manager (69.1%), followed by the habit of using social...

Table 7.4
Perception of family physicians regarding case management 6 months after implementation

<table>
<thead>
<tr>
<th>Positive statements about case management</th>
<th>Agree or strongly agree</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Le travail des gestionnaires de cas …</td>
<td>1st Q 2nd Q</td>
<td>P &lt; 0.01</td>
</tr>
<tr>
<td>...complemented mine.</td>
<td>43 (95.6)† 45 (97.8)</td>
<td>1</td>
</tr>
<tr>
<td>...enabled the frail elderly to remain at home longer.</td>
<td>38 (88.4) 27 (77.1)</td>
<td>0.508</td>
</tr>
<tr>
<td>...made it easier to access services for the elderly.</td>
<td>40 (93) 28 (71.8)</td>
<td>0.031</td>
</tr>
<tr>
<td>...made my job easier.</td>
<td>38 (92.7) 27 (65.9)</td>
<td>0.012</td>
</tr>
<tr>
<td>...helped with decision-making when hospitalized patients returned home.</td>
<td>40 (87) 20 (60.6)</td>
<td>0.008</td>
</tr>
<tr>
<td>...made it easier to collect information on new patients.</td>
<td>44 (95.7) 20 (55.6)</td>
<td>0.001</td>
</tr>
<tr>
<td>...helped reduce the duplication of services.</td>
<td>38 (88.4) 26 (55.3)</td>
<td>0.003</td>
</tr>
<tr>
<td>...reduced my administrative tasks.</td>
<td>31 (68.9) 19 (42.2)</td>
<td>0.006</td>
</tr>
<tr>
<td>...avoided unnecessary hospitalizations.</td>
<td>33 (80.5) 14 (36.8)</td>
<td>0.001</td>
</tr>
<tr>
<td>...gave me a better understanding of the living situation of my patients.</td>
<td>36 (80) 14 (32.6)</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Negative statements about case management

<table>
<thead>
<tr>
<th>The work of the case managers …</th>
<th>1st Q 2nd Q</th>
<th>P &lt; 0.01</th>
</tr>
</thead>
<tbody>
<tr>
<td>...should have been done by nurse clinicians who deliver care directly to patients in addition to coordinating their services.</td>
<td>25 (58.1) 23 (57.5)</td>
<td>1</td>
</tr>
<tr>
<td>...was an additional expense on the health care system.</td>
<td>19 (44.2) 15 (31.9)</td>
<td>0.607</td>
</tr>
<tr>
<td>...wasn't very effective because resources are very limited in my area.</td>
<td>9 (20) 10 (23.8)</td>
<td>0.727</td>
</tr>
<tr>
<td>...made the existing health care system more cumbersome.</td>
<td>10 (23.3) 7 (15.6)</td>
<td>0.508</td>
</tr>
<tr>
<td>...interfered in my patient-physician relationship.</td>
<td>5 (11.4) 4 (8.9)</td>
<td>0.625</td>
</tr>
<tr>
<td>...made my job more complicated.</td>
<td>9 (20) 3 (6.4)</td>
<td>0.07</td>
</tr>
</tbody>
</table>

* McNemar statistical tests
† Frequency (percentage)
workers from a CLSC or hospital (63.6%), and in third place was the fact that many did not know how to contact the case manager (59.4%). However, we should point out that 95% of the physicians did not indicate a lack of interest as being an obstacle to using case managers. Table 7.5 shows the obstacles to using case managers in decreasing order of importance.

Table 7.5
Obstacles to using case managers

The obstacles to using case managers are… | Agree or strongly agree | Disagree or strongly disagree |
---|---|---|
…I forget to use them. | 67 (69.1)* | 30 (30.9) |
…I use social workers from a CLSC or hospital rather than calling a case manager. | 63 (63.6) | 36 (36.4) |
…I don’t know how to contact them. | 60 (59.4) | 41 (40.6) |
…I look after coordinating and negotiating my patients’ services myself. | 54 (54.5) | 45 (45.5) |
…I still don’t really understand how case managers can help my patients. | 54 (54.0) | 46 (46.0) |
…I don’t know which of my clients could benefit from case management. | 41 (40.2) | 61 (59.8) |
…I need nurse clinicians, not case managers. | 34 (37.0) | 58 (63.0) |
…I didn’t know this service was available. | 35 (35.0) | 65 (65.0) |
…To date, my clientele is not one that could benefit from case management. | 28 (28.0) | 72 (72.0) |
…I have doubts about the effectiveness of this system. | 24 (25.0) | 72 (75.0) |
…I would use it if my compensation were adjusted accordingly. | 22 (23.4) | 72 (76.6) |
…I am afraid that my workload will increase. | 22 (22.2) | 77 (77.8) |
…Without the computerized clinical chart, I don’t see how they could be useful to me. | 20 (20.4) | 78 (79.6) |
…They are not available when I need them. | 16 (18.6) | 70 (81.4) |
…I am not interested in using their services. | 5 (5.0) | 95 (95.0) |

* Frequency [percentage]
Discussion

A total of 60.2% of the eligible family physicians contacted for the first questionnaire responded and 86% of these respondents answered the second questionnaire. These are high response rates compared to other rates mentioned in the literature for medical populations\textsuperscript{2, 13}.

Prior to implementation, the attitude of the physicians to the introduction of the ISD network and case management was overwhelmingly positive. In a survey done in 1999 by SECOR for the Quebec Federation of Family Physicians, 72% of the physicians who responded thought that family physicians should increasingly become part of an ISD network\textsuperscript{11}. In our survey, 98% of the respondents thought so. However, their understanding of the ISD concept is still vague and they felt left out of the discussions and decisions. They are interested in using case managers (86%), are confident that they will be helpful and improve care for older people, but want to know more about the case manager’s role (94%) and the clientele targeted by this new system (98%). This lack of knowledge about the case manager’s functions and the feeling of being left out of the discussions and decisions are two of the reasons that explain physicians’ reservations about case managers\textsuperscript{5, 10, 15}. Given the fact that physicians’ participation in the pre-implementation process was limited, the lack of knowledge is not surprising. Two factors contributed to their absence from the discussions: their compensation structure and very limited availability.

Unlike the concerns raised by Netting & Williams\textsuperscript{10}, physicians in the Eastern Townships do not seem to fear the intrusion of another professional in their patient-physician relationship since 97.8% consider the case manager’s role to be complementary and 83.8% do not think the latter will interfere in their patient-physician relationship. Their main fears are a heavier administrative workload and that case managers are an additional expense on the health care system. These last two impressions persisted during the initial months of implementation.

Part of the reason for the lower interest among the Granit physicians in using case managers seems to be that more than 90% of them are in solo practice. We presume that they are used to coordinating their patients’ services themselves. Therefore, we recommend paying special attention to physicians in solo practice when setting up ISD networks.

On the post-implementation questionnaire, the physicians were more critical of case management. Unfortunately, however, they had little basis for an objective assessment since they had had few contacts
with case managers and, as Walston mentions, the implementation of major changes is invariably accompanied by excessively optimistic expectations. After case management had been in place for 25 weeks, 29.8% of the physicians did not know they could use case managers. In addition, 64.4% of the family physicians who knew that case managers were available did not refer any of their patients to them during these first six months. As mentioned by White, Millette and colleagues, a lot of physicians still do not use case managers because they coordinate their patients’ care and services themselves. Changes in how they operate are coming slowly, but certain targeted interventions may help this process along.

To encourage physicians to get more involved in an upcoming ISD network, it is important to involve them early in the decisional process so they are convinced that this new service meets their needs. However, the critical factor in their participation seems to be receiving the information they need to understand the system. The majority of physicians are not familiar with or do not understand the term “ISD network” and the underlying concepts. Also, physicians must know when the new ISD network services will be available and how to access them. In the Eastern Townships, they were not sufficiently involved in the process in the pre-implementation phase, and there was also many problems in the transmission of information. The physicians thus felt that the case managers could not make any real changes in their day-to-day practice. They forgot to use these services (69.1%), they used CLSC or hospital social workers (63.6%), they did not know how to contact the case manager (59.4%), or they continued to coordinate their patients’ services themselves (54.5%). Also, they had no clear understanding of the case manager’s role (54%), nor which clientele was targeted by this service coordination mechanism (40.2%).

One of the weaknesses of this study was the number of physicians used to measure the changes in perceptions regarding case management. Sending the second questionnaire six months after implementation was too soon and did not allow enough time for close contacts between physicians and case managers. Less than half the respondents had had contact with a case manager, and only one or two of these respondents’ patients had been followed by a case manager. Physicians’ perceptions will be explored again two years after the beginning of case management implementation in order to see if their perceptions change.
Conclusion

Family physicians realize the importance of having ISD networks for frail older people. They want to work with case managers and be involved in the networks. However, their understanding of their own and the case manager’s role is still not clear. It is vital to involve them in the decisions and discussions prior to establishing this mechanism, and to inform them about the availability and functions of case managers, the profile of the target clientele and the usefulness of case managers to them and their patients. Finally, the visibility of case managers must be enhanced, not just with physicians but also with the general public.

Reference

8. User Guide for the PRISMA-7 Questionnaire
To identify Elderly People with Severe Loss of Autonomy

Michel Raîche, Réjean Hébert, Marie-France Dubois & the PRISMA partners

Introduction
Most people 65 and over enjoy good health and live autonomously at home. However, some elderly people, living at home or in a seniors’ residence, experience moderate to severe loss of autonomy. During the project for implementing an Integrated Services Delivery (ISD) for the elderly in the Eastern Townships, the partners needed to find a rapid and effective way of identifying elderly people with moderate to severe loss of autonomy, in the absence of a recognized SMAF score (Système de mesure de l’autonomie fonctionnelle – Functional Autonomy Measurement System). Johanne Bolduc, of the Carrefour Santé of the regional municipality (MRC) of Coaticook, had requested a tool of this kind. The PRISMA (Program of Research to Integrate the Services for the Maintenance of Autonomy) research team had previously conducted a mail survey to identify elderly people at risk of losing their autonomy (prediction). A re-analysis of this data made it possible to select the questions that were the best descriptors of actual loss of autonomy.

This document is aimed at presenting the PRISMA-7 tool to decision-makers and clinical practitioners whose patients are solely or primarily elderly people.
Target population and autonomy continuum

Autonomy continuum

The need
To identify people with moderate to severe loss of autonomy whose condition is not known to us, a condition that could deteriorate rapidly if no action is taken. They should at the very least undergo an autonomy evaluation.

The objective
In the absence of a known SMAF score, use a simple, effective and rapid tool to identify elderly people with moderate to severe loss of autonomy while they are in contact with health workers or in a community setting.

The SMAF reference tool
The SMAF\textsuperscript{2-4} is a component of the multi-client assessment tool. This tool has been widely used throughout Québec since the spring of 2002 by the Quebec Ministry of Health and Social Services to evaluate the autonomy of elderly people. Using epidemiological data and monitoring the distribution of ISO-SMAF Profiles\textsuperscript{1}, a group of clinical practitioners in geriatrics found an SMAF score of $\geq 15$ to be the most accurate indicator of a moderate to severe loss of autonomy.
Why is this study needed?

We could ask any number of questions to determine whether or not an elderly person is experiencing loss of autonomy or, better yet, we could administer the complete SMAF tool.

Are there any targeted questions that would give me an accurate indication as to whether or not the person before me has an SMAF score of $\geq 15$?

This research was conducted to come up with these questions.

Obviously, if we have to ask 100 questions to determine whether or not someone has a high SMAF score, it would be less time consuming to administer the SMAF directly. There are statistical analysis methods for determining how close a connection there is between a series of questions and a test result: namely the SMAF score. Obviously, the more questions we ask, the more accurate the result will be.

This is the choice we face: do we want an abridged tool that is closely linked with an SMAF score of $\geq 15$, or do we want to administer the complete SMAF?

The study was designed to help us develop an abridged tool; our goal was not to draw up a list of questions that would take as long to administer as the SMAF itself (which takes between 15 and 20 minutes to complete).

Naturally, we may often feel that some questions are lacking or that another element is just as important, but our analyses demonstrated, beyond a shadow of a doubt, that other questions are not as effective in terms of being closely linked with an SMAF score of $\geq 15$. Below please find a list of topics that were studied during this research project.

Study methodology

The list of questions analyzed was drawn up following a review of scientific and clinical literature on loss of autonomy by a committee of clinical geriatric experts. They selected a list of 23 questions that targeted the main problems associated with loss of autonomy in elderly people that could be answered by a “yes” or “no.”

These questions dealt with falls, medication, memory lapses, the need for assistance, nutrition, emotional health, hospitalization, activity/mobility restraints, deafness, vision, age, gender, etc.

The study was carried out with 594 elderly people chosen at random in the Sherbrooke area; they answered the 23 questions and were then evaluated at home with the SMAF tool. As a preliminary analysis,
each question was associated with an SMAF score of $\geq 15$. This enabled us to compile an initial list of meaningful questions (Chi square). Subsequently, an analysis of multivariate statistical regression made it possible to pinpoint the most effective questions associated with an SMAF score of $\geq 15$. Lastly, sensitivity and specificity analyses made it possible to study various threshold scores, that is, the number of positive responses the elderly person had to provide to be considered to be at risk.

Results
From among the list of 23 questions, 7 were identified as the best descriptors of an SMAF score of $\geq 15$. The other questions we studied proved to be less effective at describing a high SMAF score.

Administering the questionnaire
This tool has proven effective at identifying the targeted individuals, namely frail elderly persons. Should stakeholders exercise caution when administering the questionnaire? YES!

1. First and foremost, do not indicate that a YES answer is an at risk response.

2. The correct response = the individual’s own response:
   - Since the questionnaire was validated by mail, no one was able to influence the participants’ responses
   - Do not attempt to interpret participants’ responses
   - Do not influence participants’ responses when asking the questions
   - Avoid making any judgments (i.e. he/she answered “no” but I think it should be “yes”)

3. Should the participant hesitate between yes and no, ask him or her to choose one of the two responses.

4. If, despite several attempts, he or she persists in answering “a little” or “at times,” enter yes as the correct response.

5. Question # 6 is correct:
   “In case of need, can you count on someone close to you?”
   - A yes response is the one that indicates that a more in-depth evaluation is required.
• It is likely that simply being able to identify this person indicates that the participant felt the need of assistance. While this result may be surprising, it is correct; it was measured with the 594 people who took part in the study. Those who replied no to this question enjoy greater autonomy than those who responded yes. An elderly person who does not identify someone that he or she can count on in case of need is more autonomous.

6. Do not tell participants whether they have been identified as positive or negative.
   • It may cause unnecessary worry if we tell them they are at risk of something.
   • Say: “If necessary, the single entry point or a health care worker will contact you.”
   • What happens next: A more in-depth evaluation if the respondents gave 3 or 4 or more positive answers. That’s all!

7. What will happen after responding to the questionnaire? A more in-depth evaluation may be conducted (if the participant answered yes four times or more). That’s all!

**PRISMA-7 questions & answers**

Is the response valid if a helper answers the questions?

Yes, provided he or she is very familiar with the elderly person and knows how he or she would respond. The proprietor of a seniors’ residence may also answer for an elderly person, provided he or she is very familiar with the person and knows what he or she would respond. The best source of information is, nevertheless, the elderly person.

**Question #1: Are you over 85 years of age?**

Why the age criterion?

It is common knowledge that the very elderly experience greater loss of autonomy than those who are not as old. But at what age can we truly claim that there is a very high risk? Beginning at 80? 90? 82? With the study data, the 85-year-old threshold proved to be the most closely associated with moderate to severe loss of autonomy. However, that constitutes only a single additional risk factor, it does not mean the questionnaire is restricted to those 85 and over; it is aimed at people 65 years and over. A 72-year-old who provides 4 other positive responses has less
autonomy than a 90-year-old with a single positive response to the Prisma-7, i.e. that he or she is 85 or older.

**Question #2: Male?**
Why are men considered to be at greater risk?

It is common knowledge that men are less autonomous than women in terms of certain domestic chores. This was also confirmed during this study; being a man is closely associated with a moderate to severe loss of autonomy.

**Question #3: ... do you limit your activities**
If the person does not understand this term, try *cut down on your activities* instead.

**Question #4: ... regularly assist you**
If the person asks what we mean by regularly, it is *his or her* definition of *regularly* that counts, so ask “does regularly mean every week or every day to you?” If the respondent says *every week*, reformulate the question as follows: “Do you need someone to help you on a *weekly* basis?”

**Note on the Polish questionnaire**
There is a small Polish community in the Eastern Townships. Since one of the PRISMA research agents is also of Polish origin, she readily agreed to do the translation to ensure that the respondents were able to answer in their language of origin whenever language presented any barrier to complete understanding.
What happens to those with a positive evaluation?

An elderly person identified as positive by the PRISMA-7 must undergo the SMAF evaluation to determine his or her degree of autonomy.

As with any a screening test, positive results include true positives (the ones we are looking for) and false positives. Only an SMAF evaluation makes it possible to differentiate between the two. But PRISMA-7 makes it possible to reduce by two-thirds the number of people that have to undergo an immediate SMAF evaluation, since the test identifies 35.5% as positive (with a threshold of 3 or more yes answers). In the case of a threshold of 4 or more yes answers, only 19% were identified as positive, which eliminates 81% of those requiring evaluation. Obviously, at this point, sensitivity is reduced, but specificity increases to a significant degree. It is up to the decision-makers and clinical practitioners to select the desired threshold in terms of the process for evaluating new cases of elderly persons in their teams. Some teams decided...
to start with a threshold of 4 or more yes answers, but once they had hit their stride they lowered the threshold to 3 or more positive responses.

Regardless of what we might hope, no screening test is 100% accurate. Even the Pap smear for uterine cancer is not 100% accurate, although it is very widely used. Moreover, sensitivity to the Pap test is similar to the PRISMA-7. For this type of questionnaire, effective results allow us to recommend it and to use it extensively.

**Prevalence of moderate to severe loss of autonomy in a targeted population**

The PRISMA-7 validation was carried out with a sample of elderly persons selected at random. The prevalence (frequency at a specific time) of moderate to severe loss of autonomy in non-institutionalized people 75 and over stands at 21%. Obviously, the frequency of moderate to severe loss of autonomy is greater in elderly persons who visit health care providers or receive health services. Fully autonomous elderly persons visit physicians far less frequently. Consequently, if the PRISMA-7 was used, for example, on elderly persons visiting a CLSC, the percentage of those with moderate to severe loss of autonomy would be far greater than among the elderly members of a golf club. Moderate to severe loss of autonomy exceeding 21% is to be expected among elderly CLSC patients.

Clinical practitioners used the PRISMA-7 solely for elderly people whom they considered to be at risk. A high percentage of them were identified positive by the PRISMA-7. Is it normal to obtain this high a percentage?

One thing is certain, it is hardly surprising! The certainly tends to indicate that the intuition of the experienced clinical practitioners is confirmed by this PRISMA-7 result. By targeting, from the outset, individuals identified as frail by a clinical practitioner, the frequency will be far higher than the 21% also in this situation.

The PRISMA-7 cannot replace intuition or clinical judgement, rather, it supports it by documenting and quantifying the likelihood of dealing with an elderly person experiencing loss of autonomy. Previously, only a more in-depth evaluation made it possible to determine whether this was the case. PRISMA-7 permits an initial vetting in cases that should be evaluated first. The next step is to evaluate the elderly person with the SMAF.
Note on PRISMA-7 and case managers

Some Québec regions have a team of case managers involved in setting up the integrated services network for elderly people. A positive PRISMA-7 result does not mean that the person must be assigned a case manager. While this may be the case, only a more in-depth evaluation can answer this question.

\[
\text{positive PRISMA-7} \neq \text{The need for case manager} \\
\text{positive PRISMA-7} = \text{The need for a more in-depth evaluation}
\]

When is the PRISMA-7 required?

The PRISMA-7 may be used in a single entry point, it may be administered by telephone, by clinical practitioners or volunteers trained to use it (see instructions), by homecare workers, in emergency rooms or by volunteers (Meals on Wheels, for example). Some clinical teams plan to use it during the campaign for vaccinating the elderly against the flu, which is an excellent opportunity for more comprehensive tracking.

Conclusion

- Identifying at-risk individuals during visits with stakeholders is an innovative way to make major advances in public health;
- It provides us with a valid and effective tool for identifying frail elderly persons;
- It provides us with an excellent opportunity to identify these frail elderly people before their loss of autonomy becomes too severe, thereby increasing the potential for intervention;
- We can then ensure that they receive a more in-depth evaluation to determine the care and services their condition requires.

Different versions of the PRISMA-7 questionnaire

Note about the different versions

Most of the people administering the questionnaire altered the format to include a space for a Medicare number and the establishment’s logo. We have no problem with these modifications. However, we did stipulate that the wording of the questions remain unchanged, since the analysis
was carried out using these questions and we cannot provide any guarantees as to the validity of any that may have been changed.

Both the self-administered questionnaire and the one administered by a stakeholder are aimed at exactly the same individuals, i.e. those 65 and over; only the visual presentation and the tone of some of the information was changed. For example, we have removed the phrase “elderly person with moderate to severe loss of autonomy” in the questionnaire title in order to prevent unnecessary worry on the part of elderly people who may complete the self-administered version, and in order to avoid influencing their responses. This questionnaire is not limited to those 85 and over; it is aimed at all elderly patients. See section entitled “Prisma-7 questions and answers.”
PRISMA-7 Questionnaire
To identify elderly people with a moderate or severe loss of autonomy

Does this person have a case manager?
If yes, send the information you have on the person’s health to the case manager, and do not complete this questionnaire.

If this person does not have a case manager, do you know his/her “up-to-date” SMAF score?
If yes, do not complete this questionnaire. If his/her score is 15, refer the person’s file to the single entry point.

This questionnaire is designed for elderly people who do not have a case manager and whose SMAF score is not known.

<table>
<thead>
<tr>
<th>Identification:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question</strong></td>
<td><strong>Answer</strong></td>
</tr>
<tr>
<td>1. Are you more than 85 years old?</td>
<td>Yes No</td>
</tr>
<tr>
<td>2. Male?</td>
<td>Yes No</td>
</tr>
<tr>
<td>3. In general, do you have any health problems that require you to limit your activities?</td>
<td>Yes No</td>
</tr>
<tr>
<td>4. Do you need someone to help you on a regular basis?</td>
<td>Yes No</td>
</tr>
<tr>
<td>5. In general, do you have any health problems that require you to stay at home?</td>
<td>Yes No</td>
</tr>
<tr>
<td>6. In case of need, can you count on someone close to you?</td>
<td>Yes No</td>
</tr>
<tr>
<td>7. Do you regularly use a cane, a walker or a wheelchair to move about?</td>
<td>Yes No</td>
</tr>
</tbody>
</table>

Number of Yeses and Noes [ ] [ ]

Instructions
For questions 3 through 7, do not interpret the answer, simply note the person’s answer without considering whether or not it should be Yes or No. If the respondent hesitates between Yes and No, ask him/her to choose one of the two answers. If, despite several attempts, he/she persists in answering “a little” or “at times”, enter Yes.
(Reverse side of the questionnaire, or page 2 if sent by fax)

Identity of the questionnaire respondent
First name: ______________________________________
Family name at birth: ______________________________
Address: ________________________________________
Municipality:_____________________________________
Postal code: ______________________________________
Telephone #: _____________________________________
MIN: ___________________________________________

Identity of the person who administered the questionnaire
First name: ______________________________________
Family name: ____________________________________
Organization: ____________________________________
Telephone #: _____________________________________

Instructions
If the respondent had 3 or more yes answers, send this questionnaire or the results to
the single entry point for elderly people in your territory
Telephone # of the single entry point: __________________
Fax # of the single entry point: _______________________

* Note:
A “yes” response to question # 6 truly constitutes a person at risk, contrary to what you
might previously have believed.

Source:
This questionnaire was developed and tested by the team directed by Dr. Réjean Hébert
of the Research Centre on Aging of the Sherbrooke University Geriatrics Institute.
Should you require any additional information about this questionnaire or wish to make
any suggestions, please contact Michel Raîche at (819) 829-7131 extension 2652.

Document updated: November 2003
Do you have a case manager?
If yes, you don’t need to complete this questionnaire.

Instructions:
There are no correct answers, your answers are the correct ones. Indicate spontaneously what you think and give the questionnaire to a person in charge.

**Identification:**
- First name:
- Last name:
- Address:
- City:
- Postal Code:
- Phone:
- Health insurance number:

<table>
<thead>
<tr>
<th>Your age: ___ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex: Men ☐ Women ☐</td>
</tr>
</tbody>
</table>

**Question**

1. In general, do you have any health problems that require you to limit your activities?  
   - Yes ☐ No ☐

2. Do you need someone to help you on a regular basis?  
   - Yes ☐ No ☐

3. In general, do you have any health problems that require you to stay at home?  
   - Yes ☐ No ☐

4. In case of need, can you count on someone close to you?  
   - Yes ☐ No ☐

5. Do you regularly use a cane, a walker or a wheelchair to move about?  
   - Yes ☐ No ☐

www.prisma-qc.ca

**Consent form**

In the health network, we must ensure confidentiality whenever we send clinical information. In some cases, it may be necessary to use a consent form with the PRISMA-7, such as in a community context (for example,
a home services coop, Meals on Wheels, etc.). These organizations are not covered by health establishment consent forms. You must therefore ask the elderly person for their authorization before sending their PRISMA-7 responses to the health network, for example, the single entry point or their family physician if the person expresses any reluctance.

See the next page for a sample consent form that could be used, for example, by Meals on Wheels, in MRC Memphrémagog (designed by Paul Martel, Community Organizer in Magog).

Some community organizations in the Townships have requested feedback about the people they refer to a single entry point, whenever they get a positive PRISMA-7 score. They are not requesting confidential information, they simply want to be informed as to whether or not the person was contacted and when he or she will be evaluated.

An elderly person may refuse to respond to a volunteer. Should the volunteer believe that the physical or psychological health of the elderly person is threatened, there is a law that protects persons acting in good faith in order to protect the health of another individual, for example, by calling the single entry point to inform it of the condition of an elderly person whose condition gives just cause for alarm. The law was passed in December 2001.

Act 180, an Act to amend various legislative provisions as regards the disclosure of confidential information to protect individuals.

Authorizes the transmission of confidential information without the consent of the person involved in situations where there is reason and probable cause to believe that the imminent danger of death or severe injury (physical or psychological) threatens one or more persons.

The communication of information must be limited to information required for the purposes for which the communication is intended and may only involve the person or persons exposed or those that may offer to assist them.
Consent to transfer the questionnaire PRISMA-7

I understand that this questionnaire is used to determine whether I may benefit from a more detailed evaluation of my autonomy. If it is required, a health professional may determine my needs and the services I may receive.

I agree to answer these questions knowing that my answers may be transmitted to the single-entry point of services of the (name of establishment) which will contact me if required.

I authorise the (..............) single-entry point of services to do a follow-up with the referring organization or the health professional who administered the questionnaire.

_______________________________________
Signature of the person or a representative

_______________________________________
Telephone number

_______________________________________
Signature of the referring organization

_______________________________________
Telephone number
Choice of the threshold score for the PRISMA-7 questionnaire

Two threshold scores proved effective when administering the PRISMA-7. You will find below the results obtained during the analyses, applied to a sample population of 1,000 elderly people. The charts illustrating the results for these two scores are presented on the pages following the bibliography.

Questionnaire's ability to identify the targeted patients

<table>
<thead>
<tr>
<th>Critical threshold</th>
<th>Positive ident.</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Predictive value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 yeses or more</td>
<td>35.52%</td>
<td>78.26%</td>
<td>74.74%</td>
<td>42.65% 93.47%</td>
</tr>
<tr>
<td>4 yeses or more</td>
<td>19.02%</td>
<td>60.87%</td>
<td>91.02%</td>
<td>61.95% 90.64%</td>
</tr>
</tbody>
</table>

In other words...

We know that the prevalence of moderate to severe loss of autonomy (SMAF ≥ 15) is approximately 21% for elderly people 75 and over living at home.

As such, for a sample of 1,000 elderly persons 75 and over, 210 of them have moderate to severe loss of autonomy.

It is these 210 people that we want to identify through the tracking questionnaire.

If we ask 1,000 people to answer the questionnaire, 355 of them would have a positive score with a critical threshold of 3 or more yes answers. A more in-depth evaluation (SMAF) of these 355 people makes it possible to identify 164 people with moderate to severe loss of autonomy.

Therefore, with a threshold of 3 or more yes answers:
• 355 evaluations out of 1,000 are needed to identify 164 of the 210 targeted individuals;
• 46 of the 210 people targeted are not identified by the process.

Similarly, with a threshold of 4 or more yes answers:
• 190 evaluations make it possible to identify 128 of the 210 targeted persons;
• 82 of the 210 targeted individuals are not identified by the process.
These figures correspond with a sample for whom we have no SMAF score. Naturally, in reality, some of these 210 people living at home or in seniors’ residences have already undergone an SMAF evaluation, since some of them already receive services and have been evaluated previously.

Each option has its own advantages; it is up to the teams involved in evaluating the elderly people to choose the threshold score that suits their own intervention priorities and organization. These teams must determine who will evaluate the individuals identified as positive through PRISMA-7, how the information will be forwarded to them and how many evaluations they can carry out.

Bibliography

These results are taken from a new analysis of the data used in the following publications:


An article is in progress on PRISMA-7:


Additional references:


Table 8.1
Ability of the PRISMA-7 questionnaire to identify the targeted clients, threshold = 3

<table>
<thead>
<tr>
<th>Loss of autonomy (SMAF ≥15)</th>
<th>Yes</th>
<th>No</th>
<th>Total number of elderly persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive (≥3)</td>
<td>164*</td>
<td>191*</td>
<td>355*</td>
</tr>
<tr>
<td>True positives</td>
<td>a</td>
<td>b</td>
<td>a + b</td>
</tr>
<tr>
<td>False negatives</td>
<td>c</td>
<td>d</td>
<td>c + d</td>
</tr>
<tr>
<td>Negative (≤2)</td>
<td>46*</td>
<td>599*</td>
<td>645*</td>
</tr>
<tr>
<td>Sensitive = a + b</td>
<td></td>
<td></td>
<td>1000</td>
</tr>
<tr>
<td>Specificity = d + c</td>
<td></td>
<td></td>
<td>1000</td>
</tr>
</tbody>
</table>

* The percentages and number of subjects differ since the number of subjects was rounded off to illustrate the example on a sample of 1,000 people.
Table 8.2
Ability of the PRISMA-7 questionnaire to identify the targeted clients, threshold = 4

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Loss of autonomy (SMAF ≥ 15)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Positive (≥ 4)</td>
<td>128*</td>
</tr>
<tr>
<td></td>
<td>a = 60.87%</td>
</tr>
<tr>
<td>False positives</td>
<td>a</td>
</tr>
<tr>
<td>True positives</td>
<td>c</td>
</tr>
<tr>
<td>Negative (≤ 3)</td>
<td>82*</td>
</tr>
<tr>
<td></td>
<td>a + b</td>
</tr>
</tbody>
</table>

Positive predictive value = \( \frac{a}{a + b} = 61.95\% \)

Negative predictive value = \( \frac{d}{c + d} = 90.64\% \)

Prevalence = \( \frac{a + c}{a + b + c + d} = \frac{210}{1000} = 21\% \)

* The percentages and number of subjects differ since the number of subjects was rounded off to illustrate the example on a sample of 1,000 people
9. Update on ISO-SMAF Profiles: from Development to Implementation

Nicole Dubuc, Réjean Hébert, M. Tousignant

Introduction

In order to respond more effectively to the many needs of the elderly, a wide range of care and services must be provided, involving many stakeholders and caregivers. In the context of an ageing population, characterized by steadily decreasing resources and a growing demand for services, long-term health care systems must ensure that resources are made available to those who need them the most. This is why we must develop different procedures for systematically linking needs, services and resources.

In Québec, major initiatives have been introduced to reinforce the existing health care system by promoting a continuum of services, both at home and in institutions. Initiatives are also under way to improve the administration of the health care and services network in order to ensure that it is better integrated and able to assume full responsibility for the health of the elderly in a given region. However, the success of an approach of this kind hinges on the development of a clinico-administrative management system based on a model that will accurately reflect the actual needs of the concerned population.

To respond to various clinical concerns, such as evaluating, planning and deploying an intervention plan, directing the individual into a diversified network, and lastly, systematically tracking the needs of the elderly, a long-term health care management system must be built on a functional health model. This model would respond more effectively to the needs of elderly people experiencing loss of autonomy. Specialists have demonstrated that a diagnostic approach may not be ideally suited to determining the health of the elderly. Multiple diagnoses and chronic illnesses are common among the elderly, and this affects their ability to complete their daily activities. In addition, physical, psychological and social considerations are very closely linked, forcing a multi-dimensional evaluation if we are to gain a thorough understanding of all dimensions. This, in turn, means that in order to determine the needs of the elderly, we must not only consider any health problems that
may arise, we must also understand how such problems will affect their functional autonomy\textsuperscript{31, 40, 44}. At present, many countries use a functional autonomy measure both to establish a person’s eligibility for long-term services and to measure their effectiveness\textsuperscript{3, 41, 48}. It is also considered essential to a geriatric evaluation\textsuperscript{32}.

It is interesting to note that management systems are largely based on a classification system. The nursing care sector likely boasts the most numerous and diverse classification systems, due to the fact that nursing care generally accounts for 60 to 80% of a health facility’s overall costs\textsuperscript{12, 47}. However, the terminology used to describe the classification systems varies extensively depending on the ultimate objective (i.e. intervention plans, orientation, staffing or financing), clinical environment (i.e. hospital, home care, outpatient, long-term care), types of patients (i.e. mental health, podiatry, long-term care), which leads to some confusion. At times, the term \textit{classification} is incorrectly used to describe systems used to measure the nursing workload that, in fact, do not use patient grouping or classification principles.

While not exclusive, there are three main approaches to developing health classification systems. Firstly, there are the direct-approach systems, which are generally nursing workload measures known by the following acronyms: PRN 80, GRASP, NISS, MESSII, CTMSP\textsuperscript{59}. An instrument for measuring nursing workload compiles the number of health care hours the patients require, using validated standard hours for care activities. This information is used to formulate an objective, quantified recommendation as to the number of resources needed to perform the activities anticipated for a 24-hour period and per shift. These systems generally adopt an additive approach based on the theory that the patient’s needs are equal to the sum of a certain number, type and frequency of activities or tasks that generally involve nursing care or assistance. Each activity, treatment or procedure has a corresponding weight or score. Each point corresponds with a certain number of minutes, and the total number of minutes indicates the workload required. This procedure is task-centred, and is not linked to the creation of subject groups, but rather to the level of care provided. This type of system does not consider possible interactions between both objective and subjective clinical factors. Another theory is that a particular activity takes the same amount of time, on average, regardless of patient condition, caregiver expertise or the organizational environment.
The second approach is indirect and uses critical indicators to represent groups of care activities. The selected elements are closely correlated with nursing time and have helped to differentiate between patients requiring little care and those who need more intense care. The indicators may reflect needs such as assistance in taking a bath or walking, or may represent the condition (i.e. unconscious), the person’s state (blind) or a specific care activity (complex bandaging). They are generally scored according to various levels of intensity, representing the individual’s needs or situation, and are then combined in order to form a single value for each subject. The indicators are then grouped through consensus, by a committee, or through a statistical approach, such as multivariate regression analysis or factorial analysis. These indicators are themselves adapted to clinical realities such as the OMAHA system for home care or the MEDICUS system for short-term hospital stays. The OMAHA system does not include a module for quantitative or qualitative staffing and MEDICUS does not provide any information as to the validity of the link between the indicators and the workload.

The third approach refers to a method of presenting information other than by the overall outcome. In fact, some researchers believe that using an overall outcome conceals a certain reality and makes it difficult to determine the patient’s actual clinical profile. These researchers believe a similar result may be obtained by combining different items, since the subjects may exhibit different chronic conditions. Weighing different profiles provides a more detailed approach and is, in this case, far more useful to the stakeholders. In an approach of this kind, the systems are also based on an evaluation of indicators linked to patient care, but they adopt a different statistical approach to grouping the subjects, such as cluster analysis and its variants. The evaluated subjects are therefore compared with groups of individuals sharing common characteristics; they require roughly the same mix and level of services and cost the facility in question roughly the same in terms of resources and expenses, hence the term case-mix classification. Standard nursing care time or other types of services, or standard costs are generally allocated to each of the groups by specific validation procedures that vary just as widely.

To group these people, only personal characteristics reflecting the clinical conditions that provide the best measure of the area of interest resulting in the provision of services could be used. Since it is widely accepted that functional status accounts for a significant percent-
age of the nursing care variation, daily living activities form the nucleus of most classification systems. Weissert and Musliner suggest that the groups be defined in terms of the most sensible clinical approach, rather than simply grouping people according to similar care costs. Lastly, while the most frequent use of case-mix classifications is financial, measuring them also makes it possible to compare health care results, such as quality.

Among the management systems for long-term care that have been developed in recent years, case-mix classification systems are now the most popular. In the area of long-term care facilities, the following systems are used: the RUGs III system (Resources Utilization Groups), developed in the United States and most widely used in other countries, such as England, Japan, Spain and Finland, the AGGIR system (Autonomie Gérontologie Groupes ISO-Ressources) in France, the SHRUGs (Health Service Resource Utilization Groups in Scotland, RCI (Resident Classification Instrument) and PCAI (Personal Care Assessment Instrument) in Australia. For home care, there are few systems currently in place except the HHRGs (Home Health Resource Groups) in the United States.

However, a management system chosen on the basis of case-mix classification must take into account the objectives of the health system of interest to us and its various metrological qualities, such as reliability, validity, sensitivity, robustness and efficiency. Examined in their own context, the approaches selected by these systems meet the targeted objectives and may be applied to health care systems that operate in a similar manner. On the other hand, they also have certain limitations with regard to the samples chosen, analysis method, resource measure or classification variables used, and do not apply to an integrated care system that can track and meet the needs of elderly persons experiencing loss of autonomy in the continuum of services (home care, intermediate resources and institutions).

This situation led to the development of a case-mix classification management system known as the ISO-SMAF profile. Based on an evaluation of functional autonomy, this classification forms the basis of a system of clinical and administrative information on all elderly people receiving long-term health care services, either at home, in an intermediate facility or a long-term care institution. For the past four years, this system has been used for various applications in certain regions of
Québec; this paper will briefly review its development and validation and define its potential.

**Method**

**General overview**

Cluster analyses were used to identify disability profiles by adopting the 29 SMAF (Système de mesure de l’autonomie fonctionnelle – Functional Autonomy Measurement System) elements as classification variables. The analysis method selected for this study provides a number of classification alternatives, each of which was analyzed as to its reliability and validity according to the following parameters: stability, reproducibility, profile homogeneity, inter-profile heterogeneity, predictive validity in terms of nursing time required, cost of care and total costs (health, infrastructure, operations and administrative support). Subsequently, the content validity was determined by submitting the classifications with the correct properties to a committee of experts in order to determine their clinical usefulness and select the most appropriate classification. Each of these parameters is detailed below.

**Sample and data collection**

The transversal study involved 1,977 elderly people who were experiencing loss of autonomy. They lived in 112 facilities and were selected according to a stratified sample that was restricted to those 65 and over residing in various living environments (at home with or without services (n = 15), intermediate resources (n = 52) and institutions (n = 45) in various regions of Québec (metropolitan, urban and rural areas). A clinical evaluation and an estimate of the cost of the services required (health care, long-term care, administrative support) were carried out. The SMAF was used to evaluate the subjects in order to determine disability, and the revised CTMSP (Système de classification par types en milieux de soins prolongés - Classification System by Types in Long-Term Care Facilities) was used to determine the services required and received. A cost evaluation was conducted using the financial data obtained from each of the facilities and information collected during subject interviews.
Classification development, validation and choice

When a classification system is being developed, an instrument is selected according to its objectives and respective functions. A number of studies demonstrated the importance of multi-disciplinarity and inter-disciplinarity when evaluating the elderly. At the multidisciplinary team level, an evaluation of functional autonomy is the common denominator that helps the different stakeholders focus on the practical objectives to be achieved. It is used to track the user in the system and provide coordinated care and services. Moreover, planning interventions and directing the elderly person towards the most ideal living environment requires uniform patient-evaluation procedures. To facilitate this evaluation and ensure greater accuracy, this team needs a standardized measurement instrument that minimizes bias or manipulation and avoids duplication. The instrument must therefore be reliable, valid and sensitive to changes in the user’s situation in order for care and services to be adjusted accordingly. It must be acceptable to both the stakeholders and those being evaluated. Lastly, it must be a useful indicator for tracking user developments. In order to be adopted in Québec, this instrument must be reliable and valid both in French and in English. It must also be rapid and user friendly and not require specific, advanced training.

As indicated above, the 29 items on the functional autonomy measurement system were used to develop the classification. The SMAF evaluates 29 functions encompassing activities of daily living (ADL) [7 items], mobility [6 items], communication [3 items], mental functions [5 items] and instrumental activities of daily living (IADL) [8 items]. Each SMAF function is rated on a scale of 0 to 3, for a total score of 87, according to specific criteria derived from information obtained by questioning/observing the subject or third-party questioning. This system also makes it possible to gather information about the material and social resources used to compensate for disabilities, thereby enabling us to obtain a handicap score. The SMAF is included in the Multiclientele Assessment Tool (MCAT) mandated since 2001 by the government for use in all facilities providing long-term care and services. It is available in several languages and has been used for clinical purposes in a number of Canadian provinces and other countries. It was tested as to validity and reliability and sensitivity to change.

In view of the objectives targeted by this classification, we selected a traditional, automated method of classification analysis, namely the non-hierarchic K-means. The advantage of this method is that it groups...
subjects solely in terms of characteristics, regardless of current health practices and structures. This iterative procedure is also considered to be the most useful of the non-hierarchic methods\textsuperscript{14, 29}. According to this method, the subjects are put in a multi-dimensional space, with as many axes as there are variables, and where their position is determined by establishing how they score simultaneously on all 29 SMAF items. Next, by means of an iterative selection procedure, individuals with similar proximity are combined into a single group. The subjects’ similarity was measured by means of the Euclidian distance measure. The \textit{K-means} procedure also requires certain specifications, such as the determination of the number of groups and centres. The Ward hierarchic method was initially used to obtain this information. This procedure was systematically applied to classifications that varied from 5 to 15 profiles.

The classifications were simultaneously evaluated with different parameters, and reliability was determined in terms of stability and reproducibility. Generally, when the data are clearly structured, similar outcomes are obtained with different samples or methods or split variables\textsuperscript{23}. The stability of each of these classifications was determined using the split sample validation method recommended by Punj and Stewart\textsuperscript{52} as follows: the 1,977 subjects were divided into two sub-sample data groups, sample D1 and sample D2. Sample D1 was used to make up the groups and sample D2 was used as an internal validation sample. A cross validation of D2 was applied using one solution with constraints, and a second solution without constraints was applied to each of the groups (from 5 to 15 groups). For a specific number of groups, the solution with constraints classified all cases of the D2 samples based on the results of the D1 analysis, while the solution without constraints imposed no restrictions. A Kappa coefficient was then calculated for both of the D2 outcomes obtained, for each specific number of groups (5 to 15 groups). A minimum threshold of 0.61 was used as the criteria for accepting or rejecting a solution. According to Landis and Koch\textsuperscript{42}, an aggregated coefficient of between 0.61 and 0.80 may be considered “very good.”

Reproducibility was assessed via various approaches to automated classification analysis, such as \textit{K-means} with and without \textit{running means} and average linkage options. All outcomes were then traced and visual inspection was used to compare the various profile forms in order to determine whether or not the different methods produced similar profile structures.
To be considered a reimbursement measurement, Turner et al.\cite{Turner67} state that a classification system must be able to explain at least 30% of the cost variation and account for the greater portion of a facility’s activities. Due to the fact that nursing care and assistance account for 60 to 80% of a health facility’s costs, most systems designed to date (RUG III, AGGIR, etc.) are primarily concerned with explaining nursing care variations\cite{9,26}. While this percentage may vary according to the type of institution, it remains, for the most part, the largest. With regard to this information, Dunstan and his associates\cite{20} stress that any reimbursement or financial system must ensure intra-regional/intra-institutional equity of resources for a given region. They must also be straightforward, robust and obtained through routine clinical data. As such, predictive validity was determined through variance analysis using the ISO-SMAF profiles as an independent variable, and the required resources as dependent variables. The same procedure was used to evaluate to the degree to which the variation in health costs and totals (care, infrastructure, operations, administrative support) was explained by the ISO-SMAF profiles.

The modified CTMSP system was used to determine the number of hours for nursing care, assistance, support and surveillance; this involved a revision of the CTMSP system for epidemiological purposes\cite{18}. In the past, various authors stressed a lack of consistency in the use of the CTMSP, which varied the orientation of the elderly according to the regions\cite{2,66}. In addition, certain aspects neglected over the years by some users rendered this instrument less able to effectively determine the needs of those with cognitive loss. These findings, in addition to the comments made by various stakeholders, led the team to pay particular attention to this instrument, which resulted in significant improvements in items linked to behaviours, surveillance and communication of support that account for the services needed by this type of patient. The use of a specific cognitive measure (3MS) systemized the evaluation of this dimension for determining services and made it possible to collect accurate data on cognitive loss in elderly persons experiencing loss of autonomy. Lastly, effective use of the instrument’s administrative guidelines made it possible to ensure consistent services, regardless of the living environment.

The process was carried out in two stages. Firstly, using a standardized form, nurses collected information as to health, prescribed medications, transport for medical care, treatments and diagnostic methods,
respiration, diet and hydration, physical mobility, systematic observation, sensory capacity, functional autonomy, intestinal and urinary elimination, emotional state and behaviour and surveillance. The 3MS was administered for the cognitive aspect of the evaluation. The nurses also collected information on the resources currently being used by the subject (professional/paraprofessional, volunteers or friends and family) and the source of financing (private, public and volunteer). Secondly, a qualification team made up of a nurse and a social worker determined how many hours of service were required and provided. Through a standardized procedure, this step was used to calculate points that were then translated into hours of care. This database collected information about subjects in different profiles and determined, for each subject in a 14 ISO-SMAF profile, the median number of hours of care required (professional and paraprofessional).

The cost evaluation included care (professional/paraprofessional; surveillance, transport and furnishings), long-term care (infrastructure and operations) and administrative support. Various information sources were used to obtain the data needed to estimate the cost of the services required and received by the subjects, notably the standard costs established by Statistics Canada, as well as the institutions’ financial reports and statistics. Individual activity-based costing (ABC) was used to apply allocation criteria to identify the share of certain services (i.e. administrative support or support activities) earmarked for the institution’s care unit or program in order to determine the daily cost of the services provided to each user. This data is available separately, and according to separate elements such as living environments (at home, intermediate facilities and long-term care institutions), geographic areas (metropolitan, urban or rural) and the three valuation scenarios for volunteer work (cost = 0, or = private sector or = public sector).

The homogeneity of the profiles may be expressed by calculating the variation coefficient, which is determined by the ratio of the profile’s standard deviation in comparison with its average, and expresses the narrowness of the value chosen within a profile. According to Weissert and Musliner, a variation coefficient of less than 0.5 indicates that the homogeneity of the profile distribution is acceptable.

Heterogeneity may be determined by testing the classification’s ability to differentiate between the groups according to variables that were not used in the classification, but are known to vary between groups. It is generally qualified by variations in average consumption.
of resources and costs. In this study, it is also based on other considerations, such as significant variations in the type of care, for example, incontinence or managing behavioural problems. Significance tests (t-test, Wilcoxon) were carried out and 2 to 2 comparisons were corrected for alpha error according to the Bonferroni principle.

Lastly, face validity is determined by a committee of experts who decide whether or not the classification is relevant to the expected ends. Once all the analyses were completed, classifications with the correct properties were chosen. For each classification a description was selected for the ISO-SMAF profiles according to the 29 SMAF items, and each group’s different variables were described. These results were then sent to a committee of experts, most of who had clinical experience in gerontology and research experience. During the committee selection process, the group's members were chosen for their diverse points of view, experience and competencies. A technique combining the Delphi method and that of the nominal group allowed the members to select the ideal classification according to the stated parameters and the following criteria: the classification has clearly identified profiles, whose meaning may be readily understood. It is useful in the continuum of services both at home and in long-term care, produces a manageable number of groups and provides information that may be used to direct the patient into the long-term health care network. It helps to identify the underlying conditions of those requiring different types of services for the same number of hours per day, and may be used for other purposes, such as planning services and financing.

**Results**

Several classifications were generated by combining the hierarchic Ward method and the non-hierarchic K-means method without the running means option. Similarly, the cross validation procedure was applied and the data were examined using different methods of analysis. Firstly, by studying the results of the cross validation, three outcomes with a Kappa coefficient of (0.61 were rejected due to instability. With regard to reproducibility, various analytical methods tended to produce largely similar profiles for each n group outcome, but with a different increase in the level of autonomy. As such, using the K-means method with the running means option tended to consolidate subjects into groups with a lower level of autonomy, whereas, without this option, the
subjects were more equally divided into groups situated between the two extremes of loss of autonomy.

The other outcomes were evaluated for homogeneity, heterogeneity and predictive validity and studied by a committee of experts. The committee rejected a five-group outcome with an excellent Kappa coefficient of $K = 0.95$ as it was not considered clinically viable. Other outcomes that produced more modest statistical results were rejected for the same reason. Finally, among the four remaining outcomes, the classification with the 14 ISO-SMAF profiles was selected. Several considerations supported this decision, such as classification objectives, conditions associated with the desired system, theoretical framework, clinical judgement and, finally, common sense. The reliability of the 14-profile ISO-SMAF solution is supported by the Kappa obtained during the cross validation ($K = 0.67$), which falls within the 0.61 to 0.80 range that Landis and Koch$^{42}$ considered “very good.”

Regarding predictive validity, variance analysis helped to determine that the classification accounted for 82% of the hours of nursing care required ($p < .0000$), 80% of health care costs ($p < .0000$) and 57% ($p < .0000$) of the total costs in 1995 dollars. The total cost is forecast at 60% when the contribution of friends and family is not taken into account.

The 14 profiles are homogenous in terms of their clinical attributes – defined by a variation coefficient of less than 0.5. As regards the level of autonomy, the coefficients vary from 0.05 to 0.38. Profiles 3 to 14 have variation coefficients of less than 0.21. In terms of total number of hours of care required, the coefficients vary from 0.19 to 0.48.

As regards intra-profile heterogeneity, we noted that from ISO-SMAF profiles 1 to 14, the time required varied from 0.39 (0.16) to 4.07 (0.76) hours per day. There are significant variations between the profiles as to average consumption of resources (time or costs) with the exception of the following pairs (1 and 2; 3 and 4; 7 and 8; 9 and 10; and 11 and 12). However, each of these pairs differs greatly in terms of the specific services required. For example, ISO-SMAF profiles 11 and 12 do not differ in terms of level of autonomy, total hours of care or total costs, but rather in terms of 3MS, age, diagnostic methods (systematic observation) ($p < .007$), mobility ($p < .003$) and treatment required ($p < .001$). In terms of characteristics linked to autonomy, they also differ depending on urinary and intestinal incontinence, transfers, behavioural problems and medications taken. Generally, a gradual increase in
disabilities also translates into longer care hours and, by the same token, higher costs. However, the increase in professional and paraprofessional hours is not proportionate; therefore, the percentage of professional care hours varies and represents from 19 to 37% of total care time according to the profiles.

Figure 9.1 presents a graphic illustration of the profiles that emerged from the 14 groups, according to their results in the five dimensions, namely activities of daily living, mobility, communications, mental faculties, and instrumental activities of daily living. The colours range from green (autonomous) to red (dependent), making it possible to determine the average score for each of the profiles in the sub-dimensions. At each profile extreme is the total average disability score for the SMAF with its standard deviation.

As the profiles progressed, we noted an increasing loss of autonomy of 9.1 (3.4) to 73.8 (3.6). Among these 14 ISO-SMAF profiles, we distinguish five individual categories overall. While the results have been summarized for ease of presentation, please note that the information on
the 29 SMAF items is also available separately. The previous information was used to determine qualitatively the 14 autonomy profiles. The first category contained profiles 1, 2 and 3, in which the subjects experienced difficulty mainly with domestic chores, in terms of difficulties (profile 1), need for supervision (profile 2) or need of assistance (profile 3).

The first group is made up of a greater percentage of women (81.2%) for whom loss of autonomy translates into difficulties completing certain activities like shopping or use of transportation, while the second group is comprised predominately of men (54.7%) who have difficulty completing certain household chores, such as preparing meals and doing the laundry. At the opposite extreme, in the fifth category, which includes profiles 13 and 14, are the least autonomous group; they are generally bedridden and dependent for activities of daily living (ADL). Profile 14 individuals represent those in the final days of their life, who are completely bedridden, and in need of an assistant for all activities of daily living, including feeding themselves, since they can no longer communicate and have very severe cognitive difficulties. These people, however, have relatively minor behavioural problems, namely moaning, emotional instability or apathy, which require occasional surveillance. Between these extremes, we observed progressive disabilities in activities of daily living accompanied, generally, by a greater loss of autonomy, namely in terms of mobility or mental faculties. These disabilities are gradually manifested throughout the profiles.

The second category contains profiles whose subjects experience primarily mobility problems but whose mental faculties are largely intact. This includes profile 4 subjects who are autonomous in terms of ADL; profile 6 subjects who experience difficulty with ADL, and profile 9 subjects who require assistance both in terms of mobility and for ADL. The third category includes profiles where mental difficulties predominate. Profile 5 subjects demonstrate moderate mental deterioration and ADL difficulties, while profile 7 subjects demonstrate serious mental difficulties and minor behavioural problems. Profile 8 subjects also have serious mental problems and require surveillance or supervision for ADL and for mobility. Profile 10 subjects need assistance with ADL, are ambulatory and generally manifest major behavioural problems (roaming, running away). Lastly, the fourth category includes profiles 11 and 12, whose subjects manifest considerable difficulties, for both mobility and mental functions. Profile 11 contains subjects who require assis-
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tance for mobility and for ADL. They may suffer from occasional bladder incontinence, but retain intestinal functions. Profile 12 subjects are dependent in terms of ADL, need surveillance in terms of mobility and are generally incontinent. They also have serious behavioural problems that require closer surveillance (aggressive behaviour directed at themselves or others, roaming, constantly shouting).

Discussion

Development, validation and reliability

Through a sequential process that includes an evaluation of autonomy, computerized classification analyses, validation according to various parameters and the opinion of an expert committee, this study provided proof as to the reliability and validity of this classification of 14 ISO-SMAF profiles.

This clinico-administrative management system is useful for long-term care clinicians, to the degree that stakeholders are able to identity those with a definite profile as having roughly similar characteristics and requiring approximately the same type of care and resources as someone else with the same profile. It therefore increases our understanding of the links between the needs of individuals and the services and resources that must be provided, which is no doubt one of the greatest benefits of this study. Unlike most existing systems, the development of this system focuses first on clinical concerns and then on financial considerations. The validation process demonstrated that, in terms of clinical attributes, the profiles are both homogenous and heterogeneous. Cross validation demonstrated the reliability of this outcome and a variance analysis demonstrated its strong predictive validity.

Regarding the analysis method chosen, Everitt and associates comments that no method should be considered ideal at all times and that some approaches may be preferable depending on the available data and classification objectives. In view of the underlying theory and the data and objectives of this classification, the preferred method proved to be the *K-means* iterative method preceded by the hierarchic Ward method. This mixed method has frequently proved effective at recognizing groups. Moreover, unlike the classification formats used in other systems (ex.: HHRGs, RUGs) that describe the groups while attempting to maximize a prediction of the dependent variable, such as care hours or costs, the procedure used in this study led to a classification based solely...
on clinical attributes of the subjects, without the need of the resource prediction. As such, it is possible to innovate or to modify the care approaches without the need to develop a new classification.

Everitt and associates\textsuperscript{23} also suggest comparing outcomes with different samples and methods when developing a classification. This study demonstrated that different methods of data dissection produced similar outcomes. By applying a cross validation procedure, we also demonstrated that the classification was stable. However, the classification could depend on the sample; it was therefore important to validate this classification with other samples. To that end, a study carried out four years later, in another region, confirmed its stability by reproducing the same approach with a sample of 742 people experiencing loss of autonomy residing in different living environments\textsuperscript{16}. This study also confirmed the construct validity of these profiles by studying their similarities with relation to other measures representing cognitive and physical components. Two measures, the 3MS (Modified Mini Mental State examination) and the Modified Cohen Mansfield for evaluating behavioural problems were representative of the cognitive aspects. For physical aspects we used the Tinetti, which evaluates balance, walking ability and scale of physical functioning (PF-10) of the SF-36.

**General functioning**

The SMAF evaluation provides the information needed to link a person to a profile, and it may be routinely collected and updated regularly. A computer program automatically stores the subjects in one of the 14 profiles using the Euclidian distance. As such, each care institution can use the ISO-SMAF profile for orientation or management purposes without having to conduct an additional evaluation. This process produces savings by reducing redundant evaluations in various health care facilities. Furthermore, a computer system ensures a robust system by automatically providing the profile without judgement or additional input by stakeholders, thereby reducing classification errors and unfair treatment. It also ensures an efficient system that requires little time and effort to use.

**Clinical usefulness**

**Change of living environment**

For several years now, in Québec as elsewhere, consensus supports the need to create the best possible conditions for providing home support to
elderly people experiencing loss of autonomy. However, a time may come when they must be directed to another living environment in order to ensure that they receive adequate care. The decision to direct the elderly towards living environments other than their own home is not an easy one to make. To date, there is no miracle way to accurately predict which individuals will require placement. Each situation is unique and directing people into the long-term services network involves a decision-making process that may be influenced by many factors. Among others, availability of resources, the individual’s personal situation or resistance to a type of structure or resources, available resources in a given territory, geographic accessibility and functional living accommodations. Other factors, such as conditions of the environment, support and family burden, and level of risk may also affect the decision.

One of the primary objectives of the 14 ISO-SMAF profiles is to allow stakeholders to describe the nature and intensity of the various services that must be made available to meet the specific needs of those represented by each profile. They use a common, standardized language for coordinating local resources for home care and adopt a multi-facility, multi-sector approach. In cases where the stakeholders deem it advisable to direct users into another facility, the ISO-SMAF profile may be compared to the ISO-SMAF long-term care profiles available in a region. In order to use the ISO-SMAF profiles to direct individuals into long-term care, it is necessary to first determine which profiles the long-term care facility in a region can accommodate. This requires the evaluation of those currently in long-term care (current long-term care profiles) and the determination of the desired profiles. It is, therefore up to the various authorities concerned, such as local and/or regional joint committees and the various regional facilities, to determine which facilities are able to handle specific profiles. Once this information is available, we can determine, for a specific ISO-SMAF profile, which nursing homes can accommodate the individual, in view of the resources they have at their disposal. Several elements, such as cost of a particular profile in a specific living environment (home, intermediate, long-term care) or the factors listed above (geographic accessibility, functional living accommodations, availability of resources, family support, etc.) inform the decision to alter one living environment for another. Once the admission criteria have been defined for a particular region, the local admission committee weighs the various elements and the individual’s
situation and then recommends that individual to the proper facility. While this may appear to be an advanced management system, it is not intended as a rigid framework in and of itself; it merely provides information to help guide those involved in the orientation process. This system is a tool; it cannot replace professional judgement. As such, people, not machines or systems, must make the final decision, while exercising common sense and respecting the wishes of the individuals and their families.

At the regional and provincial level, this system is a starting point of a process involving the ongoing evaluation of patients (ISO-SMAF profiles) and resources (ISO-SMAF long-term care profiles), and it provides real-time information that can be easily updated. For example, over the past three years, the regional board and various Estrie authorities have conducted an annual survey of their long-term care facilities including foster families and intermediates resources. They used this information to determine specific admission criteria (profile # 10 to 14) and to allocate resources more effectively by studying a range of available care options and respecting local and regional contexts. Since the inventory of resources indicated that it would be difficult to meet the needs of certain profiles, particularly 5 and 9, it was used to develop new intermediate resources and other long-term care alternatives. By combining this information with results measures, care quality and customer satisfaction, regional authorities will soon be able to improve their knowledge as to the effectiveness of the existing organizational care systems. In the case of home care, an initiative launched in 2003 in the Montérégie made it possible to survey the ISO-SMAF profiles of the home care patients (long term) with 19 CLSCs. For the first time, this exercise made it possible to determine the functional autonomy of the users served by the CLSCs.

Lastly, understanding different autonomy profiles can help us to develop protocols or clinical instruments by establishing a framework for determining the correct group/array of services for each profile. It will also help determine those who would be best served by programs designed to promote autonomy for the elderly.

Management considerations
This classification estimates that nursing care accounts for 82% of nursing and assistance care time. As previously mentioned, the evaluation paid particular attention to items associated with behaviour, surveillance, and communication of support in terms of the type of care
required by those with cognitive problems. Other studies have demonstrated that cognitive problems account for 72% of nursing time and assistance, which confirms that mental problems have a major impact on care time\textsuperscript{17}. As such, whenever we evaluate the profile of someone who is suffering more serious mental problems, we can ensure that a portion of professional/paraprofessional care time is reserved for the type of services this patient requires. This would involve surveillance, systematic professional observation or determining the time required to communicate support or track the following activities: listening and providing minor support; sensory stimulation or therapeutic touch; orientation to reality; establishing relations or managing behavioural problems.

For the purposes of this study, the quantification of nursing time using the modified CTMSP method was, at the time, the most valid and least costly strategy. However, several considerations lead us to believe that another strategy could now be adopted in view of the technological progress that has been made in this area. The considerable improvements made to the original instrument have not altered the basic concept, nor the elements measured to the effect that, in some instances, study results are limited by CTMSP standards that have been in place for over fifteen years. Even though these standards were established on the basis of stringent, valid methodologies, they may no longer apply to current practices. Other factors also call into question the additive approach that was adopted. In fact, in this type of system, complexity of care and interactions between the care required were not directly considered, since the same time was attributed to specific activities, regardless of the type of patient or living environment involved. As such, it is often difficult to properly account for the time required for care provided to patients experiencing cognitive/cooperation problems. Neither does this approach differentiate the time it takes to complete a specific action at home versus in an institution. Quist\textsuperscript{53} states that these systems tend to overstate the amount of time required since they measure simultaneously performed actions that may represent approximately 20% of those carried out over a 24-hour period. In fact, generally speaking, the more items these systems contain, the more time-consuming they are. Be that as it may, to date there is no consensus as to the best way to measure the nursing workload. Some authors believe that it is impossible to correctly determine the sometimes intangible work done by nurses or the increasing complexity of nursing care and, as such, no measurement instrument can be entirely reliable. One of the arguments raised is that
more lucid individuals with fewer disabilities are a heavier burden because they “demand” more than those who are very dependent and have trouble communicating. This perception is largely due to the fact that individuals who are more autonomous make more spontaneous, sporadic demands; this makes them less predictable than dependent patients who receive routine care and explains why it is difficult to accurately determine the complexity and psychological dimension of the care. However, new technologies, such as the TEDDI system, are now being used to determine multiplicity of care, while taking numerous factors into account. This will enable us to attribute average standard time to each of the 14 ISO-SMAF profiles and to account for characteristics of the elderly and their environments and for intrafactor correlations. In terms of operational management for an institution’s programs or units (i.e. staffing) we are planning other approaches on the basis of information collected with the SMAF, ISO-SMAF profiles (i.e. profiles, % incontinence, % behavioural problems) and nursing care planning guides, necessary interventions and the expected care results.

Cost management

Classification accounts for 80% of nursing costs, which is a greater percentage than for other systems currently in place, such as RUGs in the United States (56. 9%), Japan (43.8%) and England (45%). Our classification does not, at present, include specialized rehabilitation services; they were excluded in an effort to streamline the proposed study in order to isolate certain variables. This decision does not reflect a lack of interest in these aspects, quite the contrary. The physical rehabilitation and psychological adaptation of the elderly are closely linked to initiatives aimed at increasing their autonomy and reducing their disabilities and the resulting health care costs. In order to improve the system, our team is working on other projects aimed at determining rehabilitation indicators.

Current data can be used to measure the median cost of each of the 14 ISO-SMAF profiles according to living environment. This detailed information allows us to monitor costs from various viewpoints (society, government agency, manager, environment) or to adjust certain cost categories and account for inflation, different pay rates, specific characteristics associated with institutions, type of institution, setting (rural or urban). Determining the costs of the different profiles ($ ISO-SMAF Profiles) produces objective data that can be used to establish priorities
and to provide information that will help the regions and organizations gain a better understanding of budget allocations. For example, patient evaluation makes it possible to determine the financial resources needed for the profiles in question and to compare them with the available budget, which will provide each facility with a *relative deficit indicator*. Next, by comparing the various indices, we obtain *equity ratios* that can be used to determine how equitably financial resources are distributed among the facilities. In 2001, studies carried out in Estrie demonstrated the viability of a new budget approach based on an evaluation of profiles for long-term care facilities. This approach has been used in Estrie for three years now and adjustments have gradually been introduced to accommodate certain elements. A similar approach was taken in the Montérégie region where this method was applied to 19 CLSCs.

However, it is important to note that, unlike payment systems, the development of a classification system is by nature a scientific endeavour. The development of a payment system is largely a political exercise that must take into account financial resources and variations attributable to therapeutic theories, environmental factors and scientific or technological advances. As such, similar to the patient orientation process, financial procedures cannot be changed without taking into account existing conditions. A stringent system for ongoing evaluation of care is necessary to ensure an equitable payment system. At present, this system does not consider the quality of care. As such, even though the ISO-SMAF profiles are a work in progress, we believe that this situation must be addressed in the very near future. With minimum quality standards, and armed with data that demonstrates the effectiveness of the care provided, managers will be better equipped to request additional resources. This information can also be used to determine adequate staffing levels or ratios for the various categories (staff mix). Due to budget restrictions and shortages in the health care sector, staffing and care are of major concern to the managers.

**Integrated network**

An effective management system must ensure regular, systematic follow up of those in the integrated network; it must also be user friendly and easily updated as needed. The system now in development meets these criteria. In fact, this classification is the first to consider all elderly people experiencing loss of autonomy either at home, in intermediate facilities or long-term care institutions. It also includes people who use
government services (Local Community Services Centre, Day Centres, fosterfamilies, Pavilions and Nursing Homes) and those who use private services.

This system is the starting point for the ongoing evaluation of patients (ISO-SMAF profiles) and resources (ISO-SMAF long-term care profiles); it provides information in real time and ensures follow up and evaluation of placement decisions. By combining this information with result measures, quality of care and patient satisfaction, this instrument can provide data on the effectiveness of the different organizational systems for existing services, and further our understanding of ideal long-term profiles. This could provide a major boost to Québec’s health care system. However, the success of this initiative hinges on the timely deployment of the technology needed to support these instruments, which could hamper the current system. On the other hand, since information technology is of the utmost concern to Québec health authorities, it should not compromise this type of development.1

Conclusion

With regard to the political and methodological components of regional planning in Québec, as with any initiative aimed at ensuring better organization and decision making, planning (both short and longer term) must be based on a realistic vision56. The concept of realistic vision is shared by members of the National Forum on Health who support “the vision of an evidence-based health system”28. The basic principle states that in an effective health system, pertinent, useful, and regularly updated information must inform regular decision-making and be integrated at all levels, that is, by users, health care workers, administrators, government agencies and politicians.

At present, this classification system provides a specific number of profiles that can be readily administered and revised. The system is effective in long-term care environments servicing those in relatively stable condition and makes it possible to correlate the profiles with the appropriate nursing care. The information generated by this system can be used to accurately represent reality in order to determine the type of structure best suited to the patient in the most effective way possible. As Palombo et al.51 so aptly stated, at a time when supply and demand are constantly shifting, we must stop searching for ready-made, static solutions. We need a system that will automatically monitor changes and
rapidly adapt the response according to needs and other relevant factors.

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10. Application of a Resource Utilisation Group Based on the Functional Autonomy of the Residents for Funding Long Term Care Facilities: The Iso-SMAF Profiles Classification

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Introduction

There are real economic, social and political challenges posed by the aging of the population in Canada and other countries. Between 1980 and 1995, residential and community long term care expenditures in the Province of Ontario increased more than 400 percent (from $26 billion to $2.14 billion) and the other Canadian provinces face the same problem. For example, over $2,388,027,000 are allocated in the care of elderly people with functional autonomy decline in the Province of Quebec. Elderly people accounted for 41% of public health care expenses in the Province of Quebec although they represented only 11% of the total population. This economic disparity and the costs associated with their care have an impact on health care policy regarding the elderly.

Increasing public costs for the care of the elderly have created fundamental changes that are redefining the basic principles of health care funding. In the past, overall institutional funding was predominantly tied to spending. In this approach, deficit spending was often claimed to be evidence of the need for increased funding. More recently, a common feature of acute health care funding reforms in Canada, the United States and other countries has been the establishment of a more definitive relationship between funding and case-mixes based on diagnosis. In an attempt to extend the principle of case-mix based funding to the long term health care sector, patient categorisation systems were developed in the last decade based on disability rather than the diagnosis.
In the United States, Resource Utilisation Groups (RUGs) are the most widely used system for classifying long term care patients. This classification represents a homogeneous group of residents in terms of their daily use of the resources. In the latest version of the RUGs, RUG III, residents are classified in 44 homogeneous groups and it was designed expressly to provide superior discrimination in classifying low-volume/high-cost/high-acuity patients by taking medical conditions/services and psychosocial factors into account. However, this system has been criticised on the basis of some methodological issues such as sample choice, choice of the hierarchical analysis, or resources measurement.

Because the nature of care offered differs substantially from the US perspective, the United Kingdom and Canada developed case-mix instruments for funding long term care. The Scottish Health Resource Utilisation Groups were based on the RUGs classification. Their five categories showed good discrimination in term of costs and explained 35% of the cost variation. However, refinement is needed in regard to dependency variables and the use of behaviour descriptors.

In Canada, the Alberta Resident Classification System for Long Term Care Facilities was developed in 1998. This system categorised patients into one of seven groups based on four activities of daily living indicators, two continuing care continence indicators and two behaviours of daily living indicators. However, it has some drawbacks including the limited number of possible patient categories, the limited number of patient indicators/characteristics used for categorisation, the limited scope and range of cost weight (nursing only), and non-applicability to rehabilitation.

Because of the weakness of these existing classifications for long term care, a new classification was developed in the Province of Quebec, Canada. This classification, the ISO-SMAF profiles, is based on the functional autonomy of the elderly. This classification relies on the Functional Autonomy Measurement System (Système de mesure de l’autonomie fonctionnelle, SMAF), which measures functional ability in five areas: activities of daily living (ADL), mobility, communication, mental functions and instrumental activities of daily living (IADL). The classification generates 14 mutually exclusive categories. The ISO-SMAF profiles are associated with the resources and costs of nursing care. It presents the advantage of being used in an integrated health care network (home, intermediate facilities and long term care facilities) and
containing a number of clinically meaningful categories taking behaviour descriptors into account.

However, until now this new classification had not been applied to funding the long term care sector. In this context, the main objective of this study was to apply the ISO-SMAF classification to funding long term care facilities in the Eastern Townships, Province of Quebec. The second objective was to compare the results of this new funding methodology with the available budget, i.e. the budget spent in the last year, for these long term care facilities.

Methodology

Design
The design used was a transversal study with a time window from November 2000 to February 15, 2001.

Population and facilities
The Eastern Townships are in the southeast of the Province of Quebec. The Regional Health and Social Services Boards (RRSSS-Estrie) is the entity responsible for managing the budget related to health care and social services in this area. RRSSS-Estrie serves a population of 291,359, 13.9% of whom are 65 years of age or older, and 6.3% are 75 or older. To care for the elderly with functional autonomy decline, a network of facilities was created including intermediate facilities and long term care facilities. In this study, only the public funding of long term care facilities is considered (N = 11). All residents of these 11 facilities constituted the population under study.

Functional autonomy measurement system
The SMAF\(^7\) is a 29-item scale developed according to the WHO classification of disabilities\(^{21}\). It measures functional ability in five areas: activities of daily living (ADL) [7 items], mobility [6 items], communication [3 items], mental functions [5 items] and instrumental activities of daily living (IADL) [8 items]. Each item is scored on a 5-point scale from 0 (independent) and 0.5 (with difficulties) to 3 (dependent) for a maximum total score of 87. An increase in the score represents a decrease in functional ability. The SMAF must be administered by a trained health professional who scores the individual after obtaining the information by questioning the subject and proxies, by observing and
even testing the subject. Its reliability and validity have been tested in several studies.\textsuperscript{3,8,9}

**The ISO-SMAF classification**

The ISO-SMAF classification was developed on a previous study. Figure 10.1 presents a diagram of the profiles which emerged from the 14 groups according to their results on the 5 dimensions of the SMAF scale: ADL, mobility, communication functions, mental functions, and IADL. While the results are synthesised in accordance with the 5 dimensions of the SMAF to facilitate presentation, the information is available for the 29 items of the SMAF. The level of functional autonomy is illustrated by a code. For the total SMAF score (T87), from the first to the last group we see a decreasing mean level of autonomy from 9.33 (standard deviation = 3.58) to 73.77 (standard deviation = 3.61). Each one of the 14 groups corresponds to an iso-smaf profile and these profiles can be grouped into five broad categories. The first illustrates the subjects with the first three profiles who show disabilities mainly in instrumental activities of daily living, in the form of difficulty (profile 1), need for
supervision (profile 2) and need for help (profile 3). The first profile is made up of a greater proportion of women (81.2%) for whom the disability was demonstrated by difficulties doing certain activities such as grocery shopping and using transportation, while the second profile is made up of a higher proportion of men (54.7%) who showed significant disabilities in activities such as housekeeping and cooking. At the other extreme, in the fifth category are the subjects with profiles 13 and 14 who show the lowest level of autonomy with dependency in ADL activities. The fourteenth profile represents people near the end of their life who are no longer able to communicate and show very severe cognitive impairment. However, these people do not have behavioural problems or, if they do exist, they are minor (e.g. complaining). Between these extremes, we can observe a progression of disabilities in domestic activities and activities of daily living accompanied, for the most part, by a greater disability either in mobility functions or mental functions. These disabilities also appear gradually across the groups. Thus, the second category (profiles 4, 6, and 9) consist of people with greater disabilities in terms of mobility while their mental functions are retained. The people with the fourth profile are not dependant in ADL, profile 6 are the people who present difficulty in ADL, and the ninth profile contains subjects who need help in both mobility and ADL. The third category includes people with predominant alterations in cognitive functions (profiles 5, 7, 8 and 10) while locomotive abilities are relatively intact. The individuals with profile 5 have moderate cognitive problems whereas profile 7 exhibits severe problems in cognitive functions with minor behavioural problems (stubbornness, whimpering, apathy). Profile 8 is characterised by people who show equivalent severe problems in cognitive functions but also require stimulation, guidance or supervision in ADL and mobility functions. The subjects with profile 10 need help with ADL, walk independently, but manifest severe problems in cognitive functions linked to major behavioural problems (wandering, aggressiveness towards self or others). Finally, the fourth category (profiles 11 and 12) includes people who exhibit substantial disabilities in mobility functions as well as mental functions. Subjects with profile 11 present occasional incontinence but maintain bowel function, contrary to those with profile 12 who are frequently or always incontinent and demonstrate major behavioural problems (wander, aggressive towards self or others). Although the SMAF score varies significantly across the fourteen groups, we observe an equivalent level of autonomy in groups
11 and 12. Moreover, subjects with profiles 11 and 12 require roughly the same total nursing care time and generate equivalent costs. However, as mentioned above, they exhibit different needs in specific aspects, namely incontinence and behavioural problems. In short, these results suggest that reasonable clinical discrimination have been achieved between the fourteen profiles.

**Examiners**

Four research assistants, who were experienced clinician nurses, were trained in the use of the SMAF. Formal lessons, case studies and informal discussions were conducted with the aim of assuring uniformity in the use of the SMAF. A follow-up was done in the first week of data collection to answer questions and confirm uniformity across examiners.

**Data collection procedure**

The nurses were assigned to the facilities or units by convenience. Larger facilities were visited by all four research assistants and small facilities by one or two research assistants depending on the number of residents.

Before the research assistant visited a facility, an agreement was made with the chief nurse of the units to plan the clinician nurse’s visit for the interview with the research assistant. At the time scheduled, an interview was conducted to document the 29 items of the SMAF.

In addition, a questionnaire was filled out to gather information about frequencies and time of specialised nursing care and inhalotherapy.

**Funding long term care facilities based on the ISO-SMAF profile of the residents**

The standard budget

The standard budget of a long-term care facility is the amount of dollars required to care for the residents based on the functional autonomy profile. This budget covers the costs associated with care and operating the facility. The cost estimation used to establish the standard budget was taken from a previous study, the objective of which was to determine the level of disabilities and the resources involved in caring for elderly people living at home or in institutional settings and in different areas (metropolitan, urban and rural) and to estimate the costs (public, private, voluntary) of these resources. Using the same sample, subjects were classified by ISO-SMAF profile and then the costs per day associated
with each ISO-SMAF profile were established for each type of setting in the three areas.4

In the context of the present study on annual funding of public long term care facilities in the Eastern Townships, only the public costs of public long term care facilities in urban areas were considered. Three categories of costs were considered: care, support, and administrative services. The costs of care include nursing care, skilled and unskilled (personal care), supervision, transportation for medical purposes and materials (e.g., diapers). The costs of support services include the costs of cooking, housekeeping, laundry, electricity, heating, repairs, security and taxes. Administrative services cover the management cost of the institution. In this study, infrastructure costs were excluded and the costs of specialised nursing care, rehabilitation and medication were not taken into account. Table 10.1 shows the costs per ISO-SMAF profile for public nursing homes in urban and rural areas combined.

Based on the costs per year for the different ISO-SMAF profiles, and knowing from this study the number of residents with each of these profiles, it was possible to determine the annual costs by long term care facility for caring for their residents using the following equation:

\[
\text{Annual cost Facility A} = \sum_{X} \# \text{residents of profile X} \times (\text{\$ per year of profile X})
\]

The available budget

The available budget is the amount of dollars per year the facility received for operating the building and caring for the residents in the last year. The source is the annual financial report (AS-471). The available budget for support and administrative services is based on the number of beds. The cost of nursing care is calculated by adding the resources required to care for the resident using the “Classification par types en milieux de soins prolongés” (CTMSP)18. For the purpose of the comparison with the standard budget, the same inclusions and exclusion were considered in this study.

Costs of specialised nursing care and inhalotherapy

Frequencies by week of specialised nursing care and inhalotherapy were documented by a questionnaire. Using standard times to provide these types of care, the numbers of hours were determined. Using a standard cost per hour for these categories of health professionnals, the annual costs were calculated.
INTEGRATED SERVICE DELIVERY TO ENSURE PERSONS’ FUNCTIONAL AUTONOMY

Results

Description of the population

The census of the residents of the 11 long term care facilities showed that 1590 were institutionalised at the time of the study (Table 10.2). The size of the public facilities varied considerably from 48 to 386 residents, reflecting the specialisation of the facility and urban/rural area. Regarding the mean age of the residents, the results pointed up three exceptions where the mean differed considerably from the other facilities. Two of the three (H and K) may be related to the area (urban younger than rural residents) and the third (G), which had the biggest difference, seems to be more related to the specialisation of the facility (mental problems) than the area.

Table 10.1
Costs per ISO-SMAF profile for public nursing homes in urban and rural areas combined

<table>
<thead>
<tr>
<th>Functional autonomy profile</th>
<th>Public costs per day, excluding infrastructure (in 1995$)</th>
<th>Conversion of 1995$ to 2001$ (inflated by 10.5%)</th>
<th>Annual costs in 2001$ (2001$ per day x 365 days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>#2</td>
<td>55.29</td>
<td>61.10</td>
<td>22,300</td>
</tr>
<tr>
<td>#3</td>
<td>61.97</td>
<td>68.48</td>
<td>24,994</td>
</tr>
<tr>
<td>#4</td>
<td>91.17</td>
<td>100.74</td>
<td>36,771</td>
</tr>
<tr>
<td>#5</td>
<td>70.97</td>
<td>78.42</td>
<td>28,624</td>
</tr>
<tr>
<td>#6</td>
<td>83.16</td>
<td>91.89</td>
<td>33,541</td>
</tr>
<tr>
<td>#7</td>
<td>89.39</td>
<td>98.78</td>
<td>36,053</td>
</tr>
<tr>
<td>#8</td>
<td>104.04</td>
<td>114.96</td>
<td>41,962</td>
</tr>
<tr>
<td>#9</td>
<td>133.72</td>
<td>147.76</td>
<td>53,933</td>
</tr>
<tr>
<td>#10</td>
<td>117.38</td>
<td>129.70</td>
<td>47,342</td>
</tr>
<tr>
<td>#11</td>
<td>143.91</td>
<td>159.02</td>
<td>58,043</td>
</tr>
<tr>
<td>#12</td>
<td>131.05</td>
<td>144.81</td>
<td>52,856</td>
</tr>
<tr>
<td>#13</td>
<td>153.51</td>
<td>169.63</td>
<td>61,914</td>
</tr>
<tr>
<td>#14</td>
<td>165.78</td>
<td>183.19</td>
<td>66,863</td>
</tr>
</tbody>
</table>

* There were no residents with profile #1 in public nursing homes in the study by Hébert et al. (2001)

*Results*

*Description of the population*

The census of the residents of the 11 long term care facilities showed that 1590 were institutionalised at the time of the study (Table 10.2). The size of the public facilities varied considerably from 48 to 386 residents, reflecting the specialisation of the facility and urban/rural area. Regarding the mean age of the residents, the results pointed up three exceptions where the mean differed considerably from the other facilities. Two of the three (H and K) may be related to the area (urban younger than rural residents) and the third (G), which had the biggest difference, seems to be more related to the specialisation of the facility (mental problems) than the area.
In order to present a meaningful view of the 14 profiles, they are regrouped into four categories based on their main characteristic: 1) profiles 1, 2 and 3 (activities of daily living); 2) 4, 6 and 9 (mobility); 5, 7, 8 and 10 (mental problems predominant), and 4) 10, 11, 12 and 13 (heavy and mixed disabilities predominant). These patterns of functional autonomy profiles of the residents by facility and for the total area are presented in Figure 10.2. Each colour (grey, yellow, blue and pink) represents one of the four categories of profiles. Two major points emerged from these results. First, the heaviness of the residents is over 60% for the area and more than 60% for nine of the 11 facilities. This is not surprising because the long term care facilities are the end point of a network caring for elderly with loss of autonomy. Second, facility K, as mentioned earlier, seems to specialise in mental health problems, as shown by the relative importance of the blue colour in the line representing this facility.

Table 10.2
Description of 11 Long Term Care Facilities

<table>
<thead>
<tr>
<th>Long term care facility</th>
<th>Number of residents</th>
<th>Age Mean (standard deviation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A rural</td>
<td>95</td>
<td>82.1 (11.2)</td>
</tr>
<tr>
<td>B rural</td>
<td>89</td>
<td>84.3 (10.1)</td>
</tr>
<tr>
<td>C rural</td>
<td>115</td>
<td>81.5 (13.0)</td>
</tr>
<tr>
<td>D rural</td>
<td>100</td>
<td>82.2 (10.7)</td>
</tr>
<tr>
<td>E rural</td>
<td>134</td>
<td>83.4 (10.1)</td>
</tr>
<tr>
<td>F rural</td>
<td>130</td>
<td>84.4 (9.2)</td>
</tr>
<tr>
<td>G rural</td>
<td>60</td>
<td>57.1 (16.6)</td>
</tr>
<tr>
<td>H urban</td>
<td>51</td>
<td>76.6 (13.7)</td>
</tr>
<tr>
<td>I urban</td>
<td>48</td>
<td>81.0 (8.1)</td>
</tr>
<tr>
<td>J urban</td>
<td>379</td>
<td>83.9 (9.7)</td>
</tr>
<tr>
<td>K urban</td>
<td>386</td>
<td>75.5 (16.0)</td>
</tr>
<tr>
<td>Total</td>
<td>1,590</td>
<td>80.2 (13.5)</td>
</tr>
</tbody>
</table>

Description of the functional autonomy profiles of the residents by facility

In order to present a meaningful view of the 14 profiles, they are regrouped into four categories based on their main characteristic: 1) profiles 1, 2 and 3 (activities of daily living); 2) 4, 6 and 9 (mobility); 5, 7, 8 and 10 (mental problems predominant), and 4) 10, 11, 12 and 13 (heavy and mixed disabilities predominant). These patterns of functional autonomy profiles of the residents by facility and for the total area are presented in Figure 10.2. Each colour (grey, yellow, blue and pink) represents one of the four categories of profiles. Two major points emerged from these results. First, the heaviness of the residents is over 60% for the area and more than 60% for nine of the 11 facilities. This is not surprising because the long term care facilities are the end point of a network caring for elderly with loss of autonomy. Second, facility K, as mentioned earlier, seems to specialise in mental health problems, as shown by the relative importance of the blue colour in the line representing this facility.
The standard budget and the available budget

The standard budget was established by combining the costs per day of the ISO-SMAF profiles and the census of the residents in each facility. The available budget, which represent the dollars spent in the last year, is taken from the annual financial report at the end of the fiscal year (March 31, 2001). Figure 10.3 compares these two budgets. The result shows a shortage in the available budget to care for the residents based on their functional autonomy profiles. The shortage to be funded is presented as a percentage in Figure 10.4, where the 100% required to care for the residents is illustrated by the standard budget, and the available budget as a proportion of the 100%. Thus, the shortage to be funded is illustrated by the difference between the two budgets. These shortages vary from 67% to 98% between the facilities and represent a total of $21,803,404 for the area.
Costs of specialised nursing care and inhalotherapy

Annual costs of specialised nursing care and inhalotherapy are shown for each of the facilities. For specialised nursing care, the total costs for the 11 facilities exceeded $3,225,000. The proportion of the standard budget by facility of this amount is marginal, ranging from 2 to 8%. The phenomenon is more marginal for inhalotherapy, where only three facilities provide this service, ranging from 0.2% to 2.7% of the standard budget.

Discussion

The main objective of this study was to apply the ISO-SMAF classification to funding long term care facilities. The second objective was to compare the results of this new funding methodology with the usual methods in use in the Province of Quebec. The results showed that fund-
ing the facilities by the heaviness of their residents in terms of functional autonomy highlights the under-funding of a facility when compared to the usual funding methodology based on the number of beds and hours of care. The results also showed that specialised nursing care and inhalotherapy are marginal compared to the standard budget.

Can we trust these results? Some points related to the internal validity of this study must be discussed. First, there is no possibility of selection bias since we used the total population of the facilities, excluding de facto the possibility of selecting subcategories of residents presenting more or less functional autonomy decline. Second, serious efforts were made to train the examiners. The use of a variety of learning strategies like formal lessons, case studies, informal discussions and follow-ups
enhanced the accuracy of the assessment made by the trained examiners. Third, the validity of the cost estimation by profiles used in the standard budget does not seem to be an issue if we consider the scientific recognition of these results. Moreover, to counteract the different timing of cost estimations between the ISO-SMAF study and the present study, the costs estimations used in this study were adjusted in 2001 dollars. Overall, we can be confident of the good internal validity of our study.

How can the results of this study be integrated in the planning of new admissions to long term care facilities? Using the ISO-SMAF profiles, it is possible to establish a picture of the facility in term of the heaviness of its residents. From this picture, administrators, decision-makers or admission regulation boards can compare the heaviness of the residents of a specific facility to the others, or the facility to the area. For example, facility G shows more than 60% of its clientele presenting mental problems compared to 10% in facility K. The implications of this knowledge may be integrated in the planning and administration of the long term care health organisation.

At the facility level, administrators may plan resources development and allocation based on the specificity of the clientele. For example, facility G, which seems to specialise in mental problems, may choose to optimise this expertise and to manage their staff in accordance with this speciality. Training sessions may be organised to increase the level of competence in all staff subcategories. The same strategy may be applied in facilities receiving a high proportion of very disabled residents. At a macroscopic level, admission boards may plan the admission of new residents based on the facility’s speciality. Also, infrastructure and equipment resources may be planned more efficiently if the profile of the facilities in the area is known.

What is the main limitation of this methodology for funding long term care facilities? In this kind of system where funding is based on the functional autonomy profile, it may be viewed as an incentive to neglect rehabilitation efforts. For example, what is the advantage for a facility to apply a health care plan including rehabilitation regarding an incontinence problem as compared to the use of diapers? Or why should it invest in rehabilitation resources for fall prevention, walking problems or decreased mobility? These interventions may have a positive impact on the functional autonomy of the resident but a negative impact on the budget received to care for this resident. Taking into account this “incentive to do less or nothing”, a funding system based on the functional
autonomy profiles of the residents should incorporate a positive incentive to improve the functional autonomy of their residents, such as investing the money saved in nursing or rehabilitation resources. Another potential problem is that the facility may be over- or under-funded for the fiscal period if the picture of the residents in the facility does not accurately represent the facility over the entire period to which the “snapshot” is applied. Indeed, there is an average 30% turnover of residents per year in the Eastern Townships, which could result in a false picture of the facility.

Is a funding system based on the functional autonomy profile feasible on a large scale? Some preconditions may be required before this funding system is introduced. First, the use of the SMAF could be integrated in all health care plans for the elderly. For example, the Province of Quebec just adopted legislation proposing a tool for evaluating the elderly including the SMAF. Second, as opposed to this study where a census of the long term care facilities provided the functional autonomy profiles of their residents, implementation of this funding system should be based on a continued and computerised clinical chart (CCC) including the SMAF. With this continuous information tool, the picture can be taken any time, such as at the end of the fiscal year, and the budget may be built accordingly.

Conclusion
The results of this study show the feasibility of the new funding approach to long term care facilities. The standard budget based on the functional autonomy profile, defined as the amount of dollars requested to meet the needs of the clientele, may highlight the under- or over-funding of the facility when compared to the usual funding system based predominantly on the number of beds and hours of care. However, caution should be considered in regard to the “bad use” of this system, where an incentive to do less to improve functional autonomy may be introduced. Finally, implementation of a funding system like the ISO-SMAF classification must be supported by continued and computerised clinical chart including the SMAF.

References
15. Rochon, M. «Impact des changements démographiques sur l’évolution des dépenses publiques de santé et de services sociaux, in Collection Études et analyses #21», Gouvernement du Québec, ministère de la Santé et des Ser-
vices sociaux, Direction générale de la planification et de l’évaluation, Québec, 1993.


11. Correlation Between Medication Costs and the Functional Autonomy Profiles of CHSLD Residents in Estrie

M. Tousignant, R. Hébert, N. Dubuc, C. Ducharme, F. Simoneau

Introduction

This study is part of a research project examining the application of ISO-SMAF profiles to budget allocations according to the regional municipalities (MRC) equity method – Estrie Foster Care phase. This cross-sectional study was used to identify and evaluate all foster care residents in this area. The study helped us to define this population in terms of functional autonomy profiles (ISO-SMAF) and to develop an accurate portrait of the users in each Long-Term Care Centre (Centre d’hébergement et de soins de longue durée, CHSLD) in a single area. The use of ISO-SMAF data for allocating development budgets in Estrie is an innovative approach in Québec.

One of the limitations of this study was that medication costs could not be included in the ISO-SMAF profile method. At present, there is no way to account for medications in budget allocations or expenses in CHSLD, other than on the basis of actual spending. Given the limitations of this traditional approach, we needed to devise a method that would provide us with a standard medication budget. We must therefore determine whether it is feasible to include in the ISO-SMAF profile method an average per diem medication cost that would complement the current method of CHSLD development budgeting.

This project is part of an agreement with the Estrie Regional Health and Social Services Boards (the Board). The objectives of this pilot project are to verify: 1) whether a correlation exists between the functional autonomy profile and medication costs; 2) whether a correlation exists between mental/physical health and medication costs; and 3) the link between a standard medication budget developed on the basis of ISO-SMAF profiles and the budget available to the CHSLD.
Methodology

Research framework
The research method used was a cross-sectional study conducted between May 1, 2002 and June 30, 2002.

Study sample
The study sample included all individuals residing in CHSLDs in Estrie (11 institutions). Each institution’s admittance records were used to determine the number of clients in residence at the time the study was conducted.

ISO-SMAF profiles
In the 2001 study, the intake profile used by the institutions was based on the resident’s profile according to the Functional Autonomy Measurement System (Système de mesure de l’autonomie fonctionnelle, SMAF). Using the scores of various SMAF items, a classification was devised (ISO-SMAF profiles) in order to group individuals on the basis of common characteristics.

The ISO-SMAF profile is a management system that defines subject groups with similar disability profiles and who require similar services (Resources Utilization Groups). Using a database comprised of a representative sample of 1,977 subjects experiencing loss of autonomy and residing in various living environments (home care to long-term care institutions), a cluster analysis helped to determine Resources Utilization Groups where the disability profile is relatively similar within groups, but differs from one group to the next. Statistical validation procedures and group consultation helped to establish 14 ISO-SMAF profiles. They range from a slight disability (profile 1) to a very severe disability (profile 14). The ISO-SMAF profiles are associated with the nursing care, assistance and support services required. Among others, an average cost per day is established for nursing care, assistance, support and surveillance. However, this study did not include medication costs.

The present study sought to determine the feasibility of including the medication component in per diem costs of the ISO-SMAF profile.
Data collection

Authorization prior to the study

CHSLD pharmacists are responsible for ensuring that information on the medication consumption of CHSLD residents remains confidential. However, since the pharmacists practice in an institution, this information is not their exclusive property. As is true of any study, all due caution must be exercised to ensure confidentiality.

In fact, *An Act respecting health services and social services* recognizes the usefulness of circulating information about the user and states that the executive director or director of an institution may authorize access without the user’s consent through the exceptions provided in the previously mentioned Act (section 19.2), and in *An Act respecting the protection of personal information in the private sector* (section 18, paragraph 5e).

Within the framework of this study, authorization to obtain information about the medication consumption of CHSLD residents was obtained by means of a letter sent to the executive director of the institution at the request of the Board.

Data collection

In Estrie, only one of the 11 institutions is not a member of the common provisioning group (CASSSE). The CASSSE uses two suppliers to obtain medications for the other institutions. The pharmacist responsible for supplying the institutions was mandated to provide medication consumption information for the last 35-day cycle. The pharmacist was also asked to list the cost price and product class, by user room number, on the appropriate form.

Example: Institution 1 – room 223 –

$123.45 for the last 35 days

This form was sent to the responsible employee at the institutional level, who was asked to remove the room number and replace it with the resident’s ISO-SMAF profile. This form, which combined the dollar amount and the ISO-SMAF profile, was then sent to the worker handling the Board files.

Example: Institution 1 – Profile 10 – $123.45

for the last 35 days
Results

Portrait of the population being studied

Ten of 11 institutions in 16 sites produced the requested data. In all, data was collected on 1,469 residents, for a participation rate of 92%. Table 11.1 illustrates the distribution of residents per institution.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Number of residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>47</td>
</tr>
<tr>
<td>B</td>
<td>403</td>
</tr>
<tr>
<td>C</td>
<td>372</td>
</tr>
<tr>
<td>D</td>
<td>59</td>
</tr>
<tr>
<td>E</td>
<td>91</td>
</tr>
<tr>
<td>F</td>
<td>93</td>
</tr>
<tr>
<td>G</td>
<td>128</td>
</tr>
<tr>
<td>H</td>
<td>118</td>
</tr>
<tr>
<td>I</td>
<td>98</td>
</tr>
<tr>
<td>J</td>
<td>60</td>
</tr>
<tr>
<td>Sub-total</td>
<td>1,469</td>
</tr>
<tr>
<td>K*</td>
<td>132</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,601</td>
</tr>
</tbody>
</table>

* This institution did not produce the required study data.

Cost of medications per ISO-SMAF profile by supplier

In view of the fact that three suppliers provide medication to Estrie CHSLDs (two through the CASSSE and one independent), a preliminary analysis determined the medication costs for similar profiles by supplier. The goal was to determine whether the supplier influenced the average per diem cost of medication. Table 11.2 illustrates the results of this analysis.
### Table 11.2

<table>
<thead>
<tr>
<th>ISO-SMAF profile</th>
<th>Supplier</th>
<th>Number of subjects</th>
<th>Average ($/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Supplier A</td>
<td>2</td>
<td>$8.09</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>4</td>
<td>$4.11</td>
</tr>
<tr>
<td>5</td>
<td>Supplier A</td>
<td>8</td>
<td>$4.09</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>12</td>
<td>$3.85</td>
</tr>
<tr>
<td></td>
<td>Supplier C</td>
<td>10</td>
<td>$9.73</td>
</tr>
<tr>
<td>6</td>
<td>Supplier A</td>
<td>5</td>
<td>$4.77</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>36</td>
<td>$5.15</td>
</tr>
<tr>
<td></td>
<td>Supplier C</td>
<td>2</td>
<td>$9.98</td>
</tr>
<tr>
<td>7</td>
<td>Supplier A</td>
<td>22</td>
<td>$3.54</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>61</td>
<td>$4.13</td>
</tr>
<tr>
<td></td>
<td>Supplier C</td>
<td>14</td>
<td>$12.10</td>
</tr>
<tr>
<td>8</td>
<td>Supplier A</td>
<td>12</td>
<td>$6.57</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>52</td>
<td>$3.80</td>
</tr>
<tr>
<td></td>
<td>Supplier C</td>
<td>2</td>
<td>$16.62</td>
</tr>
<tr>
<td>9</td>
<td>Supplier A</td>
<td>96</td>
<td>$4.39</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>155</td>
<td>$5.18</td>
</tr>
<tr>
<td></td>
<td>Supplier C</td>
<td>1</td>
<td>$1.66</td>
</tr>
<tr>
<td>10</td>
<td>Supplier A</td>
<td>38</td>
<td>$3.55</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>76</td>
<td>$2.88</td>
</tr>
<tr>
<td></td>
<td>Supplier C</td>
<td>21</td>
<td>$8.14</td>
</tr>
<tr>
<td>11</td>
<td>Supplier A</td>
<td>61</td>
<td>$3.50</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>70</td>
<td>$3.14</td>
</tr>
<tr>
<td></td>
<td>Supplier C</td>
<td>1</td>
<td>$16.35</td>
</tr>
<tr>
<td>12</td>
<td>Supplier A</td>
<td>66</td>
<td>$3.63</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>86</td>
<td>$3.02</td>
</tr>
<tr>
<td></td>
<td>Supplier C</td>
<td>4</td>
<td>$6.77</td>
</tr>
<tr>
<td>13</td>
<td>Supplier A</td>
<td>177</td>
<td>$2.98</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>101</td>
<td>$4.13</td>
</tr>
<tr>
<td></td>
<td>Supplier C</td>
<td>2</td>
<td>$3.84</td>
</tr>
<tr>
<td>14</td>
<td>Supplier A</td>
<td>122</td>
<td>$2.10</td>
</tr>
<tr>
<td></td>
<td>Supplier B</td>
<td>124</td>
<td>$2.42</td>
</tr>
<tr>
<td></td>
<td>Supplier C</td>
<td>3</td>
<td>$5.80</td>
</tr>
</tbody>
</table>
A distinct trend emerged: with similar profiles, supplier C’s costs were higher than the other two, except for profile 13, where the number of subjects is very limited. Supplier C supplies the institution that does not belong to the CASSSE. That said, in the institutions studied in Estrie, for residents with similar ISO-SMAF profiles, medication costs are much higher when the medication is supplied by an independent pharmacist. However, there is no major cost variation for the two suppliers using the CASSSE, with the exception of profile 13, which is statistically different (B > A).

In view of the fact that medication costs are much higher for the institution dealing with the supplier that does not belong to the CASSSE, we decided to exclude it from subsequent analyses.

**Cost of medications per ISO-SMAF profile for institutions using the CASSSE**

A second analysis focusing on the 10 institutions produced per diem medication costs for residents according to the ISO-SMAF profile. Table 11.3 demonstrates the results.

**Table 11.3**

<table>
<thead>
<tr>
<th>ISO-SMAF profile</th>
<th>Number of residents per ISO-SMAF profile (n = 1390)</th>
<th>Cost of medication - $/day</th>
<th>Average</th>
<th>Confidence interval (95 %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>$1.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>$7.62</td>
<td>9.32</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>$5.44</td>
<td>3.69</td>
<td></td>
</tr>
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<td>5</td>
<td>20</td>
<td>$3.94</td>
<td>1.84</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>41</td>
<td>$5.11</td>
<td>1.70</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>83</td>
<td>$3.97</td>
<td>1.05</td>
<td></td>
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<tr>
<td>8</td>
<td>64</td>
<td>$4.42</td>
<td>1.24</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>251</td>
<td>$4.88</td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>114</td>
<td>$3.11</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>131</td>
<td>$3.31</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>152</td>
<td>$3.28</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>278</td>
<td>$3.40</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>246</td>
<td>$2.26</td>
<td>0.39</td>
<td></td>
</tr>
</tbody>
</table>

* There are nine data items missing from the ISO-SMAF profiles and 10 missing cost items = 19 missing data items in all.
An initial finding emerges: there were very few 1, 3 and 4 profiles, so this data was excluded from subsequent statistical analyses. A complementary analysis illustrated significant variations between medication costs and ISO-SMAF profiles ($F = 0.000$) as follows:

- Profile 14 presents a significant statistical difference (less costly) than profiles 6, 7, 8, 9, and 13;
- Profile 9 presents a significant statistical difference (more costly) than profiles 10, 11, 12, 13 and 14.

Please note that the confidentiality agreement precluded the use of the residents’ age and gender, which prevented us from adjusting the results to compensate for any possible confusion attributable to these factors.

**Cost of medications per ISO-SMAF profile group for institutions using the CASSSE**

A cost/day analysis of the residents’ medical consumption was conducted, taking into consideration the grouping of ISO-SMAF profiles into categories depending on the user’s state of mental and physical health. Table 11.4 illustrates the results of this analysis.

<table>
<thead>
<tr>
<th>ISO-SMAF profile group (n = 1386)</th>
<th>Frequency</th>
<th>Average ($/day)</th>
<th>CI (95 %)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 2</strong> Profiles 4, 6 and 9 - predominately motor problems with mental faculties relatively intact</td>
<td>298</td>
<td>$4.92</td>
<td>0.55</td>
</tr>
<tr>
<td><strong>Group 3</strong> Profiles 5, 7, 8 and 10 – predominately mental problems</td>
<td>281</td>
<td>$3.70</td>
<td>0.54</td>
</tr>
<tr>
<td><strong>Group 4</strong> Profile 11 – assistance for ADL; generally continent; profile 12 – dependent for ADL, generally incontinent, behavioural problems</td>
<td>283</td>
<td>$3.29</td>
<td>0.48</td>
</tr>
<tr>
<td><strong>Group 5</strong> The least autonomous, generally bedridden and dependent for ADL</td>
<td>524</td>
<td>$2.86</td>
<td>0.27</td>
</tr>
</tbody>
</table>
Some trends emerged: there are significant variations in medication costs and ISO-SMAF profile groups ($F = 0.000$):

- Group 2 (predominately motor difficulties) differs from all of the other groups (more expensive);
- Group 3 (predominately mental problems) differs from Group 5 (the least autonomous) (more expensive).

**Comparison of a standard budget with the budget available for medication expenses in 2002-2003**

In order to determine the accuracy of a budget based on ISO-SMAF profiles (excluding salaries), we reconstructed a standard budget (required) based on the number of users per ISO-SMAF profile for each institution for 2002-2003. At the opposite side of the equation, we compared actual CHSLD pharmaceutical expenses (excluding salaries) that appeared on the AS-471 financial statement for the same financial period. Our research hypothesis was that a reconstruction of the standard budget using ISO-SMAF profiles should equal actual pharmaceutical expenses for the current year (excluding salaries).

A standard budget is defined as the amount spent by an institution to meet the medication needs of the clients it serves. In this study, the budget is established by taking the total number of institution residents, for each of the 14 ISO-SMAF profiles, multiplied by the average annual cost of the medication consumption for a resident in a predetermined profile:

$$\text{Standard ISO-SMAF medication budget} = \sum \left( \text{number of residents per profile} \times 6 \$/\text{day-medication} \times 365 \text{ days} \right)$$

The available budget is defined as the amount spent by an institution for the same financial year. In this study, it is based on 2002-2003 expenses.

A rate of response to medication needs was determined: this rate is defined as a percentage where the numerator equals the cost of the medications provided and the denominator equals the cost of the medications required according to the ISO-SMAF profiles.

$$\text{Rate of response to needs} = \frac{\text{Available budget}}{\text{Standard ISO-SMAF budget}}$$

Figure 11.1 illustrates the distribution of the response rates to the drug needs of 10 institutions. Results indicate that the average rate of response to medication requirements for Estrie stands at 114%. That is,
the amount spent exceeded the budget required, calculated on the basis of ISO-SMAF profiles, with a 14% variation. Two groups stand out from institutions close to the regional average: 1) two institutions spent considerably more than required, according to the estimate method used (23% and 42% higher); and 2) two others, at the opposite end of the spectrum, spent less than required (27% and 32% less).

Discussion
This pilot study sought to determine whether a link existed between medication costs and loss of autonomy. Our results indicate that heterogeneity exists as to medication costs according to the ISO-SMAF profile.

We also sought to determine whether a link existed between medication costs and the residents’ mental or physical condition. Our results indicate that, for CHLSD residents with predominately mental difficulties (Group 3), medication costs were higher than that of less autonomous residents (Group 5), but lower than those with predominately
motor problems (Group 2). However, we should note that we excluded the institution whose primary vocation is mental health due to the fact that it did not belong to the CASSSE. It was therefore impossible to determine whether individuals in foster care with mental health problems incur higher or lower medication expenses than those with age-related mental problems. Our results indicate that the link between health and medication costs is tenable in the population of CHSLD residents, but cannot be extrapolated to institutions whose primary mandate is mental health.

Lastly, this study helped determine the link between a standard budget on the basis of ISO-SMAF profiles and actual spending in Estrie CHSLDs. To our knowledge, there are no other studies in this area. As such, the results of our study cannot be compared with similar projects. In order to accurately document the budget for a CHSLD pharmaceutical unit (excluding salaries) based on ISO-SMAF profiles, a standard budget was compared with the real expenses of a CHSLD pharmaceutical unit (excluding salaries) from the AS-471 financial report, for the same financial period. The proposed method for estimating medication costs is not ideal. In fact, the results indicated that, on average, the ISO-SMAF profile method underestimates by 14% the actual expenses of the institutions.

Some areas merit a closer look in terms of the internal validity of this study. Firstly, the 92% participation rate was very satisfactory. Only one of the 11 institutions refused to take part in the study. Moreover, nine data items on the ISO-SMAF profiles and 10 for daily cost of medication are missing. Secondly, data collection was supervised by the Board. The information was collected by the medication suppliers and institutions. Clear, easy-to-follow instructions lead us to conclude that quality data was collected when identifying costs per institution room by the pharmacist/supplier. Moreover, the ISO-SMAF profiles proved valid in previous studies and the expense data was taken from the AS-471 financial report.

How should we interpret the extent of this variation? Firstly, we should question whether any costs were omitted by the institutions when calculating daily cost of medication per ISO-SMAF profile. The methodology is clear on this point: on both sides of the equation, only the cost of the medications appearing in the clinical file (excluding salaries) was to be included. However, we are unable to determine whether medical supplies were also included in the actual cost of medications. Secondly,
the number of residents per ISO-SMAF profile fluctuated over the year. In fact, the turnover rate was around 42.8% during that period. This fluctuation in the portrait taken at a certain date can result in some inaccuracy in the budget calculations, while actual expenses account for residents throughout the year. Thirdly, the 35-day study period could influence the per diem cost of medication. In fact, the cost was established on the basis of an inventory of prescriptions in the clinical file during a summer observation period. A seasonal effect on medication consumption by CHLSD residents cannot be discounted as a source of the variation between the standard budget and the expense. Subsequent studies should address this point. Additional factors to be addressed: Were prescriptions removed or added between the summer and the rest of year that could result in different practices by all of the other prescribers? Did the institution give specific instructions for the prescription of medications during this time? All in all, even though several possible explanations for this 14% gap were put forward, it is difficult to determine accuracy at this point based solely on these results.

Should we use the ISO-SMAF profile method for determining medication expenses in the CHLSD budgets? This is an important question with no easy answers. Some may argue that, in spite of its relative inaccuracy, it is a common base for determining institution budgets, likely better than the current lack of any criteria other than the indexed expenses of the previous year. Moreover, this method allows institutions presenting major variations in comparison with the regional average to seriously question their practices in terms of medication usage.

Additional studies may be needed to address questions that remained unanswered, the seasonal effect, for example. We realize that these results are somewhat unconventional and should be interpreted with caution. Additional studies will have to replicate these results before any formal conclusions can be arrived at regarding a link between medication consumption and functional autonomy.

Conclusions
This cross-sectional study verified the hypothesis that a link does exist between functional autonomy, state of mental and physical health and medication costs. However, it is impossible to determine whether individuals in long-term care institutions with mental health problems incur greater medication expenses than those with age-related mental problems.
This study helped to determine an average cost per functional autonomy profile for medication consumption by frail elders in Estrie residing in a CHSLD. The accuracy of the forecast for actual expenses using a standard budget based on the average per diem cost was verified for each institution. As such, by reproducing standard budgets for the institutions and comparing them with actual spending for the same time period, it was demonstrated that, on average, the budget made available to the institutions overestimates by 14% the amount required by institution residents on the basis of the ISO-SMAF profiles. However, these results will have to be reproduced for a longer observation period, while taking into account the seasonal factor.

The methodology and results of this study could prove useful to decision-makers and those responsible for planning, scheduling personnel and allocating budgets within the foster care equity method for medication costs. Despite the gaps that emerged between the standard budget and actual spending, this method forms a common denominator that may be helpful for institutions when examining their procedures for prescribing medication to frail elders residing in CHSLDs.

References


12. Public Funding of Home Care Services for Frail Older Adults: Are the Needs Being Met?

M. Tousignant, R. Hébert, N. Dubuc, C. Coulombe

Introduction

In the province of Quebec (Canada), home care refers to an array of health and social services (prevention, assessment, diagnostic, treatment, rehabilitation and community-based support services) designed to sustain individuals with disabilities, chronic or acute conditions at home or in residences of their choice\(^1\). The goals are to prevent further deterioration in client function, and to substitute for acute or long-term care services provided in institutional settings\(^2\). For older people, three programmes are generally offered to achieve these goals. First, the short-term home care program serves older adults with an acute health problem requiring hospitalisation and their subsequent early discharge home. These services are co-ordinated with the hospital staff to ensure appropriate timing of services to be delivered upon discharge from the hospital. Secondly, the long-term home care program is offered to older adults requiring care or services related to their disabilities or other conditions with the goal of delaying institutionalisation in private or public facilities. Thirdly, older persons needing palliative care are cared for.

In Canada, federal-provincial fiscal arrangements were introduced in 1977 to increase provincial flexibility and contain programme costs. In this way, the funding of health system is undertaken at both levels of government but the delivery of health services is under the responsibility of provincial governments.

Public home care has been well established in Quebec for more than thirty years under territorial agencies named Community Services Local Centre (Centre local de services communautaires, CLSC). They receive their funding from the Regional Health and Social Services Board (Régie régionale de la santé et des services sociaux, RRSSS) For delivery of long term care and services, CSLCs use two basic models. The most widely used is a provider model in which services are arranged and provided by CSLC staff, and to a lesser extent a self-managed care
model is available for specific clientele. In this model, once deemed eligible, individuals receive cash or service vouchers to arrange for their own care.

The need for home care will likely continue to increase over the next years as a way to respond to innovative health practice helping the person at home to receive services which are routinely given in facilities (acute hospital, long term care facilities). However, fulfilling the mandate of home care programme requires adequate funding as programme user needs are increasing over time. For instance, home-care service use increases as people age, hospital early discharge policies send more patients home than ever before, and the expansion of sophisticated technologies enable disabled adults to live at home1, 6.

Although a significant number of clients need to be served, home care is under-funded in the Canadian public health care system and particularly in the province of Quebec where home care services account for only 3% of total health expenditures. So far, only indirect indicators of home care under-funding are available such as waiting list for surgery, home care or institutionalisation, patients overflow at the emergency room and development of private assisted living residences for the elderly. Unfortunately, no empirical data exist to establish adequacy of the funding of home care programmes to fill the needs of users16. Therefore, it is essential to provide managers and decision-makers with a reliable system linking systematically measurement of the needs of older people with the level of the services provided. This information is necessary to identify gaps, respect accessibility principles, provide and equalise an adequate supply of home care services across all regions, and demonstrate accountability for performance.

This research deals specifically with the long-term home care programme of each CSLC as it relates to disabilities associated with the ageing process. In this context, the objectives of this study were: 1) to test the feasibility of establishing a new funding method for long term home care services based on the needs of the home care users; 2) to describe the services that home care users actually received in terms of proportion of nursing care, assistance care/support services, and 3) to estimate the discrepancy between the existing budget and the budget required to fill the needs of disabled older people using long-term home care programme.
Methodology

Design

This study used a cross-sectional design with a three months observation period from September 29 to December 21, 2002. To achieve its objectives, a number of steps were necessary.

The first step was to standardise, using a reliable and valid instrument, the measurement of services needed for every user of long term care services served by 19 CSLC in a specific region of Quebec. The Functional Autonomy Measurement System (Système de mesure de l’autonomie fonctionnelle, SMAF) and its disability-based classification system (ISO-SMAF profiles) were used for this purpose. The second step was to consult a regional database containing patient assessments as well as data on the duration of home care services provided. This information was accessible by a computerised databank already in operation in Quebec. The third step was to determine the cost associated with the services required and provided by each CSLC according to local salary scales and urban/rural status. Following this, in order to evaluate discrepancies, the theoretical budget (estimated by the required numbers of hours per year in nursing care, assistance and support services of the elderly associated with each ISO-SMAF profile) was compared to the existing budget (determined by the number of hours of public services actually delivered to home care service recipients).

Characteristics of settings

The Monteregie is in the centre of Quebec, encompassing the southern part of the Montreal metropolitan area. The RRSSS-Monteregie is the regional authority responsible for managing the budget for health care and social services in this area. RRSSS-Monteregie serves a population of 1,344,799, more than 12% of whom are 65 years of age or older, 5.2% are between 75 and 85, and 1.2% are over 85. To care for frail older adults, a network of facilities provides care and services on a continuum, from the homes of users’, private group homes (with or without public services: 7.6 places per 100 older adults aged 65 years or over), intermediate facilities (0.5 places per 100 older adults aged 65 years or over) to long-term care facilities (3.2 places per 100 older adults aged 65 years or over).

As this research addressed the long term care programs of home care services, all users receiving at least one component of the long-term
home care programs of the 19 CSLC of the RRSSS-Monteregie, in a given three months observation period, constituted the population under study (census). Most of the hours care services are delivered in Québec by the public agencies, mainly CSLCs

**Determination of services required**

For the current study, the needs of the disabled older adults were viewed according to the amount of time required in terms of nursing care, either skilled or unskilled (personal care), support for instrumental tasks and supervision. To adequately represent this time, we must consider the direct time (patient centered) as well as other parameters such as planning and reporting time, travel time, and the number of visits at home.

Time directly devoted to the user was determined using a disability based classification system. This classification is composed of 14 homogeneous ISO-SMAF profiles which can be grouped into four broad categories: namely instrumental activities of daily living (IADL) disabilities only (profiles 1, 2 and 3), IADL and activities of daily living (ADL) disabilities with predominantly mobility problems (profiles 4, 6 and 9), IADL and ADL disabilities with predominantly mental problems (profiles 5, 7, 8 and 10) and, lastly, mixed and severe IADL and ADL disabilities (profiles 11, 12, 13 and 14). Previous studies support the validity and reliability of this classification. A specific methodology based on these profiles was applied in a prior research about funding of long-term care facilities.

The information needed to assign users to profiles is directly based on the SMAF. The SMAF is a 29-item scale developed in 1982 according to the WHO classification of disabilities. It measures functional ability in five areas: activities of daily living (ADL) [7 items], mobility [6 items], communication [3 items], mental functions [5 items] and instrumental activities of daily living (IADL) [8 items]. Each item is scored on a 5-point scale from 0 (independent) and 0.5 (with difficulties) to 3 (dependent) for a maximum total score of 87. An increase in the score represents a decrease in functional ability. Its reliability and validity have been tested in several studies. In Québec, the SMAF is included in a comprehensive assessment, the Multiclientele Assessment Tool (MCAT) that has been mandated by the government for use in all LTC services including home health care agencies since 2000. Because of the recent implementation across the province, training sessions were planned two years before the beginning of this study in the
Monteregie area to ensure good understanding and administration of the tool. All of the 950 health care professionals attended the training session. Formative feedback were also available in each facility to ensure maintenance of competency over time.

From the information generated with 29 items of the SMAF, a computer program automatically classifies the client into one of the 14 profiles by assigning the individual to closest profile using the Euclidean distance measure. Each ISO-SMAF profile is associated with a specific amount of nursing care and support services (hours of direct time) (Table 12.1). The total number of hours per day were subsequently reported in hours per year (hours per day x 365 days) for each ISO-SMAF profile. These hours per year were subsequently attributed to each individual in this study receiving the care and services, based on their ISO-SMAF profile.

These direct time (patient centered) of home care services must be majored for indirect time (organisation of care, chart report and administration) and travelling time to the home. These indirect time are used as a constant applied to each visit at home. Table 12.2 shows the methodology to generate the theoretical budget taking into account total time (direct, indirect and travelling time) related to the care and service delivered.

**Existing budget for the long-term home care programme**

Duration of care and services allowed to each visit of a home to care users is extracted from the computerised databank filled by the professional at each visit to the users. For a specific user, addition of the duration of all the visits during the time window of opportunity was calculated leading to the time allowed for the 84 days under study. Thereafter, this individual time was reported by year using a simple mathematical rule:

\[
\text{Hours by year (individual level)} = \frac{\text{Total number of hours for 84 jours} \times 365 \text{ days}}{84 \text{ jours}}
\]

This direct time spent to deliver the care and services are majored for indirect time and travelling time in the same way than described previously. Transformation of these hours in budget followed the same methodology described previously.
### Table 12.1
Number of hours per day of nursing care, assistance care and support services for frail older adults associated with each ISO-SMAF profile

<table>
<thead>
<tr>
<th>ISO-SMAF categories</th>
<th>IADL disabilities only</th>
<th>Mobility problems predominant</th>
<th>Mental problems predominant</th>
<th>Severe and mixed disabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO-SMAF profile</td>
<td>Profile 1</td>
<td>Profile 2</td>
<td>Profile 3</td>
<td>Profile 4</td>
</tr>
<tr>
<td>Nursing care</td>
<td>0.01*</td>
<td>0.02</td>
<td>0.23</td>
<td>0.15</td>
</tr>
<tr>
<td>Assistance care</td>
<td>0.26</td>
<td>0.27</td>
<td>0.48</td>
<td>0.57</td>
</tr>
<tr>
<td>Support services</td>
<td>0.46</td>
<td>1.87</td>
<td>1.96</td>
<td>2.03</td>
</tr>
</tbody>
</table>
Table 12.2
Method to generate the theoretical number of hours based on the ISO-SMAF profiles

<table>
<thead>
<tr>
<th>Direct time (ISO-SMAF profile)</th>
<th>Indirect time: Organisation of care, travel time, chart report and administration</th>
<th>Indirect time: travel</th>
<th>Total time to be funded for individual X</th>
<th>Mean hourly rate</th>
<th>Theoretical budget for user X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific to the individual</td>
<td>Constant</td>
<td>Constant specific to each CSLC facility</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>User X</th>
<th>Nursing Hours/year</th>
<th>Constant¹ × # of visits in the year²</th>
<th>Constant² × # of visits in the year²</th>
<th>Hours × CAN $32.61/hour</th>
<th>= $A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistance and support services</td>
<td>Hours/year</td>
<td>Constant¹ × # of visits in the year²</td>
<td>Constant² × # of visits in the year²</td>
<td>Hours × CAN $18.67/hour</td>
<td>= $B</td>
</tr>
<tr>
<td>Total budget for user X</td>
<td></td>
<td></td>
<td></td>
<td>Total = $A+B</td>
<td></td>
</tr>
</tbody>
</table>


Results

Description of the population
The census of the users of the long-term home care programme of the 19 CSLCs in the RRSS-Monteregie showed that 8,434 disabled older adults received at least one service in the three months observation period. Women made up 68% of this population. The mean age was 80.4 (7.6 years. Home care users present a moderate level of disability with a mean total SMAF score of 23.1 (14.8 out of 87.

Disability profiles and needed services
The distribution of the ISO-SMAF profiles in the long-term home care programme of the 19 CSLC is presented in Figure 12.1. In average, 46% of the clientele of the long-term home care programme presents mainly...
problems with IADL (profiles 1, 2 and 3), 36% showed profiles with predominance in motor disabilities (profiles 4, 6 and 9), 14% profiles with predominant mental disabilities (profiles 5, 7, 8 and 10), while the last category of profiles with mixed and severe disabilities (profiles 11 to 14) represent only 4%.

Delivered of care and services by the CSLC

Table 12.3 shows the relative proportion of care and services are similar across the categories of ISO-SMAF profiles. During the three month observation period, 67% of the users received at least one visit of nursing care and 32% at least one visit of assistance care/support services. Relative proportion of care and services are similar across the categories of ISO-SMAF profiles, except for assistance care/support services for users with IADL disabilities (less proportion of users who received at least one visit). The mean number of minutes of nursing care per visit was 29 minutes and 72 minutes for assistance care/support services.

Theoretical budget and existing budget

The theoretical and existing number of hours are presented in Table 12.4 by LCSC. This shows a shortfall in the available budget to meet the needs of home care users in nursing, assistance and support services based on their functional autonomy profiles.

Needs response rates for each CSLC facility are presented in Figure 12.2. The response rates vary from 12% to 16% depending on the categories of care and services taken into account. This figure shows that three subgroups of CSLCs are quite similar. First, 8 CSLCs present response rates similar to the mean response rates for the Monteregie area as a whole (mean 2%). The other CSLCs present lower (7 facilities) or higher (4 facilities) response rates than the mean.

Discussion

The most interesting and surprising result of this study concerns the distribution of the ISO-SMAF profiles served by the public home care programme in the Monteregie. It was found that 44% of users have minor disabilities. In the context of scarce resources and low response rates of services delivered, how can we justify this high proportion of users with minor disabilities being served as opposed to those with mild and severe disabilities? Moreover, the intensity of services does not seem to be related to the needs and disability level of the clients. This means that a
Table 12.3
Proportion of users who received at least one visit of nursing care and assistance care/support services presented by categories of ISO-SMAF profiles

<table>
<thead>
<tr>
<th>……</th>
<th>Nursing care</th>
<th>……</th>
<th>Assistance care and support services</th>
<th>……</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Users who Received at least one visit</td>
<td>Number of users admissible</td>
<td>Proportion of users deserved</td>
<td>Users who Received at least one visit</td>
</tr>
<tr>
<td>IADL (1, 2 and 3)</td>
<td>2596</td>
<td>3868</td>
<td>67%</td>
<td>792</td>
</tr>
<tr>
<td>Motor problem predominant (4, 6, and 9)</td>
<td>2122</td>
<td>3043</td>
<td>70%</td>
<td>1248</td>
</tr>
<tr>
<td>Mental function predominant (5, 7, 8 and 10)</td>
<td>677</td>
<td>1175</td>
<td>58%</td>
<td>473</td>
</tr>
<tr>
<td>Mixed and heavy problem (11, 12, 13 and 14)</td>
<td>220</td>
<td>348</td>
<td>63%</td>
<td>177</td>
</tr>
<tr>
<td>Total</td>
<td>5615</td>
<td>8434</td>
<td>67%</td>
<td>2690</td>
</tr>
</tbody>
</table>
Table 12.4
Costs of the public home care programme: theoretical budget and existing budget

<table>
<thead>
<tr>
<th>CLSC</th>
<th>Nursing care</th>
<th>Assistance and support services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing budget</td>
<td>Theoretical budget</td>
</tr>
<tr>
<td>P (N=328)</td>
<td>$348,707</td>
<td>$2,328,425</td>
</tr>
<tr>
<td>N (N=696)</td>
<td>$573,755</td>
<td>$3,982,044</td>
</tr>
<tr>
<td>R (N=434)</td>
<td>$379,543</td>
<td>$2,993,338</td>
</tr>
<tr>
<td>F (N=252)</td>
<td>$311,759</td>
<td>$1,466,663</td>
</tr>
<tr>
<td>D (N=215)</td>
<td>$195,876</td>
<td>$1,249,605</td>
</tr>
<tr>
<td>M (N=285)</td>
<td>$199,172</td>
<td>$1,867,495</td>
</tr>
<tr>
<td>A (N=74)</td>
<td>$56,791</td>
<td>$345,412</td>
</tr>
<tr>
<td>B (N=371)</td>
<td>$356,377</td>
<td>$1,796,438</td>
</tr>
<tr>
<td>S (N=407)</td>
<td>$291,058</td>
<td>$2,913,232</td>
</tr>
<tr>
<td>E (N=665)</td>
<td>$603,881</td>
<td>$3,332,594</td>
</tr>
<tr>
<td>L (N=449)</td>
<td>$336,812</td>
<td>$2,729,674</td>
</tr>
<tr>
<td>J (N=489)</td>
<td>$678,052</td>
<td>$3,030,347</td>
</tr>
<tr>
<td>I (N=345)</td>
<td>$293,705</td>
<td>$2,079,503</td>
</tr>
<tr>
<td>O (N=619)</td>
<td>$649,135</td>
<td>$3,905,660</td>
</tr>
<tr>
<td>H (N=563)</td>
<td>$638,678</td>
<td>$2,794,792</td>
</tr>
<tr>
<td>G (N=482)</td>
<td>$437,967</td>
<td>$2,529,242</td>
</tr>
<tr>
<td>K (N=402)</td>
<td>$505,020</td>
<td>$2,320,516</td>
</tr>
<tr>
<td>C (N=885)</td>
<td>$356,773</td>
<td>$4,317,525</td>
</tr>
<tr>
<td>Q (N=482)</td>
<td>$422,681</td>
<td>$3,234,448</td>
</tr>
</tbody>
</table>
INTEGRATED SERVICE DELIVERY TO ENSURE PERSONS’ FUNCTIONAL AUTONOMY

A small amount of service is spread over all disabled elderly whatever their needs. Secondly, 4% of the users present a profile which would make them eligible for long-term care facilities (ISO-SMAF profiles > 10). This study challenges the eligibility criteria and provision of services from public home care programmes.

The main objective of this study was to apply a new method for determining the number of hours of home care services based on user needs and to compare the new method with the existing funding mechanism. Results show a substantial shortfall between the existing budget and theoretical budget to meet the needs of disabled older adult users of the long-term home care programme (nursing, assistance and support services) based on their functional autonomy status. More importantly, the results show the feasibility of applying this new method to determine the public funding of home care services: this is a major breakthrough in the field of health services research.

Some points related to the internal validity of the study must be discussed. First of all, there is no possibility of a selection bias since we used the total population of users of the long-term home care programme. The picture drawn reflects the reality of this particular admin-

![Figure 12.2 Needs response rates by CSLC facility for nursing care, assistance care and support services (Existing budget theoretical budget)](image_url)
istrative area of Quebec. Moreover, there is no strong indication that this area is any different from other areas of Quebec based on public health statistics such as mortality, life expectancy, age, and socio-economic status. Secondly, a major effort was made to train the health care professionals in the proper use of the SMAF and the computerised databank used in CSLCs. Despite these efforts, however, given the large number of professionals (more than 950) involved in the data collection, some imprecision is likely. However, even if there is some information bias, it is probably not systematic. Thirdly, the validity of this new funding model rests on a valid and reliable disability based classification system (ISO-SMAF profiles) which has also been used in a similar study for nursing home funding.

How should we interpret the results regarding the low response rates between the budgets required and allocated? Indeed, we should not interpret these results as painting a horrific picture of older adults in poor health left at home with no support. This study indicates that the public portion of the health care system meets only 12 to 16% of these people’s needs. However, this finding is not new. It is recognised that the family meets a large part of the needs of older adults, i.e., more than 70% according to recent studies in Quebec. Because much care involves assisting users with daily personal tasks and managing the home, perhaps home care has not needed to be highly professionalized at this point. However, we can not be sure that this response to the needs of elderly will be appropriate in the future, as both care techniques and society evolve. For instance, home care is becoming more sophisticated with early discharge from hospital and new technologies, the traditional system of informal care may change with more women working outside the home, smaller family size, or changing expectations of family responsibilities.

With these facts on mind, what should the response rate be? Should 75%, 50%, 25% be the response rates for public home care programme funding? This study does not address this question. The answer depends largely on the choices made by society regarding the magnitude of the investment to make to keep frail older adults at home. Knowing that in long term care facilities the needs are covered at 75%, there is a room to improvement in order to decrease a strong financial incentive to institutionalised frail older people.

How can those who make decisions about home care services for older adults use the data from this study? Our description of the popula-
tion of long-term home care users raises some questions about the services offered by this programme, given current financial constraints and the low response rates observed. It is difficult to justify the fact that 46% of users with minor disabilities receive care and services while only 12% of the needs of those with moderate and severe disabilities are met. Is this home care programme serving the users who should be served? Given the low response rates, decision-makers and home care programme administrators should probably match the care and services offered with the needs of frail older adults. If they cannot meet all the needs, who should benefit most from the care and services offered within the limitations of the home care budget?

Moreover, a comparison of the response rates between facilities in the same district could be used to optimise the services delivered. The organisation of care, indirect time for multidisciplinary meetings or creating individualised care plans may be an interesting discussion point between facilities to find the most efficient way to serve users.

Another use of the results of this study could be to justify more funding for long-term home care programmes. The underfunding of these programmes provides a strong argument for higher budgets. Like waiting lists for institutionalisation and surgery or the length of stay in emergency rooms, response rates can provide administrative information to help make decisions about funding home care and services for frail older adults. This study raises more questions than answers it provides but it could open a debate to help decision-makers, administrators and clinicians improve available home care and services.

Conclusion

The results of this study show the feasibility of a new funding approach to long-term home care programmes based on user needs. The theoretical budget based on the functional autonomy profile, defined as the dollars requires to meet client needs, reveals underfunding of facilities in the usual system.

The results of this study highlight the usefulness of ISO-SMAF profiles as a tool for decision-makers, administrators and clinicians to improve health care services. Use of this unique mechanism allows comparisons to be made between facilities, administrative districts, provinces or even countries. However, it must be borne in mind that implementation of a public funding mechanism like the ISO-SMAF
classification must be supported by the continued use of computerised clinical chart (CCC) including the SMAF.

Acknowledgments
The collaboration of Danielle Benoit and Guylaine Allard from the Mont-
regie – Regional Health and Social Services Authorities is gratefully ack-
nowledged, as well as the members of the home care programme adminstrators who were member of the research group: Agathe Brisebois, Jean-Pierre Beaudry, Chantal Arsenaulet Céline Charest.

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Suzanne Durand, Danièle Blanchette, Réjean Hébert

The Clair Commission report commented on the fragmentary nature of the services provided by the Québec health and social services network. Frail elderly persons experiencing loss of autonomy (frail elders) are in greater need of coordinated interventions. The Program of Research to Integrate the Services for the Maintenance of Autonomy (PRISMA) project is aimed at improving service continuity and ease of access. Given the scarcity of resources, it is important to ensure that this integration provides a cost effective model for improving the quality of life of frail elders and helps to curtail the deterioration of their functional autonomy.

PRISMA provides us with an opportunity to analyze the financial components of an integration of this kind. Studies on the implementation and impact of an Integrated Services Delivery (ISD) system for the elderly in Estrie include an economic evaluation part. This document provides a preliminary outline of this part and a detailed description of the costs of implementing and operating the ISD system. These costs will form the basis for our evaluation.

Background

The PRISMA project studies how an ISD system impacts a number of variables, notably the use and cost of sociohealth services, variations in the level of functional autonomy and empowerment of participants, their level of satisfaction, continuity of services and the burden shouldered by their caregivers. This longitudinal research project, which began in 2001, involved some 900 frail elders at risk, living in three regional municipalities (MRC) in the experimental area (Estrie) and three MRC in the control area (Chaudière-Appalaches). Some 500 additional subjects were added in 2003, and these two groups will take part in the data collection until 2005.
INTEGRATED SERVICE DELIVERY TO ENSURE PERSONS’ FUNCTIONAL AUTONOMY

The implementation of an ISD system involves a form of re-organization (re-engineering) within the public health and social services network in an administrative region. To that end, mechanisms and structures were modified or created in order to support frail elders and make sure the required services were provided by the right resource at the right time and in the right place. The ISD system involves all public health and social service institutions as well as private and volunteer organizations, which provide services to help maintain autonomy. The institutions and organizations that become ISD members maintain their own mission and structure, and collaborate, depending on their area of operations, on setting up the six components of the system: inter-institutional coordination; single entry point; case management; the individualized services plan (ISP); evaluation and classification tools (PRISMA-7, SMAF, ISO-SMAF profiles); and the Geronto-Geriatric Computer System (Système d’information géronto-gériatrique, SIGG).

Most of the funding required to deploy and operate the six ISD components are provided by the public sector. The Estrie Regional Health and Social Services Board (the Board) allocates funds earmarked for the ISD system to regional and local institutions in the seven MRCs in the region. The Board also provides additional funding, notably to develop the SIGG and training programs. Since budgets are limited, the institutions must also dip into their own operating budgets to top up ISD financing. ISD system implementation also incurs expenses for private and volunteer organizations, primarily in the area of coordination.

ISD programs for frail elders are a fairly recent phenomenon and have been set up in several countries. However they differ from the ISD system in Estrie in terms of their level of integration and the components that define them. While the ISD system is patterned after an intermediate integration model, where coordination is the keystone, several programs apply the comprehensive integration model, which is created within a single organization responsible for providing all of the services required by its clients. Some studies on ISD programs concentrate on only one of the six PRISMA components, such as case management or the computerized clinical chart (CCC) system. In addition, most of the literature is based on less elaborate methodologies than the one that defines the PRISMA model, notably, the absence of a control group and a comprehensive economic study. In order to compensate for the lack of a model, health economics formed the theoretical basis of our study.
Study objectives

Firstly, the economic study will attempt to measure the impact of the ISD system on the cost of sociohealth services. Next, it will determine whether an ISD system makes efficient use of resources.

The term efficient refers to the relation between the resources deployed and the expected outcomes\(^\text{15}\). An intervention is considered efficient if it obtains the best outcome for a specific amount of resources\(^5\). In other words, efficiency helps to minimize the amount of resources mobilized to obtain a specific result, or to maximize the result obtained with a specific amount of resources\(^\text{15}\).

Economic study

An efficiency assessment is made on the basis of a comprehensive economic study\(^5,\text{15}\), “a comparative analysis of the possible options, based on their costs and outcomes”\(^\text{15}\). We must therefore identify measure, evaluate and compare the costs and outcomes of the various options. This comparison is based on incremental analysis which compares cost variations with outcome variations for the options studied. Our study will compare two options: implementation of an ISD system (experimental area) and maintenance of non-integrated services (control area).

Several study variables (e.g. autonomy, continuity and satisfaction) can be used to measure ISD outcomes. We selected a health outcome—the degree of functional autonomy—but this does not preclude the possibility of other analyses at a later date. More efficient use of resources, through the implementation of an ISD system, could produce three possible outcomes: 1) no significant impact on the deterioration of the participants’ level of functional autonomy, with lower costs than those incurred by non-integrated services; 2) decreased deterioration of the participants’ level of autonomy, with costs equal to or less than those incurred by the non-integrated services option; 3) decreased deterioration of the participants’ level autonomy, with greater costs than those incurred by the non-integrated services option, to the degree that the ISD marginal costs do not exceed the cost of services required to mitigate a deterioration in autonomy that is equal to the deterioration it helped prevent.

In the first case, a cost minimization analysis (CMA) is required. This involves identifying the least costly option, by estimating the marginal cost incurred by the ISD system (ISD net cost). For the other two cases, a cost-effectiveness analysis (CEA) is required, since it is appro-
priate when the health outcomes of the two options, while not equal, may be measured with a common measurement unit. For the purposes of our study, the CEA equation is:

\[
ACE = \frac{\text{Net cost of ISD}}{\text{Decreased deterioration in the level of autonomy produced by the ISD system}}
\]

Please note that the Functional Autonomy Measurement System (Système de mesure de l’autonomie fonctionnelle, SMAF) will be used to establish deterioration of functional autonomy. The CEA result will provide the cost of a decrease of one SMAF point. A negative cost will indicate efficient utilization of resources, while a positive cost should be compared with the cost of services required to mitigate a drop of one SMAF point. This cost is available in the study conducted by Hébert et al.

Before defining ISD net cost, it should be noted that, since the experimental group included only three of the seven MRCs in Estrie, we will not obtain complete data for the region. As such, the economic study covers all three participating MRCs; since they are substantially different (urban vs. rural, with or without a Hospital Centre), each will also be the subject of a separate economic study.

**ISD net cost**

To some degree, the perspective of an economic study is the basis of the cost analysis. We chose the societal perspective to study the costs assumed by all public, private and volunteer sources. This is the perspective used in the literature and we believe it is the most relevant, in the ISD context, to provide an overview of its financial outcomes. Costs from various sources will be compiled separately, in order to determine whether the ISD produces modifications in the contribution made by these three financing sources.

The net cost of a program, like that of the ISD system, is equal to the cost variations produced by the ISD system and the savings it generates. Table 13.1 illustrates the four major components of the net cost of the ISD system.
Costs incurred by the ISD system

While conducting the economic study, we did not include expenses that were common to the various options studied\(^5,10\). As such, when analyzing the MRCs in the experimental area, we isolated additional resources assigned to the ISD system, that is, those that would not have been used had the ISD not been implemented.

Figure 13.1 illustrates a fictitious variation of resources used to provide services for the frail elders in an MRC. The “before” element refers to the non-integrated services option, while “after” refers to the ISD option. The ISD cost, dark part illustrated by an arrow, is an example of a possible percentage of additional resources assigned to the ISD system, which should be differentiated from those assigned to other programs.

Since the additional available resources cannot cover the entire cost of implementing and operating an ISD system, resources initially assigned to other activities or programs were subtracted and reassigned to the ISD system. Figure 13.2, which illustrates these “reassigned
resources,” presents a more accurate portrait of actual ISD implementation, whose costs stem from additional and reassigned resources.

The reassigned resources may be considered sacrifices: investments made to implement and operate an ISD system in the hope of improving services provided to frail elders. It is important to note that the savings we expect to realize through an ISD system will likely offset these investments and that, while it is highly probable that these savings will occur, we did not include them in the previous figures in the interests of a simpler presentation.

The cost evaluation is based on two types of data: the quantity and the cost of the resources used. Data relating to quantities was collected in numbers of units for material resources (computer equipment, office space, phone lines); for human resources, it was presented in hours worked.

Resource costs should, in theory, equal opportunity costs, that is, the value the resource would have produced had it been dedicated to its next best use. Since the market price can be considered equal to the opportunity cost, the resources, whether additional or reassigned, are estimated at the actual cost, for example, the purchase price of a computer, the charge for installing a new phone line, consultation fees and hourly rates in effect for the work performed. In terms of volunteer resources, since there is no market price, we used three scenarios...
according to literature recommendations: 1) a nil rate; 2) a rate equal to minimum wage; 3) a rate equal to a salary for the task.

**Implementation costs**

Most ISD studies consulted\(^6\), \(^7\), \(^13\), \(^17\) tend to disregard implementation costs, which seems quite prevalent, in practice, for the program evaluation\(^14\). However, the cost of organizing and deploying a program must be evaluated\(^5\), \(^15\) in order to better inform the health workers involved about the activities and ancillary costs of developing an ISD system.

Implementation costs stem largely from activities such as: developing coordination mechanisms; recruiting and training single entry point/case management resources; developing and deploying common tools and the SIGG. The resulting costs are included in the preliminary results section. It is important to note that these activities represent non-recurring expenses.

**Operating costs**

As with implementation expenses, it is essential to identify the marginal costs exclusively attributable to the ISD system: operating costs related to recurring expenses for new activities introduced as a result of the ISD system implementation. As such, we must concentrate primarily on human resources (and associated costs) that will be performing the new functions required by the ISD components, namely the single entry point, case management and the SIGG.

**Savings generated by an ISD system**

**Savings in the consumption of services**

The implementation of an ISD system should result in savings in the consumption of services, through, among others, a reduction in the inappropriate use of costly resources (hospitals, emergency services)\(^12\). Studies on various ISD models have demonstrated the following outcomes: fewer hospitalizations\(^2\), \(^6\); briefer hospital stays\(^7\); delayed institutionalization, reduced medication consumption\(^6\), \(^7\).

The sociohealth services consumed by PRISMA study participants and the corresponding cost evaluations and savings are not included in this document.
Savings through re-organization of the service offering

The six ISD system components generated a reorganization of the service offering for maintaining the autonomy of frail elders. This will likely result in increased productivity due to collaboration facilitated by inter-institutional coordination; centralized requests through a single entry point and less time evaluating clients and consulting clinical files due to generalized use of the same planning, evaluation and classification tools. The SIGG, in addition to simplifying clinical file consultation, will reduce time spent writing up clinical file notes.

The methodology designed to identify and evaluate these savings has not yet been completed. We must attempt to trace the exact source of the productivity gains that Gadrey considers operational efficiency. To that end, he suggests that service-provisioning operations be divided into three categories: operations of logistics and material transformation, operations of informational logistics and activities of provision of direct services. The first category does not directly concern the service re-organization under consideration, while informational logistics operations may be affected by the re-organization being studied. We hope to obtain, directly from the social and health care workers, an estimate of the time saved through the ISD system. Activities of provision of direct services are an extremely interesting avenue. The time saved by social and health care workers may result in a greater number of interventions, and we plan to compare the number of interventions carried out over a specific period of time before and after the ISD implementation. These two techniques will serve as a basis for devising a method to assess the savings generated by a reorganized service offering.

Data collection

Since the ISD system implementation in Estrie was particularly complex, first we will describe some of the difficulties we encountered, and then provide a fuller description of our process.

The service-offering re-organization brought about through the ISD implementation took place over a period of roughly two years, even though the six components on which the ISD system is based were not developed at the same pace. Moreover, this pace varied from one MRC to the next.

The ISD system is developing within the overall public health and social services network in close collaboration with several different departments or programs. Furthermore, this network is undergoing
additional concurrent re-organization. Taking into consideration private and volunteer organizations increases data collection sources. In addition, the computerized accounting systems of many ISD members prevent easy access to the specific costs of each activity.

According to economic study principles, budgets can be used to estimate costs. However, some budgets allocated by the Board combine services integration and service line improvements. While these improvements will help boost the success of the ISD system, the funds allocated to them were not included in this study, since the improvements do not derive from the ISD system. However, we included amounts reallocated to the ISD from current MRC operating budgets.

Expenses incurred by the Board and regional institutions apply to the regional network. Since our study included only three of the seven MRCs, we must attempt to distribute costs among the seven MRCs and use only costs associated with the territories studied.

In view of the above factors, we cannot claim to isolate accurately all the costs of implementing and operating an ISD system. However, the information gathered during the implementation study conducted concurrently by the PRISMA team, combined with the invaluable collaboration of sector partners (ISD members), made it possible to identify the primary activities associated with the implementation and operation of an ISD system and their related costs.

We collected data related to implementation and operation costs simultaneously. Implementation costs were calculated from September 1, 2000. This date was selected, following discussions with the partners involved, to represent the start of ISD system development work. The operating costs were compiled from the date when the component in question was put into place (these dates are included in table 13.3).

To date, data has been collected for the period covering September 1, 2000 to March 31, 2002. The second data collection project for the year ended March 31, 2003 is ongoing. The major data collection activities are as follows:

In November 2002, a consultation meeting was held with sector partners in order to clarify the methodology for evaluating ISD system costs. Representatives from the Board and most local and regional institutions attended this meeting, which was led by the PRISMA economic study team.

A document was produced to define the data to be collected, and was distributed to anyone involved in the data collection.
Two questionnaires were developed (implementation and operation) to guide the data collection for all components, excluding the inter-institutional coordination component.

For the coordination component, in the first phase, the number of ISD meetings was determined, as was the number of people present. Subsequently, individual interviews were conducted to complete data collection for the coordination component and to complete the questionnaires for the period ended March 31, 2002. Please note that these interviews were conducted with representatives from the Board and all public institutions that were ISD partners. These individuals provided information about their own institutions and, as needed, information about other organizations in their territory (pharmacies, community organizations).

Preliminary results
At this point in our study, we are able to present preliminary results only. In addition, we should mention that several factors may influence the cost of implementing and operating an ISD system in the different MRCs. This is largely determined by: 1) the nature (urban or rural) of the MRC; 2) the availability of human, material and financial resources; 3) the management structure in place prior to ISD implementation and the configuration and implementation modes chosen for the new structures and coordination mechanisms; 4) the presence, or lack, of institutions combining several missions; 5) the range of services provided in the MRC territory; and 6) the number of frail elders that, when constituting a critical mass, support more efficient utilization of resources. Table 13.2 illustrates several characteristics of each MRC studied.

As previously mentioned, data was collected until March 31, 2002 and the speed of implementation varies according to the MRC and the component. At that time, the SIGG was not operating in any of the three MRCs included in the study, and the single entry point was not available in the MRC de Sherbrooke. Moreover, the set-up of most of the components was relatively recent, and had been in operation for only two to six months. Under these circumstances, the implementation costs collected are somewhat incomplete. Moreover, since the cost progression is not directly proportional to the degree of implementation, it would not be appropriate to use extrapolation techniques to estimate total costs. Operating costs are not representative, since they were observed only for a
very short period. Aside from the period of adaptation and training involved, the volume of activity remained sub-optimal.

As such, we will limit our results to a general description of the activities and acquisitions that generated the specific costs of implementing and operating an ISD system. Each component and MRC is presented separately as well. Table 13.3 presents a summary of the ISD-related resources as at March 31, 2002.

### Inter-institutional coordination

Coordination involves all institutional levels\(^1\) (strategic, tactical and clinical) and teams up representatives from different institutions on Joint Governing Boards and various committees. Most of these were already in place prior to the development of the ISD system. The new committees, and some special meetings, which would not have been put in place without the ISD system, were identified: 668 person/hours for Sherbrooke, 48 person/hours for Coaticook and 123 person/hours for Granit.

The inter-institutional coordination also generated consultation fees for the MRC du Granit. In the MRC de Sherbrooke, a managerial position and a secretarial position were created and assigned to the Service Coordination Committee (Comité local de concertation, CLC), whose mandate includes the implementation and operation coordination of the

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**Table 13.2**

**Characteristics of the MRCs studied**

| MRC de Sherbrooke, 18,715 people aged 64 and over, urban area where regional and local institutions are located: CHSGS, CLSC and university CHSLD; CRE, URFI, UCDG, day program and day centre. |
| MRC de Coaticook, 2,297 people aged 64 and over, rural area with a Health Center containing: CLSC, CHSLD and 6-bed emergency unit, as needed, local residents visit regional institutions in Estrie. |
| MRC du Granit, 3,299 people aged 64 and over, rural area with a Health Center that includes: CHSG, CLSC and CHSLD; as needed, local residents use regional institutions in Estrie or in another adjacent administrative region. |

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*CHSG: Centre d’hébergement et de soins de longue durée – Long-Term Care Centre
CLSC: Centre local de services communautaires - Local Community Service Centre
CHUS: Centre hospitalier universitaire de Sherbrooke - Teaching Hospital
CRE: Centre de réadaptation de l’Estrie - Eastern Townships Rehabilitation Centre
UCDG: Unité de courte durée gériatrique - Short-Term Geriatric Units
URFI: Unité de réadaptation fonctionnelle intensive - Intensive Functional Rehabilitation Units*
Table 13.3
Summary of ISD-related resources as at March 31, 2002

<table>
<thead>
<tr>
<th>Component</th>
<th>Cost</th>
<th>SHERBROOKE (assumption of duties)</th>
<th>COATICOOK (assumption of duties)</th>
<th>GRANIT (assumption of duties)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coordination</td>
<td>Implementation</td>
<td>Implementation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operations</td>
<td>No resources</td>
<td>No resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single entry point</td>
<td>Implementation (Not implemented)</td>
<td>Consultation services Training</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operations</td>
<td>(Not operational)</td>
<td>(December 10, 2001)</td>
</tr>
<tr>
<td>Case management,</td>
<td>Implementation</td>
<td>Consultation services</td>
<td>Training for 2 HRAs already on the job</td>
<td>Consultation services Recruitment, training and set-up of: 1 new position 1 job re-organization</td>
</tr>
<tr>
<td>ISP and other tools</td>
<td></td>
<td>Recruitment, training</td>
<td>and set-up of: 5 new positions</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operations</td>
<td>(October 1, 2001) 5 case managers</td>
<td>(February 1, 2002) 0.10 case manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.10 coordination position</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.25 secretarial position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIGG</td>
<td>Implementation</td>
<td>(Not implemented)</td>
<td>(Not implemented)</td>
<td>(Not implemented)</td>
</tr>
<tr>
<td></td>
<td>Operations</td>
<td>(Not operational)</td>
<td>(Not operational)</td>
<td>(Not operational)</td>
</tr>
</tbody>
</table>
ISD system and the improvement of the service line. We are also considering the percentage of these positions devoted to the ISD system.

**Single entry point**
Setting up a single entry involves a directory of all services provided to frail elders by all public, private and volunteer institutions, as well as screening mechanisms for individuals at risk. In some instances, this single entry point was created by reorganizing intake resources and did not generate any additional expenses; in others, it required recruiting and re-assigning resources.

As at March 31, 2002, the single entry point component was operational only in the MRC de Coaticook and the MRC du Granit. We observed consultation fees in both MRCs, training expenses for Coaticook, a new phone line and promotional expenses for informing the residents in Granit.

**Case management and the ISP**
Case management is a new service. As such, it involved costs for recruiting and training personnel, as well as installation and equipment expenses for setting up the new case managers. In addition, consultation fees were incurred for Sherbrooke and Granit.

In terms of operations, we must include remuneration of case managers. Sherbrooke has five newly hired case managers who are supported by secretarial and coordination services. In Coaticook, two Human Relations Agent positions (HRA) were re-organized to add case management functions. In Le Granit, a new position was created and an HRA became a case manager.

It is important to note that completing an ISP is part of a case manager’s responsibilities, and that he or she is assisted by members of multidisciplinary teams. Costs incurred by the case managers for completing and using the ISP were compiled with case management resources. The multidisciplinary teams did not incur any additional expense, since they were already in place prior to the ISD system implementation.

**Evaluation and classification tools**
These tools are largely used by the case managers and, as such, fall under case management expenses. In the case of other users, mainly
public institutions, no additional expense associated with these tools was detected.

The SIGG was not operational as at March 31, 2002.

Lastly, please note that, according to data collected as at March 31, 2002, the major percentage of funding was provided by the public sector. Other private or volunteer sources made minor contributions at the coordination level.

**Conclusion**

The ISD system under study is an innovative integrated services program for frail elders. Conducting a comprehensive economical study, including an evaluation of the costs of implementing this type of program, is an innovation in and of itself. The need to measure the efficient use of resources justifies an economic study of this kind. We presented several aspects of the methodology that should be developed in the next several months. ISD efficiency studies will be conducted over the four years of the study and will make it possible to track its evolution.

**References**


14. Determinants of Satisfaction and Empowerment in the Very Old

Maxime Gagnon, Réjean Hébert, Micheline Dubé, Marie-France Dubois

Introduction

The number of seniors has considerably increased in Quebec and Canada over the past 20 years. At the end of the 1970s, people over 65 represented 8.2% of the population, while in 1990, this rate was 11%. The number of elderly people (85 years and over) is also noteworthy, since by 2021, this population will have grown by 150%. This drastic change in demographic composition can in large part be attributed to the increase in life expectancy, which has reached 81.5 years for women and 75.2 years for men. According to the Institut de la statistique du Québec, seniors consume over 40% of health services, even though they only make up 12% of the population. They are also hospitalized 3.2 times more often (25.2% versus 7.8%) than the rest of the population. We must therefore recognize the major impact that demographic ageing has on the use of health services.

This new reality requires the development of a number of geriatric services, such as assessment of severe situations, mitigation of disabilities, and functional rehabilitation, in order to meet the needs of seniors. However, the complexification of interventions, combined with the multiplicity of professionals involved in dispensing health services, often result in continuity problems in the care provided. In a situation where all of the service requests cannot possibly be met by the increasingly limited resources, it is more than ever important to ensure that services meet the full range of patient needs, while preserving the quality of care.

For almost two decades, one of the recognized indicators for measuring the quality of health care and services is the level of user satisfaction. The number of empirical and theoretical publications on the subject reflects this trend. This method is especially valuable to further knowledge in the areas of health and social services, but also to support managers and decision-makers in their efforts to continuously...
improve care. From the patient’s point of view, the level of satisfaction is also important, since it is linked to behavioural changes that promote involvement and, consequently, improvement in the individual’s state of health. We find, among these changes, improved attendance at appointments, compliance with recommendations and prescribed treatments, patient loyalty towards doctors, and openness to exchanging information.  

While several variables that contribute to determining the level of satisfaction have been studied, very few of them are unanimous, besides age and education, the impact of which, while contradictory, seems more evident. Results suggest that seniors are generally more satisfied with medical appointments, the relationship with their doctor, the waiting time, the politeness of the doctor, the medical follow-up, the physical rehabilitation, as well as the overall health care provided. Some hypotheses suggest that seniors are more inclined to submit to the authority of doctors, are more reserved when stating their opinions, are less critical in their evaluation, and demonstrate lower expectations than younger patients. However, other studies were unable to make this connection, and the results of Lee and Kasper show a decrease in the level of satisfaction among seniors over 80. This difference in conclusions is also present when analyzing education as a determinant of satisfaction. For some, a higher level of education is associated with a higher degree of satisfaction with the care given and the person giving it, while other results show an inverse association.  

In addition, most of the studies do not show a significant difference between men and women, ethnic origin, income, civil status and level of satisfaction. However, correlations were made between the perception of support offered by the network and the perception of state of health.  

Like the level of satisfaction, the concept of empowerment, in a care situation where the patient’s involvement is required, serves as significant complementary information. In fact, optimization of the intervention not only rests on proper diagnosis and medical action, but also on the investigation of the patient’s individual likelihood to maximize his physical well-being. Thus, seniors who feel competent and in control are more likely to invest in finding their own solutions. Some studies have shown that seniors are probably less likely to defy their doctor’s authority, ask questions, and take an active role in the health care process. These different facets can alter the patient/doctor relation-
ship, and cause the care provided to affect the results of the rehabilitation or maintenance of the state of health\textsuperscript{16}.

In light of these antinomic observations, it seems critical that we see the degree of satisfaction and empowerment as possibly resulting from complementary factors that are distinct from the socio-demographic variables traditionally analyzed. This research therefore has two specific objectives: 1) to identify the determinants of satisfaction and empowerment based on socio-demographic variables and health variables, 2) to establish a link between the various dimensions of patient self-determination and level of satisfaction with health care and services.

Method

Participants

The subjects were involved in the Program of Research to Integrate Services for the Maintenance of Autonomy (PRISMA) being conducted in the Sherbrooke and Québec City areas in the province of Québec, Canada\textsuperscript{25}. A list of names was supplied by the Québec health insurance board (Régime d’Assurance Maladie du Québec - RAMQ) and the subjects were randomly selected from those aged over 75 years. The inclusion criteria were: 1) to have been identified as being at risk of losing autonomy by the Sherbrooke Postal Questionnaire, 2) living at home or in seniors’residences in one of the study areas, 3) understanding and speaking French, and 4) agreeing to participate in the study.

Procedure

Trained interviewers met with the subjects in their home. When completing the different questionnaires, the subjects were instructed to consider all contacts they had had with a health professional during the last six months so that their evaluation was not based on a single positive or negative experience. To help them answer, subjects were given cue-cards that showed the different response scales. These interviews lasted about 90 minutes and sometimes took place in the presence of the informal caregiver. The subjects and their caregivers were informed about the study objectives and confidentiality. If the subject was cognitively-incapacitated, the consent of the person’s legal representative, the curator or the person responsible was required.
Measures
Predictor variables
Satisfaction with services received was measured using the Health Care Satisfaction Questionnaire (HCSQ)\textsuperscript{14} developed for the PRISMA research program. It comprises 26 questions evaluating satisfaction with the relationship with health professionals (factor 1, 12 items), satisfaction with the services delivered (factor 2, 6 items) and satisfaction with the organisation of services (factor 3, 5 items). Two additional questions addressed satisfaction with the services received for activities of daily living (ADL) and instrumental activities of daily living (IADL), and one item evaluated overall satisfaction. The instrument’s content validity was examined by a number of experts in the health care field. Exploratory and confirmatory factor analyses were done with 850 subjects and confirmed the multidimensional nature of the concept of satisfaction. The three factors explained more than 52% of the total variance. The analysis of internal consistency produced Cronbach alpha coefficients of .93, .74, and .78 for Factors 1, 2 and 3 respectively. The alpha of the overall scale was .92. The temporal stability of the instrument was examined in a test-retest study using 38 subjects. The intraclass correlation coefficients (ICC)\textsuperscript{31} for the three factors were .79 (95% confidence interval (CI): .63 - .89), .67 (95% CI: .45 - .81) and .76 (95% CI: .58 - .87). The ICC for the entire scale was .72 (95% CI: .52 - .84).

Empowerment was measured using the Health Care Empowerment Questionnaire (HCEQ)\textsuperscript{15} developed for the PRISMA research program. Empowerment is a multidimensional construct that is defined as the ability to take responsibility for one’s health. The questionnaire has three components The degree of control constitutes the first dimension of the questionnaire (factor 1, 3 items). The second dimension refers to patients’ involvement in interactions with caregivers (factor 2, 4 items). The last dimension refers to patients’ involvement in their search for information so they can participate in the decision process in an informed manner (factor 3, 3 items). Factor analyses confirmed the presence of these three factors, which explained more than 68% of the total variance. The results of content validity and construct validity (convergent and discriminant) studies were conclusive. Also, internal consistency analyses produced alpha coefficients of .79, .79 and .89 for Factors 1, 2 and 3 respectively. The alpha of the overall scale was .83. The ICCs for the three factors were .62 (95% CI: .37 - .78), .70 (95% CI: .49 - .83).
and .60 (95% CI: .35 - .77), and .70 (95% CI: .48 - .83) for all the items (N = 38).

**Independent variables**

The sociodemographic independent variables included age, region (rural vs urban), gender, marital status, and years of schooling. The independent health-related variables were self-perceived health (subjective evaluation of one’s health compared to other people of the same age), number of hospitalisations, number of medications, use of home care services from the Local Community Service Centre (Centre local de services communautaires, CLSC), living arrangement (alone or in a seniors’ residence versus living with a family member), number of health problems, number of embarrassing health problems (that have an impact on activities of daily living [ADL] and instrumental activities of daily living [IADL]), and functional autonomy measured with the Functional Autonomy Measurement System (Système de mesure de l’autonomie fonctionnelle, SMAF)\(^21\). The SMAF is a scale developed from the functional concept of health and the World Health Organization’s international classification of impairments, disabilities, and handicaps\(^20\). It evaluates 29 functions covering ADL (7 items), mobility (6 items), communication (3 items), mental functions (5 items) and IADL (8 items). Each function is rated on a four-point scale: 0 (autonomous), 1 (needs supervision or stimulation), 2 (needs help) and 3 (dependent)\(^23\). For each of the items, an evaluation of the resources available to offset the disability generates a handicap score. This scale was revised recently and a score of 0.5 was added for certain items to indicate a function accomplished autonomously but with difficulty. The total score (/87) is obtained by adding the scores on each item; subscores for each dimension can also be calculated. Inter-rater reliability of the SMAF was confirmed (k = 0.75) in a study done with 300 subjects using interviewers with different kinds of training (nurses, social workers) and working in different fields (institution, community)\(^26\). The revised version underwent additional reliability studies, which produced ICCs for the total score of 0.95 (95% CI: 0.90 - 0.97) for test-retest (n = 39) and 0.96 (0.93 - 0.98) for interraters (n = 45)\(^10\). Some validity studies have been done, including a study of the correlation with nursing time, which showed a coefficient of 0.92 (p < 0.0001) with the hours of care required\(^24\).
Analyses
The data were analysed using SAS 8.02 (SAS Institute Inc., Cary, NC), and was done in two steps. First, bivariate analyses using analyses of variance and t-tests (categoric variables), and Pearsons correlations (continous variables) were done to determine which variables were significant at \( p > .2 \). Then multivariate analyses (backward regression), including the significant variables, were done to determine their effect on the degree of satisfaction and empowerment. The backward regression is a selection procedure in which all variables are entered into the equation and then sequentially removed. The variable with the smallest partial correlation with the dependent variable is considered first for removal. If it meets the criterion for elimination, it is removed. Furthermore, multiple regressions, including health-related variables, were done to establish the effect on sub-scales of satisfaction and empowerment. For the last research objective, Pearson correlation coefficients were calculated between the different sub-scales of the satisfaction and empowerment concepts.

Results
The sample used to do the analyses comprised 450 women and 269 men with a mean age of 83 years. The sociodemographic characteristics of the participants are presented in Table 14.1.

Bivariate analyses
The sociodemographic variables with satisfaction are region of residence and living arrangement. Empowerment is also associated with these two variables in addition to marital status. The level of satisfaction is correlated with self-perceived health, receiving home care services, the presence of health problems and the presence of embarrassing health problems. The degree of empowerment varies with self-perceived health, number of hospitalisations in the past year, number of medications taken daily and the number of embarrassing health problems. The detailed results are presented in Tables 14.2 and 14.3.

Multivariate analyses
The multivariate analyses showed that the most satisfied subjects perceived their health to be excellent compared to others of the same age \( (p = 0.001) \), received home care services from the CLSC \( (p = 0.02) \), had fewer embarrassing health problems \( (p < 0.0001) \) and lived with one or
### Table 14.1
Sociodemographic characteristics of the subjects

<table>
<thead>
<tr>
<th>Variables</th>
<th>Women</th>
<th>Men</th>
<th>Both genders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 450)</td>
<td>(n = 269)</td>
<td>(n = 719)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M = 83.6</td>
<td>M = 82.1</td>
<td>M = 83</td>
</tr>
<tr>
<td></td>
<td>ET = 5.2</td>
<td>ET = 4.4</td>
<td>ET = 5</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>112 (24.9%)</td>
<td>200 (74.4%)</td>
<td>312 (43.4%)</td>
</tr>
<tr>
<td>Widowed</td>
<td>41 (9.1%)</td>
<td>18 (6.7%)</td>
<td>59 (8.2%)</td>
</tr>
<tr>
<td>Other</td>
<td>297 (66%)</td>
<td>51 (19%)</td>
<td>348 (48.4%)</td>
</tr>
<tr>
<td>Years of schooling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M = 6.7</td>
<td>M = 6.4</td>
<td>M = 6.6</td>
</tr>
<tr>
<td></td>
<td>ET = 2.7</td>
<td>ET = 3.6</td>
<td>ET = 3.1</td>
</tr>
<tr>
<td>Self-perceived health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>71 (16%)</td>
<td>48 (17.9%)</td>
<td>119 (16.7%)</td>
</tr>
<tr>
<td>Good</td>
<td>202 (45.5%)</td>
<td>124 (46.3%)</td>
<td>326 (45.8%)</td>
</tr>
<tr>
<td>Fair</td>
<td>143 (32.2%)</td>
<td>80 (29.9%)</td>
<td>223 (31.3%)</td>
</tr>
<tr>
<td>Poor</td>
<td>28 (6.3%)</td>
<td>16 (6%)</td>
<td>44 (6.2%)</td>
</tr>
<tr>
<td>SMAF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M = 18.6</td>
<td>M = 19.2</td>
<td>M = 18.8</td>
</tr>
<tr>
<td></td>
<td>ET = 12.8</td>
<td>ET = 11.6</td>
<td>ET = 12.3</td>
</tr>
</tbody>
</table>

1 Frequency, (percentage)
Table 14.2
Bivariate analyses of the factors associated with the satisfaction and empowerment measures

<table>
<thead>
<tr>
<th>Categoric variables</th>
<th>Satisfaction (/16)</th>
<th>Empowerment (/16)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n      M   SD  p   n      M   SD  p</td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>287     7.68 2.68 0.03</td>
<td>293     6.57 3.04 0.03</td>
</tr>
<tr>
<td>Rural</td>
<td>432     7.55 2.38</td>
<td>427     6.24 2.45</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>450     7.63 2.57 0.64</td>
<td>445     6.41 2.77 0.66</td>
</tr>
<tr>
<td>Men</td>
<td>269     7.54 2.4</td>
<td>265     6.32 2.60</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>312     7.58 2.42</td>
<td>306     6.39 2.61</td>
</tr>
<tr>
<td>Widowed</td>
<td>59      7.10 2.51 0.23</td>
<td>59      5.43 2.58 0.02</td>
</tr>
<tr>
<td>Other</td>
<td>348     7.70 2.57</td>
<td>345     6.53 2.78</td>
</tr>
<tr>
<td>Self-perceived health*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>119     8.32 2.68 0.001</td>
<td>119     7.19 3.05 0.001</td>
</tr>
<tr>
<td>Other</td>
<td>593     7.44 2.45</td>
<td>585     6.21 2.61</td>
</tr>
<tr>
<td>Hospitalisations*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>514     7.66 2.52 0.28</td>
<td>507     6.53 2.84 0.01</td>
</tr>
<tr>
<td>1 or more</td>
<td>203     7.44 2.49</td>
<td>202     6.0 2.30</td>
</tr>
<tr>
<td>Medications/day*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 3</td>
<td>544     7.57 2.54 0.49</td>
<td>537     6.21 2.75 0.003</td>
</tr>
<tr>
<td>≤ 3</td>
<td>170     7.73 2.40</td>
<td>168     6.92 2.51</td>
</tr>
<tr>
<td>Home care services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>168     7.95 2.83 0.06</td>
<td>165     6.53 2.71 0.39</td>
</tr>
<tr>
<td>No</td>
<td>549     7.5 2.39</td>
<td>544     6.33 2.71</td>
</tr>
<tr>
<td>Living arrangement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>320     7.36 2.65</td>
<td>318     6.10 2.77</td>
</tr>
<tr>
<td>With family</td>
<td>399     7.79 2.37 0.02</td>
<td>392     6.59 2.64 0.02</td>
</tr>
<tr>
<td>Seniors’ residence</td>
<td>82      8.10 3.03</td>
<td>82      6.96 2.95</td>
</tr>
</tbody>
</table>

* Health-variables
more family members (p = 0.01) \((R^2 = 34.19\%)\). The most autonomous subjects had the most schooling (p = 0.003), were not widowed (p = 0.009), perceived their health to be excellent compared to others of the same age (p = 0.002), had not been hospitalised in the past year (p = 0.01), took less than four medications per day (p = 0.008), and had fewer embarrassing health problems (p < 0.01) \((R^2 = 16.4\%)\). There were no significant results between functional autonomy and the degree of satisfaction and empowerment.

Multivariate analyses were also done on the different satisfaction and empowerment sub-scales. Results showed that the subjects who have more health problems, but fewer embarrassing health problems, had higher levels of satisfaction and empowerment on the dimensions involving a direct relationship with the health professional (relationship with professionals and involvement in interactions) and the organisation of services. On the other hand, the subjects whose functional autonomy was deteriorated were less satisfied with the organisation of services, but more involved in the decision process regarding the care they received. Finally, state of health was an important positive determinant for both satisfaction with the health professional and the organisation of services as well as for two of the empowerment sub-scales involvement with professionals and degree of control (Table 14.4).

A strong correlation was found between satisfaction and empowerment in regard to health care (p = 0.001). The correlational analyses showed that involvement in the decision process, involvement in the
### Table 14.4
Results of the backward regression by sub-scales (final model) (N = 719)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Empowerment</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Involvement in decisions</td>
<td>Involvement in interactions</td>
</tr>
<tr>
<td>Health problems</td>
<td>B&lt;sup&gt;a&lt;/sup&gt;</td>
<td>SE&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Embarrassing health problems</td>
<td>-0.41</td>
<td>0.082</td>
</tr>
<tr>
<td>Functional autonomy</td>
<td>-0.03</td>
<td>0.014</td>
</tr>
<tr>
<td>Self-perceived health</td>
<td>0.914</td>
<td>0.329</td>
</tr>
</tbody>
</table>

| R²                            | 5.6%        | 6.3%         | 4.3% | 7.2% | 0   | 5.5% |

*B<sup>a</sup>* refers to estimated coefficient

SE<sup>b</sup> refers to standard error

p<sub>c</sub> = t value

* = p < 0.05; ** = p < 0.01; *** = p < 0.001
interaction with professionals and the degree of control in regard to health care are significantly correlated with the overall degree of satisfaction. In addition, there is a strong correlation between the three satisfaction sub-scales and the empowerment construct. (Table 14.5).

### Table 14.5

<table>
<thead>
<tr>
<th></th>
<th>Involvement in decisions</th>
<th>Involvement in interactions</th>
<th>Degree of control</th>
<th>Empowerment Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship with professionals</td>
<td>0.19*</td>
<td>0.63*</td>
<td>0.21*</td>
<td>0.52*</td>
</tr>
<tr>
<td>Services delivered</td>
<td>0.25*</td>
<td>0.59*</td>
<td>0.33*</td>
<td>0.53*</td>
</tr>
<tr>
<td>Organisation of services</td>
<td>0.16*</td>
<td>0.66*</td>
<td>0.23*</td>
<td>0.50*</td>
</tr>
<tr>
<td>Satisfaction Total</td>
<td>0.24*</td>
<td>0.74*</td>
<td>0.29*</td>
<td>0.61*</td>
</tr>
</tbody>
</table>

* Correlation significant at the .001 level

**Discussion**

Unlike previous studies\(^9,17\), the sociodemographic variables examined in this study (years of schooling, gender, age, and marital status) were not found to significantly affect satisfaction of the elderly with health care. However, the originality of the present study lies in the diversity of the variables analysed, since it included health-related variables to explain changes in the degree of satisfaction. Self-perceived health was the determinant that had the most impact on both satisfaction and empowerment. These results corroborate the conclusions of several studies\(^8,18,30\). Conversely, older people dealing with a number of embarrassing health problems had a lower level of satisfaction. Some authors have pointed out the harmful psychological consequences of disease such as pain\(^7\), frustration and anger which can modify people’s opinions about medical care and reduce their satisfaction\(^18\). Also, the high degree of satisfaction among aging persons receiving home care services and living with family members might be attributable to the presence of continual family support and services adapted to their needs. One hypothesis could be that home care services and family support have a halo effect that influences the elderly’s perception of all the care available in the health care network.
Although they seem contradictory at first glance, the results regarding satisfaction of elderly with interactions with professionals are in fact consistent. People with health problems use more of the available health care services and are thus able to make a more informed judgement regarding the effectiveness of the interventions and the work of the professionals than those whose evaluation is based on occasional medical visits\textsuperscript{36}. However, above a certain threshold, i.e., when the health problems become chronic or serious enough to cause permanent discomfort, people have a tendency to express dissatisfaction since they think the interventions are not effective. This explanation seems to be confirmed since the subjects with a lower level of functional autonomy were less satisfied with the organisation of services in general.

The results for empowerment, which are more exploratory in nature because there is less documentation on this subject, showed that years of schooling, marital status, number of hospitalisations and number of medications were associated with self-determination in regard to health. It is plausible that older people with more education have more resources to obtain information about their problems and more confidence about getting involved in a relationship with the professionals, particularly physicians. The number of medications and hospitalisations, which are usually associated with fragile health, could influence the perception of family members and professionals concerning the person’s ability to develop effective strategies and take an active part in the decision process regarding the care required.

Looking at the sub-scales it can be seen, as it is the case with satisfaction, that people who are less autonomous in their interactions with the professionals have more embarrassing health problems. They might therefore be more likely to see themselves as powerless to deal with changes in their health\textsuperscript{29}. Conversely, people with a high level of functional autonomy could be more inclined to see themselves as able to take responsibility for their health and get involved in the decision process regarding the care they need\textsuperscript{5}.

The results concerning the relationship between satisfaction and empowerment suggest that these concepts are closely related. These conclusions are not surprising since an approach based on shared responsibility makes it possible to develop an “egalitarian” relationship\textsuperscript{3}. A relationship marked by mutual openness and collaboration facilitates support, takes advantage of professional expertise by transmitting informed and useful knowledge, optimises the decision
process and thus increases satisfaction. It is important to point out that some overlap between the concepts of satisfaction and empowerment was expected because of their conceptual proximity.

Future research should continue efforts to identify the determinants of satisfaction and empowerment of elderly. Although it was shown that variables other than sociodemographic (health-related variables) contributed to explaining these concepts, it is important to continue the analyses with other variables that will increase the percentage of the variance explained. This work is particularly important in regard to the concept of empowerment since few studies on this subject have been done to date. It would also be interesting to look at patient self-determination as an independent variable to analyse its effect on obtaining home care services, self-perceived health, satisfaction with health care and perceived quality of life. Finally, future research could be useful in verifying empirically the causal link between the concepts of satisfaction and empowerment.

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17. Hall, J. A. & Dornan, M. C. «What patients like about their medical care and how often they are asked: A meta-analysis of the satisfaction literature», Social Science and Medicine, 1988;27 (9):935-939.


15. Individualized Service Plan (ISP)
Concept and Utilization:
a Review of Experiments on
Integrated Services for the Elderly
in Québec and Elsewhere

D. Somme, R. Hébert, G. Bravo, F. Blanchard

This project was made possible through the financial support of
PRISMA, the Canadian Health Services Research Foundation, the Ministère des Affaires Étrangères français as part of the Bourse Lavoisier program and Assistance-Publique Hôpitaux de Paris.

Introduction

Many authors believe that an individualized service plan (ISP) is an integral component of integrated services for elderly people experiencing loss of autonomy, and some even consider an ISP to be a case-management quality indicator. In 2001, the Quebec Ministry of Health and Social Services (Ministère de la santé et des services sociaux, MSSS) stated that an ISP should constitute a definitive element in the care of elderly persons experiencing loss of autonomy.

The term ISP covers one product and a range of processes which include: conducting patient meetings; collecting assessment information; determining availability of services; coordinating interventions and ensuring the participation of the patients and their family and friends, all of which culminates in a written document. This document should be used to assign tasks, set objectives, ensure user participation, assign a management team, monitor plan implementation and ensure accountability and re-assessment. However, the exact form and content of an ISP has yet to be clearly defined. This may explain: major stumbling blocks to producing a quality ISP that have been reported in the past; the case managers’ desire for additional training; and the wide variety of ISP content within the same integrated system. We have therefore analyzed the literature to find standards as to ISP form, content and practical usage by case managers.
Methodology

We consulted several databanks (MEDLINE by OVID up to November 2003; NCBI/PubMed in November 2003; HEALTH STARS by OVID up to November 2003; AGELINE up to August 2003 and EMBASE up to September 2003) using the following key words: individualized service plan or individualized plan in free text, or by combining the words individualized or plan with the terms service-delivery, service-demand, service-planning, case-management, patient-care-plan, individualized-care, managed-care, integrated-care and tool. We collected information as to ISP content and utilization through descriptions of actual gerontology/care management experiments. The articles we found failed to provide any references devoted solely to the ISP or practical usage. To select articles describing case management experiments, we read recent syntheses on the subject\cite{21,23,25}, used the referenced articles to conduct a new literature search on NCBI/PubMed (using project name or author); and selected articles that described the case management process. With regard to the experiments conducted in Québec, the research also included articles published on the Internet. We also consulted ISP documents produced by the MSSS as well as the texts referred to in these official documents, which enabled us to trace the history of ISP usage in Québec.

Background and networks in Québec

Background

In Québec, individualized services plans were initially part of a campaign aimed at promoting awareness of mental health and handicaps and linked to the shift to ambulatory care that took place in the late 70s. The first reports to use the term ISP date back to the 80s, when the expression “case management” was rendered as “ISP coordination”\cite{31}. The term ISP first appeared in the Act to secure the handicapped in the exercise of their rights in 1978, but it was only in the early 90s that the Act respecting health services and social services (LSSSS) provided broader guidelines as to its general usage (Appendix 1). Nevertheless, the LSSSS leaves ISP content to the discretion of the coordinator; the only stipulation being that the patients or their representatives help to develop it; however, the Act fails to indicate what role they should play. A recent Office des personnes handicapées du Québec document provides guidelines as to ISP case histories in various environments\cite{5}. The Office
presented in opposition, case management, the model chosen by the integrated services network for the elderly, and a concerted coordination model that the Office had previously recommended. A 1990 publication, “Le Plan de services individualisé: participation et animation”, by Daniel Boisvert, provides an accurate description of the concerted coordination model that may be used to produce an ISP. The book is primarily intended as a guide for conducting a multidisciplinary meeting aimed at producing an ISP, and appears to have had a considerable influence on subsequent ISP publications. It provides step-by-step instructions for the patient meeting. A four-column form serves as planning guide (objectives, intervention, responsible person, achievement date) and the needs are listed on a second document according to various criteria. The final portion of the book is devoted to describing the quality criteria of the ISP meeting with guidelines as to how it should be conducted. This book directly influenced a 1992 MSSS document entitled: “Séminaire de sensibilisation à la démarche du plan de services individualisé”. Using six definitions, this document states that: “The individualized services plan (ISP) is a procedure that, through coordinated intervention and the active involvement of patients and their representatives, enables the planning and delivery of services designed to meet patients’ needs, in order to promote and maintain their social integration and ensure their protection.” The document emphasizes the need for a multidisciplinary meeting attended by patients and their representatives. However, it stipulates that “depending upon the situation, more useful ways may be found to develop the ISP”. The document did not cover case management nor the case manager’s ISP role, since this aspect had received little attention in Québec at the time the document was written (apparently, strictly in the mental health field). The following statement illustrates how an ISP should respond to the patients’ needs: “the ultimate goal of the assessment is to help the patients fully understand their present situation and provide an indication as to their future expectations; the gap between these two realities represents the patients’ needs. This information can be used to provide the proper care, reintegrate them into the community or suggest appropriate services to them”. Therefore, ISP content is determined by the gap, at the time of writing the ISP, between the existing and desired situation; generally, this is either a handicap or problem. Problems are prioritized during the ISP developmental phase. The document describes the patients’ ISP input as follows: “according to their ability, they describe their condition, choose
from among the suggested alternatives, take part in decisions affecting them and help organize the necessary intervention.\textsuperscript{34}

The Office des personnes handicapées du Québec published a pamphlet for the handicapped detailing what information the ISP should provide: any medical treatments the patients receive, the intervention plan being adapted/readapted, the one available in their area and educational, work integration or recreational intervention plans.

Once the Multiclientele Assessment Tool (Outil d’évaluation multiclientèle – OEMC) was finalized and distributed, a document entitled “Intervention and Service Allocation Plan (ISAP)” was made available to gerontologists, which was, in fact, used as an ISP guide.\textsuperscript{41} Several essential elements are included in the user guideline.\textsuperscript{10} The users and their friends and family are the beneficiaries of the ISAP, which they also help to produce. The ISAP includes only interventions arranged by health and services providers to meet the needs of the users and their family and friends (in this chapter the author indicates that a more comprehensive portrait would be part of an ISP). An ISAP is prepared for each user who requires assistance, unless only one or two interventions are called for with no follow-up. The ISAP is either unidisciplinary or interdisciplinary, depending upon whether one or several disciplines are involved. There must be consensus between all health care workers involved throughout the entire IP development process, and a professional is assigned to ensure that it is coordinated and revised. Lastly, the ISAP must be revised at a predetermined time, or whenever the user’s condition undergoes significant change.

The form that has often been used in Québec to develop an ISP is a two-page leaflet.\textsuperscript{41} Page 1 is used to collect patient information, explain the reason for the intervention, and indicate when it was written and revised. The two-part main section has 8 columns, the content of which is presented in Insert 15.1. Following this chapter on Québec, we will analyze the literature cited in the two experiments on integrated services for elderly persons experiencing loss of autonomy.
The Intervention and Service Allocation Plan’s assessment tool has 8 columns:

1. Date (for the problem and objectives);
2. N° (of the problem);
3. Identified problems accompanied by the following note: “problems identified following a needs assessment and on which users and their families and friends agree as much as possible, and on which the interdisciplinary teams have reached a consensus. Identify causes and manifestations: impairment, disability handicap;”
4. Objectives explained as follows: “Objectives must be expressed in terms of observable behaviour or measurable standards and should have a target period (e.g. 5 days or 3 weeks) except in cases where maintenance of results requires ongoing intervention. More than one objective may be set for each problem;”
5. Means/interventions described as follows: Describe the intervention to be taken to resolve the difficulties or problems or achieve objectives. A number of interventions may be chosen for each problem or objective.”
6. Workers
7. Services (number of times or frequency)
8. Assessment (with date/result sub columns)

ISP assessment form for SIPA researchers.
Each of the objectives is evaluated on a score of 0 to 3, out of a total score of 30 and a section for comments

1. The ISP is included in the file.
2. It reflects the multidimensional data collected using standardized tools, including the perceptions/expectations of the user and his or her family and friends.
3. The problems are linked to impairment, disability or handicaps; the users and their families and friends should agree on these problems as much as possible, and the interdisciplinary teams must have reached a consensus about them as well.
4. The objectives describe an observable behaviour or measurable standards; certain objectives include the notion of risk management.
5. Proper means are covered; they describe advisable solutions.
6. Workers involved are identified along with the frequency of the services provided.
7. The date of the re-assessment is indicated; realistic time frame.
8. The ISP result is assessed.
9. The ISP is given to the user/family and friends, both verbally and in writing, a file note must refer to it.
10. The ISP is provided to the providers, namely the attending physician, either verbally or in writing, a file note must refer to it.
The SIPA project (Système de services intégrés pour personnes âgées en perte d’autonomie)

In the SIPA experiment, ISPs were provided for each patient, and an ISP quality grid was designed (reproduced in Insert 15.2). To our knowledge, the grid has not been used in the quality analyses carried out to date; it defines the principal components for assessing ISP effectiveness:

- User involvement
- Sections for problems, objectives, means, workers and frequency
- Re-assessment date

In this experiment’s assessment of the quality of care and services, P. Lebel reports that in 80% of cases, an interdisciplinary intervention plan (IIP) was developed (revised in depth over the course of the year in 60% of cases). The term ISP was not used, but in an experiment where a multidisciplinary team is expected to cover the needs of someone in a single “SIPA” institution, it is not surprising that ISP and IIP are used interchangeably. These ISPs were not analyzed as to content or form.

Bois-Francs experiment

In a study on methods for coordinating geronto-geriatric services, the authors reported 25% ISP utilization. During the study to provide a breakdown of a case manager’s tasks, 6 case managers were monitored for 16 days. No ISPs were completed during that time, but the required services were implemented. The authors concluded that, at times, the ISPs were completed at a later date, upon completion initiatives arranged with health care workers or partners and once the agreements had been completed. Qualitative analysis as to the ISP content and form demonstrates the following:

- Problems are described in overly general terms, without any opinion as to their seriousness or consequences
- Case managers tend to establish patient objectives, but there is rarely any indication of results or time frame
- Means and interventions are described in non-specific terms. There is little information regarding psychosocial therapeutic interventions that are pivotal
- Information about the health care worker in charge is properly presented
- The frequency with which the services are provided is not accurately indicated
The section on re-assessment is not used. It appears difficult to track evolving service needs between several ISPs.

However, the authors reported an average SMAF/ISP assessment time of 44.7 days (although 30% of the time an assessment was not done at all). The authors believe that the ISP form should be redesigned to improve its effectiveness in determining specific patient services. A new post-automation assessment illustrates a considerable increase in the number of ISPs produced (46.4% of patients under case management have an ISP). This analysis is also noteworthy to the degree that it is the first to provide insight into ISP utilization (of 3,199 ISPs, 741 are read within 6 months of being produced, primarily by the people who wrote them).

The ISP through case management experiments

ISP content
The ISP or *individualized services (or care) plan* appears to be a consistent component of *managed care or integrated care* experiments. Applebaum estimates that writing an individualized, goal-oriented ISP must be an integral part of long-term case management. He acknowledges that no standardized formula can be applied to all care situations, but believes it is essential to case management quality assurance. In Insert 15.3 we present the essential elements of ISP content taken from an analysis of the case management experiments.

ISP sectors
Few of the articles provide a list of areas included in the ISPs. Wilber *et al.* list 8 areas (with between 2 and 22 adapted services each): housekeeping; activities of daily life; nutrition; home safety; transportation; technical aids; support services; medical services and program services. Foote and Stanners identified 9 areas to be considered during the assessment when writing up an ISP (with 2 to 9 secondary fields each): customer perspective; clinical context; disease prevention; personal care and well-being; sensory ability; mental health; relationships; safety and environment.

Patient involvement
The patients’ contribution to their ISP is implied in certain studies; however, the plan becomes a signed contract between the case manager and
the patient\textsuperscript{38, 42}. Some indicate that the patients are participants in the ISP process and approve the allocation of services\textsuperscript{15, 35, 40, 45}. Riley et al. define markers for customer-focused, case-management quality assurance, including, notably, a document outlining “who does what, when and how”\textsuperscript{42}. It was also suggested that the following elements be included in the patient profile at the end of the planning phase (and logically in the ISP as well): the patients’ perceptions in their own words, their scheduling preferences and a record of any disagreements that may arise between patients and service providers. This concept was recently revisited by Foote and Stanners, who included the patients’ end-of-life/quality-of-life perceptions\textsuperscript{16}. Similarly, Leutz et al. studied patient participation in HMOs. Based on the HMO-approved general principal that patient involvement is desirable, the authors checked as to whether or not the ISP forms had a patient-approval space and whether instructions provided to the case managers included options for obtaining this approval. In 15 out of 24 HMOs, the ISP provided a space for the patient’s signature. Moreover, 15 locations provided instructions to their case managers as to patient involvement\textsuperscript{29}. Lastly, Kodner et al. consider active patient participation as a determinant of successful integration\textsuperscript{25}. Malone Beach et al. have demonstrated that care-givers of elderly people with dementia wished to help complete the ISPs and understand any rules and regulations regarding the individual’s eligibility for the assistance they felt was needed. The authors believe that the first step is to communicate detailed plans to the family. As such, the family is

**Insert 15.3**

**Conceptual elements of the ISP taken from a review of the literature**

- The services plan must include a standardized, multidimensional assessment to determine the patient’s needs\textsuperscript{3, 4, 6, 13, 14, 18, 22, 24, 26, 32, 35, 40, 42, 43}
- The plan must provide a list of care providers with information as to the service provided (frequency and duration)\textsuperscript{2, 3, 6, 9, 11, 14, 18, 32, 42, 43, 45}
- This list must include both formal and informal services of various kinds\textsuperscript{3, 11, 14, 18, 22, 24, 35, 37, 42}
- The plan must provide monitoring and re-assessment instruments\textsuperscript{2, 9, 22, 24, 35}
- The notion of measurable, standardized objectives and time frames\textsuperscript{3, 9, 15, 18, 35, 37, 40, 42} for the services is not universal. Solely delivering the service as planned is often deemed satisfactory\textsuperscript{2, 6, 14, 32, 37, 43}
- Some insist on describing specific interventions for each patient\textsuperscript{8, 19, 35}, but we did not find that other authors made this distinction from one intervention to the next.
- The plan must be communicated to all health care workers, including the physicians\textsuperscript{6, 11, 15, 20, 42}
Case management variables

Case management includes the following key steps: case identification according to established criteria, a standardized, multidimensional assessment; individualized planning; identification of resources; and the implementation, monitoring and re-assessment of the plan. Some also include the concept of “advocacy,” which involves advice and representation. Nevertheless, a review of case-management experiments demonstrated major practice differences for this function, at times within the same experiment. These organizational differences have a direct impact on ISP development, content and use. As such, case-management teams naturally produce different ISPs than do individual case managers. In the first instance, the ISP is part of the team’s regular workload, and the team is also responsible for ISP implementation and re-assessment. It is frequently a meeting report that team members write up according to own language level and profession. There are two types of case-management teams: those where multidisciplinary team members actually care for the patient and those where the input of multidisciplinary team members consists of jointly prescribing services provided by third parties.

For individual case management, a meeting may or may not be held to write up a plan, but it is largely the case managers themselves who monitor the patient; the ISP is designed to assist them and the language level is generally that of the professionals who write the document. Naturally, in this case, their profession has a major bearing on ISP content, which is not true for team case management. The fact that each profession has a separate case management task is what Capitman et al. refer to as a variation as to the level of specialization for integrated network experiments. In terms of procedures, a multidisciplinary meeting is recommended by certain authors, and in instances of team case management, it cannot be otherwise. However, the meeting is not essential to plan development. At times, this involves a review process by the case managers, or by a geriatric specialist and/or managing supervisor. At times, the case manager suggests a plan that is discussed initially with the physician and subsequently with the patients and their primary networks, and simulta-
neously, or at a later date, during a meeting with the service providers\textsuperscript{15, 26}. Lastly, the case manager may complete the ISP with the patient alone\textsuperscript{3, 22, 40}. Abrahams \textit{et al.} demonstrated how ISP content was affected by the compartmentalization of work (both social and medical, even within \textit{integrated} networks) and of responsibility within the care system\textsuperscript{1}.

In the USA, Great Britain and France, case managers are also responsible for controlling costs (which are then included in the ISPs)\textsuperscript{1, 12, 13, 16, 18, 32}. As such, case managers appear to give with one hand and take back with the other, notably by increasing primary network involvement (combining the roles of advocate and gatekeeper), which may result in ethical problems\textsuperscript{4} and possibly curtail use of the plans if the case manager does not exercise sufficient financial control\textsuperscript{32}. In other countries, if budget concerns appear exclusively at the administrative level and particularly at the strategic level, they are largely absent at the clinical level, which is the case managers’ field of expertise. As such, the ISP does not appear to include the costs associated with the services provided\textsuperscript{26, 28}. Along with cost concerns, ISP time frames and budgets also appear to have a major impact on content\textsuperscript{1}. We should also point out the vast caseload variation (from 7 to 300 cases per case manager), which naturally affects the process of producing the ISP and its content\textsuperscript{1}, due to the amount of time it takes to complete this task. By the same token, case management strictly via telephone\textsuperscript{3, 45} identifies fewer problems and results in fewer interventions than case management via personal interview\textsuperscript{45}. The availability of regional services and policy (which leads to the development of day centres or the creation of home-care jobs) obviously has a major impact on ISP content as well\textsuperscript{1}. Lastly, Capitman believes the variable imposed by the case manager’s specific professional activities explains the variation in ISP content\textsuperscript{9}.

\textbf{Implementation difficulties}

Little research has been done into the difficulties of implementing ISPs in an integrated network. However, according to Chamberlain \textit{et al.}, we cannot expect 100\% implementation of new technology (case management, for example) vis-à-vis the model, and 6 to 29\% implementation of new technological components is standard\textsuperscript{12}. Applebaum believes that case managers involved in “Channelling project” require supplementary training to write up diversified care plans, which provide standardized objectives for both formal and informal services\textsuperscript{4}. This might indicate
that case managers are not comfortable with the tool. It is interesting to note that individual training, over four weeks, helps to greatly reduce the inter-individual ISP variation. In their S/HMO study, Harrington et al. demonstrated that physician/case-manager contacts occurred less frequently than anticipated, and that physicians did not have easy access to or use the case managers’ assessments or care plans. Since neither document is found in the medical records, other professionals did not have access to them either. When physicians were asked to explain why they failed to use the assessment when it was readily available, they commented that it was too long and detailed to be of use in a clinical setting. Regarding case management assessment for elderly patients in 18 HMOs, Pacala et al. reported that case managers drew up care plans in 78% of cases, and more frequently after a multidisciplinary meeting, and that in 39% of cases, the plan was a signed contract with the patient. Moreover, in 4 of the HMOs, case managers organized and authorized access to services without the benefit of an ISP, specific objectives or a multidisciplinary meeting. Abrahams et al. studied different case management practices by submitting 7 fictitious cases to four S/HMO case management teams. The ISP was not systematically completed (it was done in 4/7 cases in one S/HMO, 5/7 in another and in 6/7 cases in the final two). The fact that the patients’ family and friends were able to meet their needs was often used to explain the lack of an ISP. While the potential usefulness of the ISP, which we covered in the introduction, is not at issue, to our knowledge, no studies have been conducted as to how much the case managers actually use this tool. This could help explain and limit the content variables, at least within the same integrated network.

Unresolved problems
A review of the literature led us to conclude that some problems cannot be solved.

Should the ISP present an accurate account of the services in place for a patient?
In fact, the document produced by the MSSS, already quoted above, appears to indicate that only instances where an imbalance exists between the actual and desired situation should be included in the ISP. In several instances, we noted that patients were assigned case managers due to the fact that they had at least one unmet need. At other times, the
ISP is described as being able to meet immediate, short-term or existing needs or identify unmet needs. But other documents frequently illustrated that all patient services had been put in place, which was particularly true when the ISP was also used to control costs.

How does assistance provided by family and friends figure in the ISPs? Most patients assigned with a case manager have family and friends who help them deal with most of their disabilities. Often, they have provided this assistance for a considerable time, with no indication of exhaustion or disinterest, even in instances where responsibility has shifted from one family member to another (budgeting or errands, for example). If assistance is provided on an ongoing basis and without difficulty, should it be noted in the ISP, and to what end? As such, in certain experiments, if the person’s needs are being met by friends and family and the task (evaluated by a standardized telephone survey) does not exceed a certain threshold, the person is not eligible for case management.

What is the physician’s ISP role? In published experiments, the physician’s role is highly variable: the physician may intervene directly in the case management, or be an active partner. But, more often, they act as case management associates and their contribution varies considerably according to their designated ISP role.

What level of accuracy should we expect to find in an ISP? In some cases, the ISP appears to include a full description of the services provided (name of health workers, exact intervention dates, etc.). In fact, some authors believe weekly or monthly entries are sufficient, while others believe the plan must include detailed tracking of services. In Québec, this touches upon whether or not we should clearly differentiate between interdisciplinary IPs (which are detailed) and ISPs, and if so, how we should define them. This also takes into account the link between ISPs and standardized practice protocols.

How do case managers and health workers actually use this tool? A study of the use of computerized clinical chart (CCC) provided this information by illustrating that, at present, it is generally the case managers themselves who read the plans they have written. It is unclear at what precise point in time this tool becomes indispensable to case managers or other professionals, which could influence the form of the ISP.
A plan would be more useful to case managers themselves during the coordination and implementation phase, but could present too great a time variable to be of use to other professionals. However, a summary of services put in place would be helpful to professionals during the information gathering phase and to case managers during the follow-up or reassessment phase.

Conclusion

Our review of the literature leads us to conclude that the ISP, an essential case management tool, is highly variable as to content, form, conceptual convenience and utilization. Perhaps these elements should be better defined to ensure simpler implementation and utilization of this case management tool.

References


Appendix 1

Québec’s legal framework

Nine sections of Québec’s legal statutes refer to the ISP: four sections in the Act respecting health services and social services (S-4.2) and five in the Act to secure the handicapped in the exercise of their rights (E-20.1).

Section 10. Every user is entitled to participate in any decision affecting his state of health or welfare.

He is entitled, in particular, to participate in the development of his intervention plan or individualized service plan where such plans are required under sections 102 and 103.

The same applies to any modification made to such plans.

Section 102. Each institution must develop for users of a class determined by regulation under paragraph 27 of section 505, to the extent prescribed therein, an intervention plan in order to identify the needs of the user, the objectives pursued, the means to be used and the estimated period during which services are to be provided. The intervention plan must ensure coordination of the services provided to the user by the various resources of the institution that are involved.

Section 103. Where a user of a class determined by regulation under paragraph 27 of section 505 is to receive over an extended period health and social services which require, in addition to the participation of an institution, that of other resources, the institution which provides the greater part of the services involved or the resource designated jointly by the resources concerned must, as soon as possible, develop an individualized service plan for the user.

Section 505. The Government may, by regulation:

Paragraph 27° determine the classes of users for whom an intervention plan or an individualized service plan must be prepared.

No regulations have ever been adopted.

Section 45. Every handicapped person who is a resident of Québec within the meaning of the Health Insurance Act (chapter A-29) may apply to the Office for the preparation of a service programme to facilitate his educational, vocational and social integration. This application must be presented in accordance with the procedure prescribed by regulation of the Office.

Section 47. The Office shall decide on the eligibility of a handicapped person for a service programme, in accordance with the criteria and standards fixed by regulation, within sixty days of the receipt of the application. The decision of the Office must be substantiated and forwarded to the handicapped person in writing.

Section 49. The Office shall see to the preparation of the service programme of a handicapped person it declares eligible in accordance with section 47, in particular, by appealing directly to existing resources and local and regional organizations.

Section 50. A service programme may include any or several of the following elements:

(a) a functional, medical and social rehabilitation programme;
(b) a social integration programme;
(c) educational and vocational guidance
(d) a general educational and vocational study programme;
(e) a remunerative employment.

Such a service programme may be amended to take account of new circumstances. In the elaboration of a service programme and in making amendments to it, the Office must respect the free choice of the handicapped person.

Section 51. In preparing and executing a service programme, the Office shall help the handicapped person to obtain the required services from the departments, public agencies and other public administrative bodies.
16. Framework for the Evaluation of the Quality of Care and Services Provided to Vulnerable Elder Persons

André Tourigny, Lise Côté, Edeltraut Kröger, Paule Lebel, Marie-Jeanne Kergoat, Diane Morin, Michel Tousignant

Introduction

In the context of the accelerated ageing of the population, both in Québec and elsewhere in Canada, the loss of autonomy experienced by the elders and which also implicates their caregivers, poses major challenges in terms of the organization and delivery of services. There are a variety of first- and second-line resources and services to meet the increased demand for evaluation, treatment, rehabilitation, psychological and social support as well as assistance to promote living at home for the elders. However, these services are delivered by a multitude of resources and healthcare professionals, which poses a major concern in terms of service continuity and quality. Developing Integrated Service Delivery (ISD) for the elders and their caregivers is one way to reduce the problems of continuity and fragmentation of services. Understanding and measuring the quality and continuity of the services provided to the elders in this context is therefore critical, both to decision-makers and service providers.

The primary objective of the paper is to explain the process currently underway in Québec for evaluating the quality of care provided to vulnerable elder persons. After presenting the relevance, objectives and selected perspective for quality evaluation, the main definitions of the quality of care and services in the healthcare field will be provided. The paper will then offer the definition of quality that has been selected and the quality framework that forms the basis of the current process. Each dimension in the quality evaluation framework will be presented, notably by demonstrating the importance of continuity as a dimension of the quality of services provided to the elders. Quality evaluation by indica-
tor will be illustrated by describing the process used to select the measures or indicators. Lastly, the paper will present the steps involved in developing and completing the process for measuring the quality and continuity of the services provided to the elders.

Why is it important to evaluate the quality and continuity of the care and services provided to vulnerable elder persons?

Decision-makers and health care providers are extremely concerned about the quality and continuity of services provided, not only throughout the integrated services network, but wherever the elders receive care, whether in a community setting (home, private practice, local community clinics or local community services centre (CLSC), community organizations, etc.) or in an institutional facility (hospital, rehabilitation centre or nursing home, etc.). The objective of monitoring and assessing the quality of care and services for the elders is to obtain the information needed to improve the organization and delivery of services for this group and to make sure they receive quality services that are appropriate to their needs. Quality evaluation is needed since we cannot improve that which we cannot measure. Opinions expressed by project partners and decision-makers demonstrated that a continuity assessment was highly indicated since continuity evaluation is less developed and has a strong correlation with quality. The partners also suggested integrating into this project initiatives already in place in the healthcare sector. Continuity also needs to be evaluated in order to understand the benefits that will derive from integrated services networks, since one of their key objectives is to enhance service continuity. It is essential to develop quality evaluation processes that provide a measurement for continuity of care and services in order to gain a better understanding of the network’s ability to deliver ongoing care and services to the elders, while taking into account new communication methods among partners in the public, private and community networks.

The process outlined in this document is required to better assess service quality and continuity with regard to the complexity of the problems resulting from loss of autonomy in the elders. General quality indicators in the literature do not necessarily apply to patients 65 and over, and this segment of the population is often neglected by quality improvement processes. The project will also provide information which will contribute to restructuring the health system using evidence-based data, and adapt it to the needs of vulnerable elder persons. This
will involve the implementation of a new organizational model for medical care, namely family medicine groups (FMG), since the elders form a large percentage of FMG patients. The process could enhance initiatives already underway in certain Québec regions to create quality monitoring based on indicators for the elders. It should also allow to better meet the diverse information needs of healthcare decision-makers and providers.

**General objectives**

The primary objective of the present process is to develop a quality and continuity evaluation and to adapt it to the care and services provided to elder persons living at home (home support, private practice, CLSC, etc.) or receiving care and services through hospitals, nursing homes or the integrated services network. We want to identify and validate the measures of the quality/continuity of services pertaining to the elders by selecting pertinent, reliable indicators that are closely linked to the care and services process. This approach allows us to consider new communication methods introduced among existing healthcare facilities and among the numerous service providers from medical and pharmaceutical services, nursing, rehabilitation, social and psychosocial services, as well as among partners in the public, private and community networks. The proposed process specifically targets those 65 and over who are particularly vulnerable, that is, those at greater risk of disability or death, or those who have already experienced a loss of autonomy. It is estimated that between a quarter and a third of those 65 and older fall into this group, in consideration of their age, disease and day-to-day life.

**Evaluation perspectives**

As part of this evaluation process, which is aimed at producing information that will help improve services, it is important to identify the selected perspective and consider the audience, i.e. the stakeholders who will be using the information generated by the evaluation. Literature on the evaluation of the quality of health services indicates that several perspectives should be considered. Measurement of the quality/continuity of services developed from a population perspective applies to a population segment determined by certain common characteristics, either on a local, regional or national basis. From this perspective, there are various stakeholders with different quality roles and mandates, namely
managers of healthcare establishments or those who plan regional or provincial healthcare and services.

The evaluation could also be defined from an individual or clinical perspective\(^9\) in terms of the quality of care delivered to a specific type of patient in a targeted clinical setting. The quality evaluation process is therefore aimed at producing information that will be useful to healthcare providers or teams delivering specific services to elder persons. The present project to evaluate the quality/continuity of services provided to the elders is designed to provide information that could prove useful from an individual, clinical or population perspective.

**Quality definitions**

The authors completed a systematic review of the literature in order to better define the concept of quality underlying the current process. Literature agrees that there are many ways to define *quality of healthcare*, and that it is difficult to formulate one definitive description since it would necessarily reflect the perspectives and objectives of all the groups involved, namely the patients, healthcare professionals, physicians, managers and decision-makers\(^2, 5, 19\). In fact, over a hundred definitions were catalogued by the Institute of Medicine (IOM) in the United States (USA).\(^4\) Three of these definitions are cited more frequently than others, namely those used by Donabedian, the American Medical Association (AMA) and the IOM.

Donabedian defined high quality healthcare as “the kind of care which is expected to maximize an inclusive measure of patient welfare, after one has taken account of the balance of expected gains and losses that attend the process of care in all its parts\(^2, 11\).” According to the same author, quality is determined by characteristics related to the structure, process and outcome of care\(^11\).

This distinction as to structure, process and outcome was made by several authors in the healthcare field\(^3, 4\). As such, the quality evaluation may include measures of these three dimensions. More recently, it was stated that, in a project aimed at improving quality by changing processes of care, the process characteristics would be the preferred dimensions for measuring quality, provided their link with the outcomes is established\(^3, 26\). As regards structure characteristics, it is necessary to demonstrate that any variation in these characteristics would influence the outcomes, which is often difficult to establish.\(^3\) Lastly, the outcome characteristics may be used to assess quality, provided variations in
them can be attributed to those occurring in dimensions of the healthcare structure or process. However, health outcomes are also influenced by many factors that are not related to healthcare but to the patient. As such, outcome measures must be adjusted for patient criteria in order to use them for the evaluation of the quality of care. These adjustments require data that are not necessarily available in the process described here.

The second frequently cited definition is that of the AMA, which states that quality care is “care that consistently contributes to the improvement or maintenance of quality and/or duration of life.” Conceptually, this definition closely mirrors that of Donabedian, even though it is less specific and focuses essentially on the outcomes targeted by the services. In order to present a definition of quality, the IOM conducted a detailed analysis of 130 definitions provided by various American organizations, associations and hospitals. This analysis made it possible to identify 18 dimensions inherent to the formal or generic definitions. Eight of these dimensions were selected by the IOM as the basis for their own definition.

Quality definition selected

For the purposes of the present process of assessing the quality/continuity of services to the elders, we selected the IOM quality definition, which integrates several aspects and dimensions in its formulation. “Quality of care” is “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.” The IOM’s definition of quality was selected for its comprehensive nature, which accurately reflects the elements to be evaluated; it also takes into consideration both the individual and the population; and it appears particularly well suited with regard to integrated services networks for vulnerable elder persons.

In addition, this quality definition includes in its formulation numerous aspects or elements deemed important in quality of health services literature. More specifically, it includes a quality scale: “the degree to which…” and applies to a broad array of care elements: “health services.” This definition mentions both individuals and the general population as targets in its quality evaluation initiatives “for individuals and populations” and is focused on one goal, “to increase … desired health outcomes.” It also includes the probable character of the outcomes, but stresses achieving a net benefit: “increase the likelihood of.” The defini-
tion emphasizes the importance of the outcomes and links the services with the outcomes: “health services … increase … outcomes,” while considering the importance of the individual patient’s preferences and societal values that must be taken into consideration when making decisions and formulating healthcare policy: “desired health outcomes.” The definition also takes professional constraints into account, depending on the status of the technical, medical and scientific knowledge, and implies that it is the ongoing responsibility of health professionals to use the best knowledge base available “consistent with current professional knowledge.” Lastly, this definition highlights the link between the care and service process and health outcomes, which is consistent with the conclusions of Donabedian and Brook.

**Process for identifying a quality framework**

After selecting a definition of health services quality, it was necessary to identify a framework consistent with this definition. This quality framework is designed to provide a reliable base that identifies the dimensions and aspects to be measured and monitored by the indicators during the process for assessing the quality of services provided to the elders. This step was completed by comparing conceptual frameworks found in the literature on quality of care and services. Several frameworks have been catalogued, as adopted by various nations, major Canadian and American organizations, as well as two international frameworks. National frameworks that are more concerned with quality, such as those used by the IOM and the New Zealand framework, were analyzed. We also considered frameworks developed to measure the performance of a care system, depending on whether they addressed quality of care dimensions, such as the frameworks from the Joint Commission on Accreditation of Healthcare Organisations (USA) and the National Health Service (Great Britain). The Canadian Institute on Health Information (CIHI) also suggested primary dimensions linked to the performance of Canada’s healthcare system. The distinctions between *performance assessment* and *quality evaluation* are not always clear, and include similar, overlapping dimensions. However, the literature refers primarily to *quality evaluation* when referring to the clinical practices of caregivers.

The dimensions included in these frameworks were analyzed and organized in a comparative chart, which made it possible to study the dimensions suggested by different sources versus those put forth by the
IOM, the CIHI’s performance dimensions and Maxwell’s or Donabedian’s dimensions\(^{13, 20}\). This comparative analysis made it easier to select the dimensions considered most pertinent to the development of our own quality evaluation framework.

**Suggested framework**

The proposed quality evaluation framework results from a comparison of existing conceptual frameworks from which the quality dimensions were identified. The dimensions and aspects selected for the framework are largely based on the IOM framework\(^{16}\) and take into account most of the dimensions from other frameworks, notably that of the CIHI on performance.

The proposed framework is based on various categories of dimensions; those that describe the quality dimensions associated with healthcare (horizontal boxes) and those that describe the consumer perspective or “outcomes desired by the elders and their caregivers” (vertical boxes).

<table>
<thead>
<tr>
<th>Outcomes desired by the elders and their caregivers</th>
<th>Safety</th>
<th>Effectiveness</th>
<th>Patient and community centeredness</th>
<th>Timeliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transversal dimension: Continuity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Staying well</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Getting better</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Living better with illness and disability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Coping with the end of life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transversal dimension: Equity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Two transversal dimensions, *continuity* and *equity*, are also included and linked to the two other dimension types. Each of the horizontal boxes refers to a health-care quality dimension which will then be related to steps or outcomes desired by the elders (vertical boxes) in order to better define the selected quality indicators or measures. More
particularly, for aspects referring to healthcare and services, there are the dimensions of safety, effectiveness, patient-centeredness and timeliness, which correspond with the dimensions used by the IOM.

Safety of care “is the extent to which harm from care or from the environment in which care is carried out is kept to a minimum” (poor utilization or misuse; adapted from the National Advisory Committee on Health and Disability, New Zealand, 2001). Effectiveness of care refers to “providing care and services based on scientific knowledge and in the correct manner to all who could benefit, and refraining from providing services to those not likely to benefit (avoiding overuse and underuse).” Effectiveness includes the measures and aspects linked to competence, appropriateness and effectiveness, as presented in the CIHI quality concept.

In order to evaluate the quality of services provided to the elders, it is important to integrate the perspective of the elder person or the patient, through the patient-and community centeredness of care, which corresponds to “healthcare that establishes a partnership among practitioners, and patients and their families and communities (when appropriate) to ensure that decisions respect patients’ wants, needs, preferences and that patients have the education and support they require to make decisions and participate in their own care.” The acceptability dimension suggested by the CIHI is included in patient-centeredness. The other healthcare dimension is timeliness of care and services, which refers to “obtaining needed care at the right place and time and to minimize unnecessary delays in getting that care.” This dimension also includes accessibility as proposed by the CIHI.

Similarly to the IOM, the selected framework also considers various aspects linked to the consumer perspective on healthcare, which corresponds with the outcomes desired by the elders and their caregivers. The vertical boxes refer to the needs and expectations of the patients depending on the various situations where health services are required, namely staying healthy, getting better, living with illness or disability and coping with the end of life (IOM).

In the framework selected for assessing the quality of services provided to the elders, the continuity dimension occupies a determining position (transversal) and affects most of the other dimensions considered. The continuity dimension is very relevant to the evaluation of the care and services provided to vulnerable elder persons, since fragmentation of services, indicative of a lack of continuity, poses major problems
in terms of quality. The definition used for the continuity dimension is the one suggested by Jeannie Haggerty and colleagues. Continuity is consistent with “the degree to which a series of discrete healthcare events is experienced as coherent and connected and consistent with the patient’s medical needs and personal context.” Since continuity includes several different aspects, various measures are needed to cover all facets of the concept. Three aspects characterize and define continuity, namely, continuity of approach or management, which refers to the “a consistent and coherent approach to the management of a health condition that is responsive to a patient’s changing needs;” relational continuity, which refers to “an ongoing therapeutic relationship between a patient and one or more providers;” and informational continuity, which refers to the “use of information on past events and personal circumstances to make current care appropriate for each individual.”

Equity is also a transversal dimension of the framework, similar to the IOM model. Equity refers to the absence of variation in care or services due to personal characteristics, such as gender, ethnicity, geographic location or socio-demographic status. To evaluate equity, we determine how these characteristics affect measures in the other quality dimensions. It must be noted that all of the dimensions included in the IOM model were selected for our final framework. We added continuity, since we consider it to be a key dimension in the evaluation of the quality of care to the elders. With regard to the dimensions proposed by the CIHI, they are all integrated into our proposed framework, namely, safety, effectiveness, appropriateness, competence, acceptability, availability and continuity, with the exception of efficiency, which affects the concept of performance and has a less direct impact on quality. The IOM also excluded efficiency from its framework since it considers that those aspects of efficiency, which are closely linked to quality, are reflected in the other dimensions used; for example: errors in care are a form of waste or lack of effectiveness. However, the unit cost of a service is an aspect of efficiency that is not relevant to the evaluation of the quality of care and services. The benefit of the suggested framework is that it would promote better understanding and help identify crucial measures and indicators linked to the measurement of the quality of services provided to the elders. Each indicator and quality measure selected will be linked to one or more of the dimensions in the horizontal boxes and to one of the patient service-expectation elements, on the vertical plane.
Conceptual Framework for the Evaluation of the Quality of Healthcare Services provided to Vulnerable Elder Persons

| Quality of care: refers to the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (IOM, 1992, 2001). |
|---|---|---|---|---|
| Dimensions | Safety | Effectiveness | Patient and community centeredness | Timeliness |
| Safety of care is the extent to which harm from care or from the environment in which care is carried out, is kept to a minimum. (New Zealand Health Care Quality Workshop-2001) | Effectiveness is providing care and services based on scientific knowledge and in the correct manner to all who could benefit, and refraining from providing services to those not likely to benefit (avoiding overuse and underuse) (IOM 2001). | Patient and community centeredness refer to healthcare that establishes a partnership among practitioners and patients, and their families and communities (when appropriate) to ensure that decisions respect patients' wants, needs, and preferences and that patients have the education and support they require to make decisions and participate in their own care (IOM 2001). | Timeliness refers to obtaining needed care at the right place and at the right time (CIHI 2000) and minimizing unnecessary delays in getting that care (IOM 2001). |
| Transversal Dimension: CONTINUITY | | | |
| Continuity refers to the degree to which a series of discrete healthcare events is experienced as coherent and connected and consistent with the patient’s medical needs and personal context. (BMJ, 2003) | | | |
| APPROACH OR MANAGEMENT CONTINUITY: • refers to a consistent and coherent approach to the management of a health condition that is responsive to a patient’s changing needs. | RELATIONAL CONTINUITY: • refers to an ongoing relationship between a patient and one or more providers. (Includes the importance and the duration of the support offered to the elders by the healthcare provider) | INFORMATIONAL CONTINUITY: • refers to the use of information on past events and personal circumstances to make current care appropriate for each individual. | |
| Transversal Dimension: EQUITY | | | |
| Equity means providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socio-economic status (IOM 2001). | | | |
Assessing quality and continuity by measuring indicators

As described above, the evaluation undertaken in the present project is based largely on process measures. Some outcomes or structure measures could be selected if they are considered to be determining factors within the context of the quality of services provided to the elders and if it is feasible to measure them. This exercise will be based on quality and continuity indicators, which are explicit criteria measures as opposed to implicit criteria measures. Implicit criteria refer to the judgement demonstrated by the health professional in the absence of standards or external directives. There are three implicit criteria that could be summed up as follows: “Was the process of care adequate?” “Could better care have improved the outcome?” “Was the overall quality of care provided acceptable?”

The process measures used in this project are based on explicit criteria. They will be supported by a review of the scientific literature demonstrating a link, preferably causal, between the process being measured and the health outcomes. The quality indicators will be chosen from a list of proposed measures, resulting from a review of the literature. This selection will be based on certain criteria. A number of organizations and authors have proposed such criteria for quality indicators or measures. Following a review of the literature, criteria were selected for indicators to be used for assessing the quality of care and services provided to the elders. These criteria were strongly influenced by the IOM study and include overall importance, scientific value and feasibility.

Identifying indicators to be used

The quality of care indicators used for this study were taken from several sources, some of which made it possible to identify process indicators. The sources consulted were, notably, the IOM study, the Assessing Care of the Vulnerable Elders (ACOVE) project, Great Britain’s National Health Service (NHS) and the Research and Development Corporation (RAND). ACOVE is a major research project on the assessment of the quality of care provided to vulnerable elder persons. To complete the study, literature produced by various organizations from several countries and authors in the field was consulted, and a complete list of the documents consulted is available. The indicators selected in this manner are not all applicable to the context of elder persons and were not always validated by a consensus of experts. Often, the source failed to provide scientific documentation for the indicators enumerated.
A further review of available literature made it possible to identify quality indicators specific to nursing, psychosocial and rehabilitation care. These indicators were also not necessarily validated by an expert panel and were not always supported by clinical or observational studies. Instead, they mostly resulted from a consensus of clinical experts in accordance with guidelines provided by professional associations.

Two selection phases were completed in order to identify, from among all the indicators catalogued, those that could be applied to services offered and delivered to the elders, taking into account the indicators catalogued by the ACOVE project. Most of the indicators catalogued were classified according to each of the dimensions selected for the framework. The ACOVE project also provided several continuity indicators to which additional new measures were added and which will be applied, at first, to dementia. Also, it is useful to distinguish indicators applicable to several health problems experienced by the vulnerable elders, namely, general healthcare indicators from those applicable only to specific problems, namely, specific indicators.

**Examples of quality indicators for healthcare process evaluation**

<table>
<thead>
<tr>
<th>Conceptual dimension</th>
<th>General healthcare indicator</th>
<th>Specific health indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Drug history</td>
<td>Restraints during disruptive behaviour</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>Information about physical activity</td>
<td>Treatment for depression</td>
</tr>
<tr>
<td>Patient-centeredness</td>
<td>Information about the choice of treatment</td>
<td>Consent to restraints (disruptive behaviour)</td>
</tr>
<tr>
<td>Timeliness</td>
<td>Time between diagnosis and treatment</td>
<td>Ease of obtaining first line care as needed (hypertension)</td>
</tr>
</tbody>
</table>

For safety evaluation, an example of a general healthcare indicator is “the drug history of a vulnerable elder person must be updated by the first-line consulting physician as well as in hospital files.” This indicator corresponds with “getting better and living with disease.” A dementia-specific indicator is: “if a vulnerable elder is placed in physical restraints, then each of the following measures should be enacted: a) consistent release from the restraints at least every two hours; b) face-to-face reassessment by a physician or nurse at least every four hours and
before renewal of the restraint order... The targeted situation is staying healthy.

A general healthcare indicator for measuring effectiveness is: “among community dwelling older persons multifactorial interventions should include... exercise programs with balance training as one of the components...” The targeted situation is staying healthy and living with illness. A depression-specific indicator is “if a vulnerable elder with dementia has depression, then he or she should be treated for the depression.” The targeted situation is getting better.

A general healthcare indicator for patient-centeredness is “for several health problems, patient-centeredness should include information provided to the patient as to the choice of possible treatments.” In this case, there are several target phases, namely, prevention, getting better, living with illness and coping with the end of life. An example of a dementia-specific indicator is: “if a vulnerable elder with dementia is to be physically restrained in the hospital, then the target behavioural disturbance or safety issue justifying use of the restraints must be identified to the consenting person (patient or legal guardian) and documented in the chart.” The targeted situation is living with illness.

A general healthcare indicator for measuring timeliness is: “the amount of time that elapses between diagnosis and treatment for most problems must respect pre-established standards.” The targeted phases are prevention, getting better, living with illness and coping with the end of life. An example of a specific timeliness indicator in the case of several chronic illnesses, such as hypertension is the “ability to obtain first-line care, as needed.” Several situation are again targeted, namely staying healthy, getting better and living with illness.

Steps in the quality evaluation process
The process described here was completed in several steps that were discussed by the research team and with a group of the decision-making partners involved in the planning, organization and delivery of services to the elders in various regions of Québec. The first two steps have been completed or are currently in progress, while subsequent steps will be completed at a later date.

Step one: selecting target conditions
The first step was to select one or several problems, pathologies or conditions in order to validate the indicators and to measure the quality and
continuity of the services provided to vulnerable elders. The criteria for selecting the problems were taken from a publication by Sloss et al. 25 on the selection of conditions for improving the quality of care provided to vulnerable elder persons, which, for the most part, were the basis for the ACOVE project. Additional criteria were added, notably with regard to the experience and previous work of research scientists involved in the project. The following criteria were used to select the problems to be evaluated:

1. Prevalence or incidence among persons aged 65 years and older; 25
2. Impact on health and quality of life of vulnerable elder persons; 25
3. Effectiveness of medical care in improving outcomes among vulnerable elder persons; 25
4. Disparity in quality of care across providers and geographic areas; 25
5. Feasibility of obtaining data from a medical record or an interview to assess process of care; 25
6. Involvement of providers from various professions or disciplines (multidisciplinarity);
7. Care delivery in preventive, curative and rehabilitation facilities (continuity of care);
8. Correspondence with expertise and work already completed by members of the research team.

Based on these criteria, six problems were identified as study targets, namely dementia (3) 21, medication (1), falls (6), incontinence (12), pressure ulcers (12) and stroke or cerebrovascular accident (CVA) (5). The problems selected also meet criteria 6 and 7, since the care provided to treat these problems could involve input by several types of professionals, particularly nurses, physicians, pharmacists, physiotherapists, occupational therapists, nutritionists and social workers. Furthermore, several of these problems require preventive, curative, rehabilitative, long-term and end-of-life care, i.e. a continuum of first-line care in a hospital, nursing home or at home that corresponds with the approach of the integrated services networks for the elders currently being developed in Québec. Among these conditions dementia, incontinence and pressure ulcers are of particular interest from a nursing/long-term care
perspective, and are closely related to the research goals and nursing/long-term care expertise of the various researchers involved in the project. Lastly, the PRISMA project (Program of Research to Integrate the Services for the Maintenance of Autonomy), which includes an evaluation of the quality of care and services provided, used a case tracking approach. The cases tracked were hip fractures, cognitive impairment and instances of CVA. As in the ACOVE project, where only a limited number of problems were selected (i.e. dementia, falls and incontinence) to facilitate and validate the development of indicators to be used to assess the quality of services provided to the elders, “dementia” will be the first problem selected to evaluate the quality and continuity of the services provided to the elders in Québec.

**Step two: validating the indicators**

An expert panel will identify and validate indicators that affect the quality and continuity of the care and services provided to the elders and their caregivers in community or institutional settings. This step is designed to determine the indicators most relevant to the evaluation of the quality of healthcare and services provided to the vulnerable elders in a Québec and Canadian context, using the existing indicator index. The indicators are validated through a Delphi or modified Delphi (RAND) consensus method\(^{14}\). The validation includes an evaluation of the overall importance or impact the indicator will have on health, its usefulness and the likelihood that it will be affected by the healthcare provider or system (susceptibility). The scientific value is also evaluated in the Delphi process and by the research team. It includes the face validity and reliability of the measure as well as the value of the scientific evidence demonstrating a link between a process indicator and a health outcome.

Achieving consensus through the modified Delphi method has already been tested during this project. An interim index including the ACOVE indicators for falls, dementia, osteoporosis, medication and heart failure, as well as indicators from other sources without documented scientific proof, was submitted for scoring to a panel of nine experts (general practitioners, geriatricians (all indicators) and pharmacists (medication and heart failure indicators)). This step provided information on the feasibility of the Delphi method, on the documentation to be submitted, on the collaboration of expert-clinical practitioners and on the statistical analysis of consensus according to the RAND UCLA
appropriateness method\textsuperscript{14}, which is an adaptation of the Delphi technique. Consensus will be arrived at by consulting clinical experts from different professions, namely general practitioners, geriatricians, gerontopsychiatrists, nurses, occupational therapists, pharmacists, psychologists, neuropsychologists, social workers and nutritionists and from the various levels involved (Short-Term Geriatric Units [\textit{Unité de courte durée gériatrique}, UCDG], Nursing Homes, Local Community Services Centre [\textit{Centre local de services communautaires}, CLSC], Geriatric Outpatient Services [\textit{Services ambulatoires gériatriques}, SAG]) in the provision of healthcare and services to vulnerable elder persons in Québec who may be suffering from dementia. This validation by an expert panel will make it possible to select indicators most relevant to the elders with regard to an evaluation of healthcare and services.

Feasibility is measured by the research team in a parallel study and examines the existence of prototypes for the selected measures, data sources, the cost and suitability of the measure and the possibility of conducting subgroup analyses. Since the availability of several of these indicators will depend on the type and quality of data sources, a pilot study should be conducted to document the availability of these sources and their validity as well as data sources to be developed in order to measure them. This pilot study should also include the various strategies for gathering information from quantitative or qualitative data. The study is indicated since the experts consulted using the Delphi method should be qualified to judge the pertinence of an indicator, without, however, being able to determine whether a data source for it is available or valid. This step will provide an index of valid indicators that will make it possible to measure the quality and continuity of the care and services specific to a selected problem as well as the general healthcare aspects relevant for patients affected by this problem.

\textbf{Step three: testing the indicators}

Lastly, the selected indicators and related data collection strategies will be tested and the potential of the databanks available for measuring these indicators will be evaluated. For a targeted problem, this involves testing the process in several healthcare settings and aims at producing information that is both valid and useful to those involved in elder care. An important element of this process is the challenge of developing strategies that, on the basis of the evaluation, will result in ongoing improvement in quality and continuity of care and services provided to
the elders. These strategies will include efficient knowledge transfer and methods that will be developed with the partners to help improve the quality and continuity of care delivered by the health sector. As such, three subsequent steps will include:

- Testing all quality and continuity indicators in order to pinpoint factors that will facilitate or impede their use in various settings;
- Measuring, at the local and regional level, the continuity of healthcare and services provided to the elders and their caregivers as part of a process to measure the overall quality of healthcare and services provided to the elders and their caregivers;
- Implementing mechanisms aimed at using the results of the evaluation at the local and regional level, in order to ensure ongoing improvement of organizational and clinical practices.

Conclusion

This process provides a definition of quality and has selected a conceptual framework for assessing the quality and continuity of the care and services provided to vulnerable elders. It will also propose a quality/continuity evaluation using process indicators that will be validated in a Québec context. Indicator selection is in line with the methodology developed in the USA by the IOM and the RAND. The indicators, to be applied initially to dementia, but also including general elements as well as continuity of care, will then be tested in different clinical settings. This step will provide measures that will make it possible to target the problems of quality and continuity and lead to ongoing improvement of organizational and clinical practices that could be adapted in particular to integrated services networks.

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17. A Sociopolitical Approach to Integrated Services for the Frail Elderly Experiencing Loss of Autonomy

Louis Demers

Introduction

For several years now, there has been widespread agreement that integrated services are an effective way to improve continuity of services for frail elderly people experiencing loss of autonomy (frail elders), and several experiments carried out in Canada and elsewhere tend to support this. In Québec, integrated networks are one of the initiatives put forward by the Ministry of Health and Social Services (Ministère de la Santé et des Services sociaux, MSSS) in its “Orientations ministérielles sur les services offerts aux personnes âgées en perte d’autonomie.” The deployment of networks of this kind help the elderly remain in their own homes. This responds to the desire of the elderly to remain at home, of health care workers to provide the best possible quality of life to them and of the hospitals and long-term care providers to reserve beds for those most in need of them. In short, providing Integrated Service Delivery (ISD) is a win/win solution. Be that as it may, progress is painstaking at best, and varies considerably from one region to another, within regions and from one territory to the next.

We do not believe that the relative progress of service integration is directly related to “objective” factors, such as the number and percentage of frail elders or the region’s resources. Rather, we believe the deployment of an effective service coordination system is a social innovation that could not have taken place without the action and interaction of people committed to setting up a system of this kind. To demonstrate the role key agents play and why, we will adopt a sociopolitical approach based on the work of Giddens and Lemieux.

After presenting several concepts that are central to this approach, we will show how the Québec health and social services system has structured itself over the years to provide services that require little or no
coordination between organizations and various professional practitioners. We will also see that introducing methods and practices that foster service integration is a social innovation, based on necessity on a particular context to which local, regional and government actors can contribute. In our conclusion, we will comment on this analysis.

**Sociopolitical approach: a brief summary**

By sociopolitical approach, we mean a method of studying social, political or organizational phenomena by examining the results of inter-actor relations, while taking into account the fact that these actors are part of social systems, and that they are reproducing the structural properties of those systems. As we will see, they can utilize these structural properties to reproduce or transform existing ways of doing things.

From this perspective, humans are knowledgeable agents, that is, they are able to bring about change in a given situation. This ability to make a difference is the exercise of power in its generic form. Power is the ability of an actor, individual or collective, to produce results. It is primarily “power of” and not “power over.” Actors act reflexively and are not confined to the role or position they occupy.

The actors do not operate in isolation. At work, for example, they interact with other actors: superiors, colleagues, subordinates, clients and associates. The relations between these actors may be broken down into three dimensions\(^1\), two of which merit special attention from a sociopolitical perspective. The first consists of the links between the actors. These links are strengthened through interactions, and facilitate organized action\(^7\). Control, the other dimension of inter-actor relations, is the ability to win acceptance of one’s own preferences\(^\ast\).

Inter-actor interactions do not occur in a random way. More often than not they take place in concrete settings of interaction like care units, cafeterias, community organizations, doctors’ offices and MSSS meeting rooms. Central to the perspective we are describing here is the idea that these inter-actor contacts create structural properties that are “structured features of social systems, especially institutionalized features,

\^The expression “organized action” has a broader sense than that of the organization. This expression is appropriate for designating the coordination of services provided to frail elderly people, who rely on the conduct of individuals attached to different organizations, not to mention the user’s family and friends.

\^\^Transaction is the third dimension.
stretching across time and space\(^{8}\). These properties have a virtual existence in that they are only actualized by the actions of the social actors performing them, even though the latter may not be aware of it.

For example, during an appointment between an elderly person and his family physician in the physician’s office, both participants are utilizing properties of the Québec health and social services system, namely: the physicians’ freedom to set up operations, the reimbursement of their services by the public health insurance plan, their choice of reimbursement methods and, generally speaking, the professional division of labour that governs the medical field.

These structural properties, comprised of rules and resources, restrict the actors, since they limit the opportunities available to them, but, at the same time, they also enable them, since they make possible the actors’ actions. For example, the Professional Code not only determines the range of actions a physician may perform, it also enables the physician to perform them.

As is true of any social system, an organization has structural properties that we should avoid confusing with general conceptions about organizational structure. Both in everyday language and in some scientific writings, organizational structure tends to be compared with the human skeleton. This might lead us to believe that this structure exists independently of organizational actors, or that it is static. However, the structuration of an organization (the production of social relations in time and in space) can only be achieved through the actions of these actors. Organizational charts, procedures, job descriptions, in fact, the entire rule apparatus serves to structure an organization, but only to the extent that it supports the social relations that occur there. Other aspects, often less formalized, also influence the structuration of an organization: the receptiveness of directors and managers to the initiative shown by their subordinates, how physicians view their managerial responsibilities, the professional identity of the agents\(^{19}\), and the existence of networks of social actors that allow individuals to share information, norms and values that would not otherwise circulate\(^{12}\).

Even though the structural properties of social systems are therefore reproduced by agents during their daily activities, this does not necessarily mean that their interactions support the status quo. Any action that helps to reproduce the structure of a social system is also an act of pro-

\(^{*}\) A social system is the “patterning of social relations across time-space, understood as reproduced practices” (Giddens, 1984, p. 377).
duction that can result in a change to this structure. To return to the previous example, while reproducing the structural properties mentioned above, practicing physicians may agree to collectively provide medical services to the growing number of elderly people who make up their practice. As such, they help to modify the nature of medical activities. This decision might also result from the MSSS decision to create family medicine groups (FMG). In the first instance, the physicians exercise positive control over a decision to change their practice; in the second, control is exercised by the government. Had the physicians failed to comply with ministry guidelines, government control would have been negative.

The end result of changes to medical practice remains unpredictable in part. In the view of actors at various levels of the sociohealth system (clinics, Local Community Services Centre [Centre local de services communautaires, CLSC], Regional Health and Social Services Board [hereinafter referred to as regional board] or the Ministry of Health and Social Services), unintended consequences of a new FMG may create new problems that these actors will have to deal with.

We have used a rudimentary example to present several concepts from a sociopolitical perspective. In the following sections, we will illustrate a far more complex situation: the reproduction and transformation of methods for organizing services for frail elders. To that end, we will examine how the reproduction of a method for organizing compartmentalized care became common practice. We will then study the conditions that will ensure the ongoing development of these practices in order to improve the integrated services offering.

The reproduction of a compartmentalized care system

In this section, we will provide a schematic representation as to how a system like the health and social services system can reproduce an inter-organizational/inter-professional division of labour that is not designed to achieve a high degree of service integration. First, we will isolate the primary structural properties of the system as a whole, and then we will examine how these properties are reproduced in health and social services organizations.

The Québec health and social services system is comprised of several structural properties that are used daily by actors of the MSSS, the regional boards and the organizations providing the services. The public nature of the system’s funding and regulation is undoubtedly the most
significant characteristic. In fact, it connects the sociohealth system’s structuration to the Québec budget, to negotiations for federal health funding and hierarchical regulations marked by legislation such as An Act respecting health services and social services and the Canada Health Act.

Among the other main characteristics of the system are a hospital-centric heritage where general hospitals play a role that is generally the realm of community services, delegation*, regionalization, medical division of labour, standardized working conditions through collective agreements negotiated throughout Québec and the public services provided by legally independent organizations whose overall funding is not tied to their volume of activities.

Over the years, Québec sociohealth system actors have reproduced these structural properties according to different variants. For example, delegation methods differ from one region to the next, not solely due to a region’s demographic, physical and organizational characteristics, but also due to the way in which the directors, managers and professionals on the regional boards interact among themselves and with their counterparts in the MSSS and organizations in their region. Structural property as represented by delegation therefore refers to the range of inter-regional variations and the changes they undergo over time.

The reproduction of the structural properties of the Québec sociohealth system is also achieved by the organizations that provide the services. The organizations are also social systems with structural properties. These properties are supported by properties of the sociohealth system, but they are also created through interactions that take place between actors in the organization. However, the ability of the organizational actors to change existing practices hinges on two separate phenomena.

On the one hand, what organization actors may do is dependent upon the physical environment where their actions take place, such as geographic location of their workplace and actual physical setup of the facilities. On the other hand, current procedures result primarily from individual and collective decisions made by both the actors and their predecessors: inter-departmental budget allocation, policy on admittance and length of stay, teams divided according to programs or

* Delegation is a specific type of decentralization in which the periphery enjoys management autonomy and is not part of the same organization as the centre. (Lemieux, 2001, p. 42-46).
disciplines, physician schedules, and so on. These collective decisions, made over the years, considerably reduce the range of possibilities and foster a repetition of existing practices, which is not without advantage to the members of an organization. Indeed, the production of health and social services requires a certain degree of predictability in terms of the behaviour of the contributing agents. Routine is the basis for all organized action, notably those performed in professional organizations.

It is difficult to alter work habits, both because they have been tested over the years and because they are reproduced, voluntarily or not, by a very large number of actors. There are two additional reasons for this: firstly, people may believe they know the right way to do things and that improvements hinge solely on additional resources, and secondly because the groups have an interest in the role they play in the system. This is true of the management staff of an organization who refuse to consider cooperating with possible partners in order to preserve their autonomy and to avoid inter-organizational joint action that is both time consuming and the source of potential tension. This is also true of professional practitioners who wish to perpetuate a single-discipline method because they have acquired vast expertise in this type of practice, or because they are uncomfortable with the idea of sharing responsibility for their patients. The coordinators of community organizations must also weigh the pros and cons of a closer partnership with public organizations, since their autonomy rests in the balance.

To sum up, sociohealth organizations can be considered as social systems, that is as patterned social relations that take place in time and space. These relations, which are structured through interactions between members of an organization, exploit the structural properties of the organization and those of other social systems, primarily that of the Québec health and social services system. Over the years, the structuring of this system has resulted in a reliable division of labour for diagnosing and treating patients with acute health problems. However, it results in discontinuity of service for people like frail elders who require joint intervention. Silo operations of this kind were exposed by the Clair Commission, among others.

From a sociopolitical angle, how do we represent the renewal of practices that are in step with the needs of dependent patients? That is what we will tackle now.
Introducing service coordination methods

In this section we suggest that introducing effective service coordination methods for frail elders is a social innovation, the success of which hinges upon the cooperation of local actors responsible for devising and implementing these methods. It is from this angle that we will study the role regional and MSSS agents can play to support the development of these innovations.

Integrated services: a social innovation

Integrated Service Delivery (ISD) is achieved when a comprehensive array of services is available to the users who need them, and when these services are coordinated to ensure that users are provided with “the right service, at the right time, in the right place, by the right person,” and that they are not left on their own to obtain this service. Coordination refers to the mechanisms and actions that must be put into play to make integration a reality, to varying degrees. An integrated offer utilizes services provided by public and community organizations, family clinics, private agencies and pharmacists.

Setting up an ISD system and ensuring its survival can only be achieved if we abandon existing practices and rules devoted to delivering services with little or no coordination. In this sense, ISD is a social innovation that could be defined as: “[…] any new approach, practice or intervention or any new product that is designed to improve a situation or solve a social problem and that has found support at the institutional, organizational and community level”\(^1\).

According to Drucker\(^6\), even an innovation involving the introduction of a new product or modification of a process is mainly social and organizational in nature, rather than technical. Unlike preconceived notions, innovation is rarely the result of a brilliantly conceived plan. Rather, it results from an awareness of the benefits to be derived from reorganizing existing production methods in order to provide greater benefits. Innovation rarely achieves perfection on the first try. In order to bring about the desired improvements, it must be introduced on a small scale so as to avoid excessive investments in time and money. According to Drucker, “grandiose ideas, plans that aim at “revolutionizing an industry” are unlikely to work”\(^6\).

Operating an ISD system requires the collaboration of many people. For an innovation of this kind to succeed, it must spring from actions, not only from the people who will benefit from them, but also from those
providing them. These actions are primarily performed by the individuals who are expected to provide services to the elderly every day. But they are also performed by the managers of the administrative units that employ the health care workers and directors of the organizations that house these units. Setting up inter-organizational services for frail elders requires mechanisms supported by the management of the partner organizations, as illustrated by the Bois-Francs experiment20.

Several ISD models already exist. In a recent article, Hébert10 provides a schematic representation of three families of ISD systems, including the one that is currently in place in Estrie.

From a sociopolitical perspective, achieving Integrated Service Delivery is a three-phase interaction: a problem arises, a solution is devised to solve it, and the solution is implemented14. In the case of legislation, these three phases are clearly defined. That is not the case, however, of a service integration change. We could, as was the case in Bois-Francs, see directors of local health and social services organizations commit themselves to improve services for the elderly; participate in a collective debate on the nature of organizational problems affecting frail elders; adopt an abstract model designed to solve or ease the perceived problems, install a beta version of this model and improve it through experience.

Regardless of the sequence of these phases and how they overlap, the general principle remains unchanged: a problem emerges, actors devise a solution for it, and resources (material, human and information) are made available to solve it. The solution is implemented and modified as needed to make sure it reflects changing conditions.

It is easy to understand why an innovation, such as the deployment of methods and actions to ensure integrated services, has a better chance of success if it is introduced on a limited scale. The greater the number of components and partners to be coordinated, the more changes to be made, the greater the probability of not achieving consensus, the more ISD procedures attempt to solve general problems that do not reflect reality, and the less likely it is that those who have to implement the changes (first and foremost the health care workers) will be able to participate in the design of the model, and consequently, to appropriate it.

Two consequences will ensue from the foregoing. Firstly, an integrated services system cannot be reduced to a set of formal components. In the last analysis, those in charge of implementing the model must take part in it to ensure success. In practical terms, this means that the formal
deployment of ISD components does not guarantee that the desired integration will take place. Conversely, the lack of a formal integrated services network does not automatically mean local actors are not cooperating to ensure better service coordination for frail elders. Operating an ISD system presupposes that we have created an abstract model of what it should consist of and that we adapt current ways of doing things to incorporate the new linkage level, namely the new practices that improved service coordination requires. General managers must relinquish part of their autonomy in order to help achieve greater collective efficiency. Managers must also make a collective effort to harmonize tools and actions and to replace inter-organizational agreements under their management or within their departments. Moreover, health practitioners must agree to work with other professionals and to devote more time to coordinating with them.

Secondly, a formula that has been successfully tested in one territory will not necessarily put down strong roots in another. If we view the ISD system as a generic solution to the problem of discontinuity of services for frail elderly persons, this solution must adapt to local conditions, such as service consumption habits, the location and availability of services and the relations of trust, indifference, rivalry or mistrust that exist between organizations. In that regard, service integration presents a specific challenge in urban areas where users may request services in several medical clinics, hospitals or CLSCs.

When an ISD system operates as it should, it becomes institutionalized. In other words, the users and the producers of services, by reproducing it during their daily activities, provide it with the “solidity” that we attribute to long-established social conditions. Once this has been achieved, we will be able to claim that the structural properties of the local sociohealth organizations have been modified.

Service integration: the role of regional and MSSS actors
The difficulty frail elders experience in obtaining well-coordinated services has not escaped the notice of the regional and ministerial actors directly involved. We believe that the effectiveness of the actions they take to deal with this problem can be measured by the willingness and ability of local actors, primarily health care workers, to modify their habits and ensure more effective service coordination.

From this perspective, we will concentrate on two recent MSSS initiatives directly aimed at improving service coordination, namely Bill
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25 and the *Orientations ministérielles sur les services offerts aux personnes âgées en perte d’autonomie*. We will also examine the role regional boards played in these two government initiatives.

In view of the public character of the Québec sociohealth system, several of its structural properties, which we mentioned above, have a legal framework. The MSSS can therefore endeavour to influence current practices through legislation, as was done in December 2003 when the National Assembly passed Bill 25, *An Act respecting local health and social services network development agencies*.

Bill 25 is designed to “make it easier for people to move through the health and social services network” (article 1). To achieve this, the ministry has mandated the regional boards to form local services networks that “must include a local authority consolidating the institutions, identified by the agency, that provide local community service centre services, long-term care centre services and, except in certain cases, hospital centre services” (Bill 25, Explanatory Notes). These networks should also include the services provided by physicians, pharmacists, community organizations, social economy agencies and private resources.

While the aim of the Bill has received general consensus, the same cannot be said of the remedy it prescribes. It has faced stiff opposition from the Quebec Association of CLSC and CHSLD (*Centre d’hébergement et de soins de longue durée* - Long-Term Care Centre), which protests the mandatory mergers between public organizations and the fact that these “structural games” do not provide a valid solution to problems that differ considerably from one territory to the next.

Changes imposed “from above” often fail to consider regional distinctions, which creates problems. A uniform solution handed down from the top of an organization can, at best, address only some of the problems it is attempting to solve. This type of strategy frequently leads the actors involved to resist the change, not simply because they wish to maintain an advantageous situation, but because this change would create undesirable consequences or be impractical in their environment.

Moreover, the creation of a single organization mandated to provide the whole of services to a category of users does not eliminate the problem of coordination between various administrative units and different service production locations. Establishing agreements between partners within a network may be an interesting option for the integration of organizations in the same entity (Demers, Dupuis and Poirier, 2003).
Under the letter of the law, the authority enjoyed by the new regional boards is limited to proposing to the MSSS the number of local networks a region will have and indicating which public organizations they will include and what their territory will be. As such, regional boards can only ensure greater service coordination by reducing the number of organizations.

Imposing integration on organizations is not the only way to improve services. In 2001, the MSSS published a document entitled “Orientations ministérielles sur les services offerts aux personnes âgées en perte d’autonomie”15, which made integrated services the first priority in the reorganization of services provided to frail elderly people and outlined the components that should make up an ISD system. The document was broadly distributed through the health care system and perceived as a clear signal that the MSSS was committed to ISD for frail elderly people.

Afterwards, certain regional boards, which had not already begun promoting ISD, re-launched this initiative and provided funding for pilot projects. As a result, health managers had to adapt the model to conditions in their territory. Under this approach, the regional board has to demonstrate its commitment to ISD and support the change by providing professional and material resources.

Conclusion

In complex systems, power is shared between several actors and several social systems. This, among other things, is why the actors in them often feel powerless: they rely, in part, on the actions of agents who may be beyond their reach. What happens “in the field” affects what happens “higher up” and vice versa. That is why it is important to understand the interdependence of decisions made at different levels of the sociohealth system.

Seen from this angle, service fragmentation is not solely due to lack of local coordination. It is also attributable to the interdependent nature of actions undertaken by actors at different levels of the health system and their relative lack of knowledge of the context in which other levels of actors operate. Therefore, even though government, regional and local actors display a common willingness to improve services to frail elders, their respective actions are not necessarily in step.

Adopting a sociopolitical approach to ISD for frail elders creates a better understanding as to how, why and by whom an integrated network
is deployed successfully in a specific context, and how and why it is not. This may lead researchers to be cautious in generalizing their findings. It is risky to transpose reasons for the success or failure of an experiment. What works today in one area may not work elsewhere tomorrow.

Even though this may appear obvious, it bears repeating that the kind of true change that we hope for when referring to ISD can only come about locally “in the field” where services for the elderly are provided. Organizational reforms can only be useful if they support this innovation.

References

The progressive ageing of the population results in a preponderance of chronic illnesses that require ongoing, long-term care. This scenario means the traditional hospital-centered model is ineffective and must gradually give way to a health services model that focuses on the frail elders’ place of residence. First-line health services and homecare would therefore form the crux of the system and, given the plethora of organizations and professionals involved, integrated services delivery is a must.

This volume gathers the opinions of the researchers, clinical practitioners and managers who helped establish these INTEGRATED SERVICES. Their combined experience and knowledge is invaluable and helps further our understanding of this partial restructuring of the Québec health network. It is no exaggeration to say that they have made a major contribution to Québec health care field.

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