USING ABM IN MANAGING TERRITORIAL HEALTH SERVICES: THE “HOME-CARE” CASE IN THE TUSCAN HEALTH SYSTEM

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Working paper n. 01

2006
Working Paper n. 01-2006

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Acknowledgments

The authors acknowledge Sabina Nuti director of Laboratorio Management e Sanità and scientific responsible of the training course that originated the experience on which this paper is based, and all those who sponsored and participated in this initiative. Finally the authors wish to thank the participants at the EIASM conference, held in Siena – 7-9 Settembre 2006 for their helpful comments.

Please quote this way:
Abstract

In recent years in Italy, as in other European countries, profound changes have been introduced in health care at both the central and the regional levels. Most of them were oriented towards a shift from “hospital-centred” healthcare to healthcare based more on territorial services.

This transition pursues two objectives: giving more effective responses to citizens’ needs and reducing public health expenditure. Changes that involve organizational structure must also be carried out with the introduction of measurement tools that can help in planning and can control the changes.

Starting from the experiences of the healthcare system of the Tuscan Region of Italy, the paper aims to provide an experience of the ABM approach to measure both output and efficiency of territorial health services.

Activity Based Management provides an appropriate method to examine territorial activities and to meet the fact-finding needs of national and regional policy, by considering the issues indicated by the territorial managers of the Tuscan healthcare system and the regional and national experiences in recent years.

ABM focuses on managing activities as the route to improving value for users and for the local healthcare unit; this is accomplished by the measurement of activities and resources that determine the costs and performance of territorial services. This approach requires organization and integration of sets of data belonging to different systems such as financial and operational systems. The ABM model is complex but it can be used by policy makers for strategic perspective and for continuous improvement. Moreover, ABM meets managers’ demands, as the Tuscan territorial managers have confirmed in interviews.

On the basis of experience obtained in territorial long term homecare, the paper underscores the principal issues arising from the process of conducting an ABM project in territorial health services through strong involvement of healthcare workers. The paper also presents the main outputs achieved.

JEL Classification: I10, I18
Keywords: Home care, performance measurement, ABM
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**Introduction**

One focal point of the healthcare system in the last decade is the shifting away of health activities from the *hospital* towards the *territory*. This shifting is driven by the changing demands that require updating of the instruments and manner of assistance; the health needs of growing subgroups of the population, such as the chronically ill, the elderly and those in need of hospice services in their homes have changed quantitatively and qualitatively and they will continue to do so, as a result of the epidemiological transition in the ageing of the population and the general increase in wealth in most countries (Saltman, Rico, Boera 2006).

A larger proportion of patients suffer from more than one disease and receive a mix of health and social care provided by several workers from different disciplines at the same time. There has emerged a growing importance for a sphere of primary care, available throughout the territory, that has a critical organization of integrated services.

This process, common to public healthcare systems of all western countries has, for some time, been under discussion and development in Italy as well. Until 30 years ago in Italy, there were two solutions for healthcare or assistance needs: the family doctor and the hospital. The hospital essentially guaranteed a constant presence of caregivers (often of mediocre qualification) and the reassuring presence of some, usually qualified, doctors. Today, the hospital continues to be a central point, but the evolution of scientific knowledge, the progressive need for highly complex technologies, ever greater competence required in specializations, have radically modified its characteristics and expectations.

It is recognized as a centre of great professional expertise, of more and more sophisticated technology, a place of prestigious professional training, but it has also become the principal source of
expenditure of the healthcare system. Management of citizens' health problems can no longer be defined and planned by single individuals or sectors, but must be conceived of as a network, or at least must differentiate between levels of intensity and complexity of assistance, based on criteria or operating methods coordinated by the various subjects responsible for care at the various levels. Today, hospitals are focusing on intensive care and limited phases of the course of an illness, where the critical nature of the conditions justifies the great commitment of scientific, professional and economic resources. The most highly specialized professionals and most costly technologies, however, must be managed to the best of their potential, shifting less demanding needs to other levels. Therefore, patients that can be managed either with limited hospital visits (clinic or out-patient treatments) or in facilities that do not have high levels of technology or intensive care (rehabilitation centres, special health-service houses, but also homecare) must find the answer to their needs in these structures. The 1998-2000 National Healthcare Plan confirmed this trend establishing the plan of action on the following principles:

- to shift attention from hospital care to territorial care, with a specific district-centred organization;
- to develop alternatives to hospitalization such as: Integrated Homecare (ADI), semiresidential care and home hospitalization, promoting integration of the different forms of intervention and creating the special health-service houses (RSA) provided for by law no. 67/1988;
- to bring about integration of the different forms of healthcare and of healthcare and social services (institutional, managerial, professional integration);
• increase protection of weaker subjects, creating specific pathways for each of the different life phases: procreation, childhood and adolescence, the elderly, terminal phase of life;

• institute specific actions for the terminally ill (among which, creation of authorized and accredited residential and daycare facilities – hospices).

The 2003-2005 National Healthcare Plan summarizes, in the following terms, the essence and aims of the changes in progress:

“The primary objective is to create a process of reorganization that guarantees a high level of integration of the various health and social services, with the support of the basic healthcare provider, the family doctor. This process is developed to combine health and social services, to provide continuity of treatments and rehabilitation, to create integrated health programs and cross-sector interventions, together with the redistribution between hospital and territory, but in favour of the latter, of financial and organizational resources for activities rendered”.

“The territory has always been considered the provider of out-of-hospital services; today it is clearly necessary to establish a new, rational supply of services throughout the territory that considers hospital interventions as outside the territorial realm and reserves them more and more frequently for acute pathologies”.

“It is an approach that is reversing the traditional system of healthcare supply based predominantly on the hospital that waits for citizens to come to it to obtain services, in favour of an approach that identifies the territory as the active subject that intercepts healthcare needs and, in a unified manner, takes over the health and social service needs of citizens”.

The development of territorial services poses new problems, also in terms of management and measurement of the activities executed and of the outcomes.

Unlike the hospital healthcare providers, where output measurement was introduced using DRGs (Fetter, Freeman 1986), territorial healthcare activities are still being studied and analysed to identify and codify “products”; performance evaluation of territorial activities is felt to be one of the most crucial necessities for improving control of these services (Cifalinò, Bottone 2004).

This paper presents a methodological approach that was found with the aid of researchers to meet the managerial and informational needs of a specific territorial service: integrated home care. The pathway followed to get our paper’s output began with a training course held at the Scuola Superiore Sant'Anna in 2004. This initiative was for those people responsible for management control of the Local Healthcare Units (AUSL) in Tuscany and those responsible for territorial services and was organized on two phases: a first, classroom, phase where participants agreed upon and learned a common language on measurement topics currently in use and a second, laboratory, phase where participants divided into three work groups whose aims were:

• to compare territorial pathways or services mapped by following the user in his/her path of assistance;

• to subdivide the service into various phases, and for each of these, to identify the expected outputs, the professional figures involved, the critical points and the indicators that measure them.

The services investigated by the three groups were: the normal pregnancy pathway, the stroke rehabilitation pathway and the Integrated Homecare Pathway (ADI).

In the laboratory phase the work done by the professionals was based on the ABM/C method and was supported by researchers using
an interventionist-research approach, with a direct involvement of researchers with the actors in a “participant observation” in the field and a constructive (actionist) aimed at solving problems (Jönsson and Lukka, 2006), that contributed to light the principal problems involving measurement and interpretation of the territorial activities perceived by the territorial activity managers.

The starting point was taken considering the user and his/her needs. Starting from the customer is one of the distinguishing process-based approaches (Euske et al., 1998). This made it possible to:

- To follow the patient and, therefore, to have a comprehensive view, satisfying user needs, not those of the organization;

- To have the organizations communicate and, therefore, make comparisons with each other of the same service that they all offer in order to identify a pathway common to all, based on “what” to offer rather than “how”, and not to address the matters associated with the organization of the service, which remain independent choices for each provider.

- To identify the critical points to monitor and to agree upon common objectives to be achieved by all the organizations.

Thus, two distinct outputs arose from the laboratory course:

1. Identification of the critical points in the measurement of territorial services perceived both by those responsible for management control (whose role is measurement) and by the territorial service professionals (whose role is management).

2. Three mappings agreed upon for the territorial services mentioned and a system of indicators that measure the outputs or the critical aspects of the service.
This experience made it possible to bring to light critical points in the process of analysis and solution formulation for the problems that arise in development of the ABM phases. These critical points can be taken into consideration when designing similar territorial healthcare initiatives.

The paper is organized along the following lines: after identifying the characteristics of the ABM approach conducted during this experience, the results relative to some key critical points experimented in the territorial services, the experience of ABM conducted on Integrated Homecare and the application of ABM by the Local Healthcare Unit of Siena are described.

**An ABM approach to the management of territorial services.**

The Activity-Based Management approach was considered the appropriate choice for the solution to the problems in question.

In general, since central and regional governments have begun to press for the wiser use of resources and recovery of efficiency in the healthcare sector, there has been an increasing interest to extend application of ABC/M from manufacturing, where it was originally developed\(^1\), to the service sector (Lawson, 2005); in the United States,

\(^1\) For about twenty years, cost accounting has seen the predominant introduction of a different way of providing the information to support managerial decisions: Activity-Based Costing (ABC) (Cooper, Kaplan, 1988). The difference from traditional costing systems is in the fact that it considers activities as the focus of resource consumption and longer the direct product. In fact, traditional costing systems go back to Scientific Management and were essentially focused on seeking greater production efficiency; instead, today’s competitive contexts require attention to other aspects, such as the quality and the differentiation of supply, introducing or reinforcing functions that have no direct relationship to production. The greater recourse to these functions has brought about an increase in indirect costs and, therefore, greater attention to techniques that make it possible for indirect costs to be reflected in the product (Vitali, 2004). Performance measurement through activities as the essence of organization processes shows whether the output has been achieved and how it has been achieved. Measurement of performance through activities is the cornerstone of Activity-Based Management (ABM). ABC
this system is in continuous development for use in managed care as an instrument for negotiation of rates (Baker, 1998).

Use of integrated process information systems makes it possible to go beyond the prevalently financial point of view of traditional analytical accounting systems that focus on the effects of management (answering the questions: how much is the cost of a responsibility centre? How much has it produced?) and not on the causes (answering the questions: how and why were these resources spent?). These considerations assume greater importance in a healthcare context where users of the information to modify/orient action are professionals (Lega, 2001). ABM can be seen as an answer to the government and management problem of the hospital activities of healthcare organizations: by integrating elements of process and total quality, the ABM system is an aid in description and evaluation of patient pathways (Casati, 2000).

If ABM is seen as an answer to information needs associated with performance, then application of ABM is a bit more debatable. In general, the complexity of healthcare organizations adds to the criticisms already mentioned: healthcare organizations have a highly division oriented model, and information often still has high costs since, for certain services, the user must go through various facilities that do not have integrated information and computer systems. Another important critical factor for the success of ABM/C in healthcare is associated with the perception that as an instrument, ABM/C is complex, and there is no explicit support from management (as previously found at the general level), and an additional criticism is that

and ABM methods have been applied in various sectors since mid Eighties, and many articles report on whether they were successful. Among the critical points of ABC/M, two are most frequently cited: the difficulty in connecting the process system to the body’s organizational system and to the individual evaluation system; the high costs involved in designing the mapping of activities in very complex, integrated contexts, thus running the risk of making the measurement system more rigid rather than lightening it (Cinquini & Mitchell, 2005; Dossi, 2006).
data gathering/request is often seen as merely an accounting exercise (King et al., 1994).

In Baker’s opinion, only a combined use of the two systems makes it possible to have a complete and accurate picture of the progress of a service or a facility. Although various authors have emphasized the criticism of Activity Based Budgeting, for facilities involved in healthcare pathways it is necessary to introduce a monitoring system of pathways in their running. Without objectives and measurement a pathway cannot be improved, risking that the lack of integration among facilities/services makes it impossible to realize “healthcare pathways”, in that it is the user himself and not the healthcare organization that supplies the connection between the various components and phases of the service (Nuti, 2004). In this sense, a cross-sectional/process oriented monitoring system such as that of ABC/M can benefit both the organization and the user.

For territorial services, one of the principal reasons for using ABM is the great amount of interaction of the various organizational functions; providing a territorial service often requires involvement of professionals and services belonging to different facilities (ex. hospital, consulting or social services). From this the necessity arises to understand the process that creates value for the user, independent of the organizing facility. Furthermore, the fact of going beyond the particularities of the organizations makes it possible to compare them, concentrating on the essential point, the service provided. The link between the organization and the pathway will be the responsibility of each organizational function of its own characteristics: there are organizations that “externalise” some value-added (for to the user) activities or activities that create no value. In these cases, though these activities are monitored for outputs obtained, it will not be necessary to estimate or calculate their “production” costs, since these are determined by the paid price of the external service provided.
The passage from the responsibility centre to the process of service makes it possible to obtain comparable information from different healthcare organizations.

**Key issue and outputs**

**Critical points in the management of territorial services**

In the preliminary part of the project individuals responsible for management control and those responsible for the territorial services carried out an analysis and comparison. Various critical points were found associated with control of territorial activity. The critical points can be divided into four categories:

1. Absence of an adequate, integrated system of information technology;
2. Absence of established guidelines and reference standards;
3. Organizational problems;
4. Absence of a true integrated pathway for patients;

There is no single, reliable computerized flow of information that surveys activities and data of territorial services. There are many different information flows that originate from territorial services, even sent to different subjects (ex. Region, Ministry, Organizations), and they sometimes survey the same things in different ways, causing both duplication of data gathering activity and production of conflicting data. This not only makes data interpretation and comparison with other
organizations difficult, but it is also difficult to evaluate different areas of the same organization. Another problem of territorial information systems for users is integration: the territorial services information systems “do not communicate” with each other… not being usage-based, it is not possible to follow the clinical-treatment history of a user who goes to several territorial facilities or who uses several territorial services. There can even be errors in the estimation of the number of cases followed by a territorial service if it is not user-based: there is the risk of counting the same person more than once if s/he goes to the same facility at different times.

2. Absence of established guidelines and reference standards:

There are no regionally or nationally valid reference standards to achieve or to compare to for territorial activities. Where organizations use the same indicators, in most cases, these measure different things, since there is no use of common terminology.

3. Organizational problems:

Directors of territorial services are asking for greater clarity in the division of roles. “Who does what?” There is not a clear assignment of responsibilities to the various forms of organizational units. The territorial organization of all the Tuscan healthcare providers is based on Regional Law 22 of 2000, modified in 2005 (R.L. 40) which has basically a matrix structure: there are functional units that provide interventions/services and there are professional operations units. One problem that became more readily apparent on presentation of the mapping of territorial services in the Tuscan Local Healthcare Units is the heterogeneous nature of the organization of services, which leads you to believe there are even different service supply structures… “But is it possible that so close areas or organizations provide solutions for
such different needs?” This is a question the operators asked themselves when they were examining their own indicators in the organizational budget categories. This heterogeneity is something that also emerged when comparing different organizational budgets; besides different styles of negotiation process for objectives and actions, the strategies and objects to be monitored by the organizations were also clearly found to differ greatly from one organization to another and among the different areas of a single organization.

4. Absence of a true integrated program for patients

Often the territory does not take charge of the patients’ situation; the users risk having to go from one facility to another to devise a course of treatment for themselves and, in some cases, they risk a lack of continuity between hospital and territorial treatments. This lack of connection between the hospital and the territory and among the various territorial services makes the territorial response a sort of “individual interventions” rather than a “response to a complex need.” In the territory, even more than in the hospital, the patient’s situation must be taken in charge by a reorganization of services in function of his/her needs. This taking charge of the patient’s situation can also be considered a guaranty of the system’s fairness: if the patient’s situation is not organized for him/her, only those users who are the most knowledgeable of their rights will in the end succeed in obtaining a solution.

Problems concerning the information systems are undoubtedly strategic, since decisions cannot be made without quality information, but considering the fact that information systems must support decision-making and given the developments in technology and software in recent years, these problems could not be surmounted in the short
term. They can be confronted, with adequate investment, once it is clear what information is to be obtained.

The work group concentrated primarily on how to deal with the other three categories of problems of specific territorial services.

**Experience of implementation of ABM in “The Integrated Homecare Pathway”**

The following part of the paper, after a short introductory overview of homecare services, presents the results of the work group that included the Local Healthcare Units of Siena, Grosseto and Arezzo that chose the Integrated Homecare pathway as the service path to study.

For some years now, the organization of homecare services has been a priority objective in order to provide citizens with a system of social protection for more complex needs that require both healthcare and social service intervention at the same time. As in other countries, this is occurring in Italy after a long period of extraordinary expansion of activities in hospitals that have become ever more frequently the natural centre of all health and social services of a certain importance\(^2\).

\(^2\) The most recent indications are contained in the Italian National Healthcare Plan 2003-05, which, in various points, calls for promotion of home healthcare, and in particular:

* Objective 2.2., on “Promotion of an integrated network of health and social services for care of the chronically ill, the elderly and the disabled”, indicates the necessity to reinforce and guarantee the correct availability of network facilities and services (home hospitalization, integrated homecare, integrated daycare centres, nursing homes and rehabilitation institutes) in accordance with their effective use, and at the same time to reduce the number of inappropriate, acute hospitalizations and the length of stay for appropriate hospitalizations, thanks to the presence of an efficient and effective network.

* Objective 3, on health promotion, points out that the increase in the number of elderly persons poses the necessity to encourage their participation in society, contrasting their exclusion and reinforcing the integration of social and healthcare policies to ensure homecare in order to avoid institutionalization whenever possible.

* Objective 3.2.3., on palliative treatments demonstrates that palliative treatment interventions are placed within the largest project of care programs for the individual that also includes reorganization of the network of interventions of home healthcare, social-healthcare services and assistance (network for home treatment and care).
This is confirmed by the fact that in the last ten years regional regulations have given a substantial boost to homecare treatments and, in particular, to Integrated Homecare. Integrated Homecare was born as a model for assistance to ensure providing coordinated and continuous healthcare interventions (medical, nursing, rehabilitation) and social services (aid in personal hygiene, providing meals, domestic assistance) in the home by various professional figures who are functionally coordinated with each other. It is, therefore, delegated to meet complex needs of persons who require continuous social services and healthcare.

The responsibility for assistance is attributed to the family-practice physician, the organizational headquarters is the district and execution of assistance requires design of personalized plans of assistance in relation to the individual’s needs. Initially, this form of assistance dealt essentially with the elderly population and the disabled; subsequently it was extended to treatments of other types of individuals such as those afflicted with AIDS, Alzheimer’s, the terminally ill and others, with the idea of orienting interventions more frequently toward non-hospitalization forms of assistance and aimed at guaranteeing a need for humanized assistance and for respect of the quality of life. The most recent pathway evolution in this sector addresses the creation of an integrated network of various homecare services, from the simplest to the most complex (from extemporaneous home access for healthcare and social services workers to planned, continuous nursing care, whether related or not to that of the family physician, to specialized team homecare, sometimes using complex diagnostic-therapeutic and telematic technologies (ex. telemedicine)\(^3\).

\(^3\) In recent years, on the whole, a progressive increase in the use of homecare services has been recorded. In 2000, there were over 10,370,000 elderly in Italy, of whom 5,800,000 were between the ages of 65 and 74 and 4,500,000 were over 74 years of age (data National Institute of Statistics, 2000). In the same year, integrated homecare activity for the elderly involved over 191,000 persons, equal to 1.9 %?? of the over-65-year-olds out of a total of 240,000 persons assisted
The basic work phases of the aforementioned work group were:

1. Identification of the phases of the Integrated Homecare pathway;
2. Identification of final outputs;
3. Identification of process performance measures;

The first step the Integrated Homecare work group took was to identify the macro phases of the Integrated Homecare pathway: from identification of the need to the end of intervention or of the final evaluation.

The Macro phases found are (see fig):

1. Identification of need (that can originate from the hospital or the territory)
2. Receipt of request
3. Multifaceted evaluation
4. Definition of objectives and personalized intervention program design
5. Providing the integrated intervention
6. Intervention termination and final evaluation

The activities of each macro phase are listed showing any temporal relationships.

by Integrated Homecare (source: Italian Statistics Society data 2000 and 2001, Health Ministry). In 2001, Integrated Homecare was extended to 214,000 elderly, out of a total of approximately 270,000 assisted. Though constituting “large aggregations” that do not make it possible to evaluate the cases treated specifically, the data show that Integrated Homecare is primarily concerned with the elderly, who represented 79.8% in 2000 and 79.2% in 2001 (...).
Using ABM in managing territorial health services: the “home-care” case in the Tuscan Health System

fig. 1

For each activity, the following were identified: the objectives to be reached, the professional figures to be involved and the indicators to monitor in order to ascertain whether the program was in line with its objectives.

In this perspective, one of the most important outputs found by the Integrated Homecare work group was to identify the needs of the user and to group them into three programs. Whether the user is referred through the hospital or the territory, his/her pathology can be one of two types: the first one, subjected to possible health improvement and the other who cannot improve his/her health. This grouping helps in finding connections between user need and service provided, through a path starting from the user’s needs and going towards the objectives the service must achieve. This passage synthesizes how the organization creates value for the user. The service is the object of the analysis and evaluation.

In cases where the pathology is subjected to improvement, the user’s need may be: recovery or improvement of the degree of self-sufficiency through a rehabilitation program, improve clinical
conditions or treat the pathology in progress through the therapy program. In cases where the pathology cannot be subjected to improvement, the user’s needs can be palliative treatments and/or pain therapy, not necessary neoplastic pathologies, and he/she is treated through the palliative treatment program. The user’s needs are directed into three Integrated Homecare programs: rehabilitation, therapy or palliative treatment programs. Into these three programs, cross-sector social services are inserted in response to problems of a social nature that add to the other healthcare needs. In the Integrated Homecare program, social needs do not give rise to a separate program, but are met in all the three programs through integration and involvement of the organization’s professionals or those of the Municipality of the District.

![Diagram of pathways in the integrated home care](fig. 2)
Afterwards, the process performance measures to monitor the outputs of each phase as well as the indicators for program monitoring were identified. They are reported here below:

1. For the rehabilitation program:
   a. no. of Integrated Homecare rehabilitation program cases IMPROVED/ total Integrated Homecare cases in rehabilitation: the objective of the rehabilitation program is recovery or improvement of self-sufficiency on the part of the user. The patient’s achievable goal is evaluated by the interdisciplinary evaluation unit and is described in the individual’s treatment plan. After repeated, sometimes interdisciplinary, examinations the patient’s state of health is evaluated and improvement, or lack thereof, is recorded (using FIM\(^4\) or other evaluation scale)
   b. no. of Integrated Homecare rehabilitation program cases where Medical Emergency Service intervention was required/total Integrated Homecare rehabilitation program cases;
   c. no. of Integrated Homecare rehabilitation program cases where hospitalization was required/ total Integrated Homecare rehabilitation program cases;

2. For the therapy program:
   a. no. of Integrated Homecare therapy program cases IMPROVED/ total Integrated Homecare cases in therapy: just as for the rehabilitation program, the patient’s achievable goal is evaluated by the interdisciplinary evaluation unit and is described in the individual’s treatment plan. After repeated - sometimes

\(^4\) FIM: Functional Independence Measure refers to a scale that is used to measure one's ability to function with independence.
interdisciplinary - examinations the patient’s state of health is evaluated and improvements, or lack thereof, is recorded (using the CIRS\textsuperscript{5} or similar evaluation scale)

b. no. of Integrated Homecare therapy program cases where Medical Emergency Service intervention was required/total Integrated Homecare therapy program cases;

c. no. of Integrated Homecare therapy program cases where hospitalization was required/ total Integrated Homecare therapy program cases;

3. For the palliative treatment program, the normal outcome is patient death, therefore, as program outcome indicator, only unfavourable events can be taken into consideration (such as hospitalizations or requests for Medical Emergency Service), signals that something in the program has not worked; compared to the others, this is a “negative” indicator, because it monitors whether the program has not worked, whereas in the other cases, verification is of whether the program is working:

a. no. of Integrated Homecare palliative treatment program cases where Medical Emergency Service intervention was required/total Integrated Homecare palliative treatment program cases;

b. no. of Integrated Homecare palliative treatment program cases where hospitalization was required/ total Integrated Homecare palliative treatment program cases;

4. Indicator of the quality perceived by the user (which also measures the level of social services); this indicator is

\textsuperscript{5} CIRS: Cumulative Illness Rating Scale.
constructed on the basis of the percentage of satisfied users of the service or by focus groups based on investigations, preferably carried out with the same methodology as the healthcare organizations, to make it possible to compare the same service offered by different organizations.

The major difficulties encountered in this phase were associated with identification of indicators that explain the results but are not costly in terms of information gathering: the hard part was to use information already present in the regional or organizational flows and to add the smallest number of changes possible to already existing information flows and, where necessary, to insert new information being careful about the amount of time necessary for input of new information flows by healthcare and other workers (therefore, the cost of the information) with respect to its benefits.

**ABM in action in the “Integrated Homecare Program” of the Siena Local Healthcare Organization**

The Siena Local Healthcare Organization applied the indicators for hospitalizations and for territorial interventions of emergency assistance and Continuing healthcare to the Integrated Homecare programs previously mentioned, carrying out a comparison of the three centres of one of the organization’s districts. In some of the subjects treated, indicators were also used to measure possible clinical improvement or improvement in self-sufficiency before and after treatment.

In 2005, in the District in question, of the 1128 individuals who were enrolled in Integrated Homecare, 435 were followed in the experiment, either because they suffered from particularly demanding pathologies or because they had situations of great social-healthcare
complexity. The frequencies of the principal pathologies are shown in the following table:

<table>
<thead>
<tr>
<th>Pathology</th>
<th>No. cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoplasias</td>
<td>170</td>
<td>39%</td>
</tr>
<tr>
<td>Dementia</td>
<td>20</td>
<td>5%</td>
</tr>
<tr>
<td>Cardiopathies</td>
<td>40</td>
<td>9%</td>
</tr>
<tr>
<td>Stroke</td>
<td>58</td>
<td>13%</td>
</tr>
<tr>
<td>Respiratory</td>
<td>38</td>
<td>9%</td>
</tr>
<tr>
<td>Decubitus</td>
<td>11</td>
<td>3%</td>
</tr>
<tr>
<td>Orthopaedic</td>
<td>66</td>
<td>15%</td>
</tr>
<tr>
<td>Immobilization</td>
<td>18</td>
<td>4%</td>
</tr>
<tr>
<td>Other</td>
<td>14</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>435</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 1

It is noteworthy that we are witnessing a progressive shift of Integrated Homecare towards persons suffering from more complex pathologies with ever greater healthcare needs.
**Distribution of Integrated Homecare cases in the three programs.**

The healthcare goal was defined in 100% of the 435 cases followed, and the program with greatest frequency was that of palliative treatments (62%) that are not only for individuals suffering from terminal phase neoplastic pathologies but also for all subjects who had exhausted every other possibility for improvement.

<table>
<thead>
<tr>
<th>Distribution IH cases in the three pathways</th>
<th>No. cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palliative pathway</td>
<td>268</td>
<td>62%</td>
</tr>
<tr>
<td>Rehabilitation pathway</td>
<td>85</td>
<td>20%</td>
</tr>
<tr>
<td>Therapy pathway</td>
<td>82</td>
<td>19%</td>
</tr>
<tr>
<td>Total</td>
<td>435</td>
<td></td>
</tr>
</tbody>
</table>

Table 2

For placement of subjects in the three pathways, the reference used was the desired goal, applied in the following manner:

- The individuals with vascular or orthopaedic conditions with reasonable possibilities of recovery of motor capacity or improvement in the degree of self-sufficiency were placed in the rehabilitation pathway;
• The patients with chronic pathologies who had relapsed or pathologies in the process of stabilization were placed in the therapy pathway;

• The individuals for whom there was no hope of improvement, no matter what the basic pathology, were placed in the palliative treatment pathway.

The distribution of the types of Integrated Homecare is essentially uniform in the three district centres of the Valdichiana area, even though there is a higher frequency of the “therapy pathway” in the Montepulciano centre.

<table>
<thead>
<tr>
<th>Distribution of cases in the 3 district centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiusi</td>
</tr>
<tr>
<td>Montepulciano</td>
</tr>
<tr>
<td>Torrita</td>
</tr>
</tbody>
</table>

Table 3

Indicators of pathway outcomes.

The global pathway indicators were measured for 230 cases, thus obtaining a 53% representation of all the cases treated.
In Table 4 the outcomes of the three pathways are reported. In the category “other” are individuals who were no longer under observation because they were transferred or placed in special healthcare houses or for some other reason and the subjects who had improved. We must remember that for the palliative treatment program, the normal outcome is patient death, which should occur with dignity, with good pain management, with care that guarantees satisfying primary needs and with the comfort of family members.

<table>
<thead>
<tr>
<th>Outcome of Integrated Homecare Treatment</th>
<th>Improved</th>
<th>Deceased</th>
<th>Other</th>
<th>No. Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palliative</td>
<td>6</td>
<td>116</td>
<td>11</td>
<td>133</td>
</tr>
<tr>
<td>Therapy</td>
<td>30</td>
<td>8</td>
<td>6</td>
<td>44</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>40</td>
<td>7</td>
<td>6</td>
<td>53</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>230</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4

It is not possible to survey these types of indicators immediately, since it requires a careful, complete evaluation at the end of the program that was not always possible to execute.

Instead, the unfavourable events were consistently surveyed during the treatment period for all the subjects placed in the various programs. This required counting the number of times it was necessary to have recourse to the territorial medical emergency service and the number of unprogrammed hospitalizations. In fact, these last two indicators are both signs that something in the pathway has gone wrong.
and, as a result, the family members were forced to resort to other actors (Table 5).

<table>
<thead>
<tr>
<th></th>
<th>Emergencies (no)</th>
<th>Emergencies (%)</th>
<th>Hospitalizations (no)</th>
<th>Hospitalizations (%)</th>
<th>No. Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiusi</td>
<td>21</td>
<td>17.95</td>
<td>14</td>
<td>11.97</td>
<td>117</td>
</tr>
<tr>
<td>Montepulciano</td>
<td>32</td>
<td>18.29</td>
<td>40</td>
<td>22.86</td>
<td>175</td>
</tr>
<tr>
<td>Torrita</td>
<td>13</td>
<td>9.09</td>
<td>13</td>
<td>9.09</td>
<td>143</td>
</tr>
</tbody>
</table>

Table 5

The percentage of unfavourable events is not very different in the three district centres, though we must be careful to remember that the lack of an automatic survey system could lead to discrepancies, in that where the workers operate more carefully and survey adverse events more accurately, they appear, instead, to be less effective.

Finally, only the number of activations of the territorial medical emergency service and the number of hospitalizations were used systematically and completely among the Output indicators. It was quite easy to involve the Multidimensional Evaluation team workers and, as a result, the homecare workers. In fact, workers appreciated the gratifying aspect of introducing this work throughout the territory as an action to resolve the user’s problems, an action that can be measured and evaluated during and at the end of the program.
To complete the picture, it would be necessary to add another indicator surveyed objectively on the basis of simple parameters that would make it possible to assign a value for the complexity of the cases, so as to be able to compare the statistics, somewhat as happens for hospital DRGs. We must always remember, however, that these evaluation systems permit evaluation of interventions performed, they are not the goal to achieve (the goal always being the resolution of patient problems). Therefore, indicator surveys must be simple and must not be time-intensive for the workers. In this sense, the model used experimentally by one District of Local Healthcare Unit 7 did not put a significant burden on the workers’ time, each evaluation takes only a few minutes extra. This certainly caused workers to participate more readily and with greater conviction in the multidimensional evaluations. It also caused greater attention to the design of the personalized project for the different subjects undergoing treatment with increased attention to individual needs. Compliance could be further improved by a computerized data collection and production of indicators.

**Conclusions**

The Integrated Homecare work group designed an analysis model and a system of performance measures agreed upon by 3 Tuscan Local Healthcare Organizations, making it possible to monitor the critical points of an Integrated Homecare pathway (or pathways); establishing and using the same indicators also makes it possible to compare the outcomes of different organizations.

It is desirable to have a system of cost measures (ABC) coupled to the outcome measure system. The work groups concentrated especially on creating value for the user and levers that the organization
can move to increase it (through identification of critical activities to monitor), identifying the professional figures involved in accomplishment of each activity and leaving identification of cost drivers and efficiency analysis for a later phase.

It is noteworthy in the end to point out some critical aspects of the experience described here. There were various difficulties to overcome in order to establish a common mapping:

- **Adoption of the point of departure: the user’s health needs.** The work groups were asked to map the pathway that the user follows or should follow to find the solution to his/her health needs. In a day to day work routine, the final goal can be taken for granted, also because the specialization of the work and the increase in the number of professional figures and facilities involved can make one lose sight of the bigger picture. Therefore, the groups worked on mapping the pathway that the user executes in the facilities/services to meet his/her personal health needs.

- **Identification and separation of core and peripheral services.** The mapping and comparisons must be performed only on the core. The supply of the same service by the different organizations varies both in organizational methods of response (ex. consulting room in some Local Healthcare Organizations, women’s centres in others...) and for added characteristics in some services. This is found especially in communication activities. There are some organizations that involve more professional expertise than others when designing courses for giving birth or that provide more information than others. In these cases, participants were asked to chart what the minimum common service is that the organization should provide; for example, for preparation courses for giving birth, it was considered useful to define
minimum course content necessary, the length (in hours) and the professionals to be involved.

- Treatments of those services that are performed by other private subjects or other private or public organizations (municipalities) but that are an integral part of the service. When the user has a pathway that encompasses more than one healthcare or social-healthcare service, problems arise for the continuity of care, and problems increase when services are provided by the private sector (in some organizations, as in the case of rehabilitation in one of the areas in Tuscany) or by municipalities in the areas of Tuscany where social services were not delegated to the healthcare organizations. These problems of continuous care and institutional relationships must not influence measurement of those pathway activities that affect the outcome of the service: documents/agreements among services or institutions must provide for a feedback of key information on outcomes of the pathways under their responsibility.

Another type of problem relates to the conditions of application of the measurement model: when there is no promoter or explicit support/request form the organization management or from the service manager, it is rare that the measurement method or system is employed. The pressure and support of the manager are determining factors in the favourable outcome of the implementation and use of measurement systems. In fact, after one year, only the Siena Local Healthcare Unit 7 tried to apply and calculate the set of indicators that had been identified.

In spite of the problems encountered in trying to agree upon a mapping and the difficulties in applying the model, this work can offer considerable opportunity, since the comparison of territorial services of
the different organizations meets needs that have been felt at different levels:

1. At the regional level: this information can be used to make a series of decisions that range from establishing service fees to whether or not to increase levels of assistance and on health needs in general;

2. At the organizational level: by comparing data on the efficiency of different organizations in providing the same service, mechanisms for improvement can be triggered to recover efficiency or quality where there are differences in the outputs achieved. Inter-organizational comparison is an important element for territorial services, because in these, more than in other services, there are no national/international reference standards to indicate good practice, and, therefore, the objectives and standards to achieve;

3. At the operating level: professionals see the whole value chain and can identify mechanisms for service improvement by comparisons with their colleagues, especially when the problems are in the interaction between facilities. Introduction of systems of measurement can be experienced positively, as in the case of the experimentation in Local Healthcare Organization 7 of Siena: it is highly motivating to be able to measure the output of your own work (especially of teamwork). In addition, this motivating impact can be reinforced if the measurement system is not much complex and time consuming in collecting data/information.
References


