EVALUATING PERFORMANCE IN THE TUSCAN HEALTH CARE SYSTEM

Sabina Nuti, Milena Vainieri, Anna Bonini

Working paper n. 02

2005
Working Paper n. 02-2005

Sabina Nuti*, Milena Vainieri*, Anna Bonini*

* Laboratorio Management e Sanità (MeS) - Scuola Superiore Sant'Anna di Pisa

Corresponding Author’s address:
*Sabina Nuti
Laboratorio Management e Sanità - Scuola Superiore Sant’Anna,
Via S. Francesco, 18 56127 PISA – Italy
Tel. (39 +) 050 88 3871/3878/3864
Fax: (39 +) 050 883890
Email: direzionemes@sssup.it
Web site: http://www.meslab.sssup.it/_sito/

Acknowledgments
The authors want to thank the Project scientific committee for the support and is particularly indebted to Prof. Riccardo Varaldo for suggestions and helpful discussions. This paper was presented at the EHPG meeting, held Perugia - September 2005.

Please quote this way:
Abstract

The Tuscan health care system strives to foster cooperation among the various organizations that provide services. Government authorities therefore believe it is important to plan and develop a transparent system capable of monitoring the economic results of the region’s 16 public health authorities and their ability to pursue and accomplish the aims of the regional health care plan. The principal aim of the Tuscan performance evaluation system is to give a general outline of the management of the region’s health care authorities. This outline is intended to be useful both for evaluating performance and for enhancing and promoting the results of the healthcare system.

JEL Classification: I10, I18
Keywords: Performance evaluation system, benchmarking in healthcare

---

1 The contribute to the paper has to be addressed to Sabina Nuti for the paragraphs: 1;2;3; 3.1;3.2; 4; 5 ; to Milena Vainieri for the paragraph 4.2 and to Anna Bonini for the paragraph 4.1.
Index

Index ................................................................................................................................................. 4
The Tuscany Healthcare System ......................................................................................... 5
Premises and goals of the evaluating performance system ........... 8
Conceptual Model ................................................................................................................... 11
  The multidimensional result reporting system .......................................................... 16
  “Ad hoc” assessment processes ............................................................................... 22
Results ........................................................................................................................................... 25
  Clinical and health assessment .................................................................................. 25
  External assessment .................................................................................................. 30
Some final considerations ................................................................................................. 35
References .......................................................................................................................... 39
The Tuscany Healthcare System

The regional government works through a network of sixteen public health authorities among which four are teaching hospitals, integrated with the Universities of Florence, Pisa and Siena (AO Careggi in Florence, AO Meyer in Florence, AO Pisa in Pisa, and AO Siena in Siena) and twelve are Local Health Authorities (see figure 1). The teaching hospitals are entrusted with providing hospital care for citizens resident in that particular town and third level Area Vasta care. Local Health Authorities are responsible for providing services to the population living in its area regarding:

- prevention, including the fields of veterinary care, public health and hygiene, sports medicine, occupational medicine, and legal medicine;

- district healthcare, including primary care and paediatrics, diagnostic and outpatient activities, as well as all services coordinated by the districts (Drug department, Handicap, adults’ and children’s mental health, health guidance centre…)

- Hospital services, including community hospitals, hospices, rehabilitation and long care hospitals.
These sixteen public health authorities represent the core of the health regional system even if the last healthcare Regional Plan has introduced two new structures that are the “Area Vasta” and the “Health Societies”\(^2\).

Tuscany regional health system with all its subjects can be represented in figure 1.

---

\(^2\) “Area Vasta” are network organizations that coordinate the activities of Tuscany’s local health authorities around the three university hospitals of Pisa, Florence and Siena, especially regarding inpatient activities, so as to avoid the duplication of services while guaranteeing both integrated and adequate care pathways. “Health Societies” are planning organizations, as a means of managing and governing the demand for health services, and as a means of collaboration and coordination between the municipalities and the local health authorities.
In its 2002-04 Regional Health Plan the Tuscany Region lays down the objectives, values and operative principles of the Tuscan health model. Among these are the obligatory principles of universality and planning, the former guaranteeing all citizens’ access to the Regional Health Service, irrespective of their social class (see www.regionetoscana.it). The plan proposes three main qualifying points:

- Quality evaluation through measurable health outcomes;
- Integration of policies at a regional and at a local level;
- Empowerment of local communities;

To achieve these goals, the Tuscany regional government is carrying out different actions as:

- Reduce inequalities;
- Humanize health services;
- Protect the environment;
- Increase security;
- Promote healthy lifestyles;
- Help children to grow in good health;
- Develop clinical governance for social diseases;
- Invest in social and health services for the elderly.

The effort is also to allow citizens and local communities to participate more actively at the healthcare system and to give them more power, above all in the planning process that is considered fundamental in order to match citizens’ needs with the type, quality and quantity of services offered, while avoiding the waste of resources and guaranteeing the suitability of services.

In this respect, in order to sustain, assess and improve the action of its health authorities, since 2002 the Tuscany Region has been
Nuti S., Vainieri M., Bonini A.

planning a system to monitor their performance, involving the measurement of the many important variables in the pursuit of regional strategic objectives.

**Premises and goals of the evaluating performance system**

The Tuscany Region has got the regional information system which systematically gathers a large quantity of data and information sent by the local health authorities by means of standardized information flows, and it has already had access to a great deal of information for a number of years. However, this mass of information and data has often been inadequately dealt with, for a number of reasons. These include a frequent lack of conciseness in the representation of data, inadequate accessibility and availability of information for the decisional processes they could serve, and a frequently inadequate form to be useful for health authority management. From this situation arose the idea for the planning and implementation of a system to measure and highlight the outcomes achieved by Tuscany’s health authorities and hospitals. This system was to serve as a working and management tool for healthcare authority management, the local council and the regional administration.

In a health system such as Tuscany’s where emphasis is on cooperation between the players of the system rather than on competition, it was important to plan and develop a system that could be shared by the various authorities themselves and by the authorities and the Regional administration. It needed to be transparent in terms of method and objectives, capable not only of monitoring the health authorities’ capacity to maintain financial equilibrium, but also of pursuing the strategic objectives defined at the regional health system level. It was therefore important to anticipate a system capable of taking into account other types of outcomes, important in order to achieve the
objectives of improving the public state of health and well-being, such as the quality of services on offer and the capacity to meet citizens’ needs. From the very outset then, the project was accepted as a challenge for the whole regional system, and not as a means of “marking” management and the health authorities. It was and is seen, instead, as an opportunity for understanding, growing and learning; a tool available not only to the Region, but also to health authority management, in order to support the government of the health system as a whole and its specific local authorities; it is a method of highlighting areas of excellence and of improving areas shown to be critical or weak (Jones 2000).

Therefore, through the performance evaluation process and the identification of an essential system of monitoring indicators, the aim is to start a ‘best practices’ enhancement process of the local Health Institutions (Mc Nair et al 1992).

Taking these premises into account, in 2001, with law n. 7425, the Tuscany Region entrusted the research group of the Sant’Anna School of Advanced Studies and Doctoral Research with the task of drawing up a pre-feasibility study of a system for the measurement and highlighting of health authority performance in Tuscany.

• Subsequently, with law n. 3065/2003, the project was entrusted to the Scuola Sant’Anna and four health authorities were selected to participate in the pilot study: Azienda USL 3 of Pistoia, Azienda USL 5 of Pisa, Azienda USL 8 of Arezzo, and the teaching hospital unit of Pisa.

The decision to entrust the management of the project with a university was not a random one: in order to ensure the reliability, precision and transparency of the system, the involvement of a public university institution was considered essential, since it could share the

---

3 The research group of the Scuola Superiore Sant’Anna, coordinated by the writer of this article, was formed by Professors Lino Cinquini and Domenico Bodega, senior researchers Alessia Macchia, Cristina Renzi, Danilo Neglia, Gabriella Giuliano, consultants Paolo Martinez and Marco Lovo, Emanuela Tangolo, and researchers Manuele Bellonzi, Milena Vainieri, Anna Bonini, Angelo Boccaccio, Annalisa Brambini, Manuela Furlan, Linda Marcacci, and Domenico Cerasuolo. Professor Riccardo Varaldo acted as scientific director of the project.
project’s aims, adopting them as its own mission as a service to the area it serves. Furthermore, the Scuola Superiore Sant’Anna - as a public university institution with special status[^4] - could guarantee a multi-disciplinary approach, consolidated skill in the area of health management and a position external to all the health authorities in Tuscany since, unlike the other universities in the region, it is not involved in the management of the three university hospitals of Pisa, Siena and Florence.

The aim of the project was to provide a summary of the state of health authority management, useful not only for the measurement of performance, but necessary above all for the highlighting and communication of the results obtained. The system planned and implemented in the four pilot institutions also showed that the tool could become a fundamental means for supporting government functions, especially at a regional level. In fact, for this to happen, it is essential to be able to rely on a system that is both transparent and shared, capable of monitoring not only health institution results in economic and financial terms, but also the ways in which these institutions are organized and achieve results in the process of providing services, in terms of clinical quality and the public’s satisfaction.

The project’s objectives were defined by the research group of the Scuola Superiore Sant’Anna and the Councillor for health of the Tuscany Region, Enrico Rossi, the main supporter of the project, and subsequently approved by the General Managers of the healthcare authorities involved.

[^4]: The Sant’Anna School of Advanced Studies is an autonomous, special-statute university that operates in the field of allied sciences. The School’s aim is to: 1) promote the development of culture, scientific and technological research, and innovation; 2) offer and oversee quality undergraduate, graduate and continuing education; 3) assure continuous interaction between research and educational activities for high quality university studies.
Evaluating Performance in the Tuscan Health Care System

**Conceptual Model**

Over the last twenty years many performance measurement systems have been developed, each different from the next (Lynch – Cross, 1991; various authors, 1991; Kaplan – Norton, 1992; Lewis, 1999). The one which has become most widespread, however, is the Balanced Scorecard (BSC) system which, although designed for profit-making companies, can also be effectively applied to public bodies providing utilities, as shown by Kaplan and Norton in 2000 and 2001. A fundamental aspect of this system is that there must be cause and effect relations between measures of process and result. Generally speaking, in the case of the public sector the two authors (Kaplan and Norton) propose that the dimensions of performance measurement should be modified and adapted and that the financial perspective, for example, should be replaced with citizens’ or users’ results.

The focus of the outcome results of the BSC should be linked to the mission of the public non-profit organization. In the case of the healthcare sector, this means the improvement of the state of public health (Chang – Lin – Northcott, 2002). In fact, if in the case of private companies the objective pursued by managers and monitored with the BSC is that of maximizing shareholder profits, in the case of a regional health system, the main objective common to the system’s stakeholders – the general public and politicians – is the improvement of the population’s health. In order to attain this objective, other dimensions in the performance measurement system can be considered, linked to the processes and outputs achieved which act as determining factors and involve other subjects such as managers and professionals (doctors and other health workers).

In order to become an efficient tool of strategic management, the BSC should consider financial and non financial measures in a causal relationship so as to highlight that the management of processes leads to outputs capable of improving the final outcomes (Kaplan – Norton, 1996, 2000, 2001; Pursglove – Simpson, 2000). Although the health
sector is particularly complex, the BSC can be applied at both a single institution and a regional level. In this last case the BSC approach is possible where there is a policy with clear strategic objectives for the public system. In Great Britain, for example, the PAF (Performance Assessment Framework) was introduced as a strategic tool for the management of the public healthcare system. As with the BSC, the underlying concept of this tool is that of causal relations between inputs, processes, outputs and outcomes. The British government explains its choice of the dimensions present and monitored in the PAF: “from an initial view of the health of the diverse communities of the local population under consideration (Health improvement), we need to ensure that everyone with health care needs (fair access) receives appropriate and effective health care (effective delivery) offering good value for money for services (efficiency), as sensitively and conveniently as possible (User/Carer experience), so that good clinical outcomes are achieved (Health outcomes of NHS Care) to maximize the contribution to improved health (back to Health Improvement)” (NHS Executive, 1999, pp.7-8).

The Tuscan Region has selected the performance assessment system described in the following paragraphs, in order to introduce a management tool for the regional health system. In this way, long-term strategic guidelines can be monitored alongside short-term objectives with process measures considered fundamental to achieve improvements in outcomes (Mayne J., Zapico-Goni E., 1997) The Tuscany region aims to employ this tool to measure the capacity of the individual health authority for strategic efficiency, both in terms of the area in which it operates and the regional system of which it is a part. Although the field of application goes beyond the individual health authority dimension, extending to all the region’s health authorities, its role can still be compared to the BSC system in that it is a systematic and coordinated instrument of strategic management, not at company level, but in the sphere of the regional health service. In regional contexts where an integrated policy for the management of public utilities assumes a role of planning and strict control of the public
subject as a guarantee for the citizen, this kind of tool for performance measurement can be both useful and efficient, even at wider levels; it is a means of verifying the efficiency of strategic regional guidelines on the one hand, and of monitoring the capacity of those health authorities in the regional system to carry out their role and meet local demands.

Over the past few years, in fact, the Tuscany Region has paid a great deal of attention to the issue of health sector assessment, both in terms of the quality of services on offer to the citizen, and the organization methods adopted on a regional level.

During the feasibility study, the research group devised an initial model (see figure 2) capable of describing the cause and effect relations in the provision of services by a health authority.

The research team set out to highlight both the types of results expected by the health authorities, and the ways in which these are actually achieved. Starting from the right-hand side of the diagram, we can observe the “last” results obtained by the health authority; that is, the outcomes, which can only be pursued in the medium to long-term (Vedung 1997). They refer to the health authority’s ultimate aims, or in
other words to the improvement of the social well-being and state of health of the population. Because of the complexity of the measurement mechanisms employed and the system of factors jointly involved in their pursuit, this kind of result is unlikely to aid management action in the short term, even though the starting and finishing points of the health authorities’ action remain. Although it often takes years or decades to move and improve an indicator of outcome, what is certain is that it is from an analysis of the population’s state of health that a process of planning and orientation of health authority action begins. Moreover, in order to assess the effectiveness of an action undertaken, the analysis of its impact on the population’s state of health must be carried out (Opit 1993). An example of this is the screening carried out for breast and colon cancer.

The diagram shows how the outcomes, which are in any case subject to monitoring by both the regional health authority and the health department itself, are preceded by the output results which play a large part in determining them. These output results are divided into four areas:

a) User and citizen satisfaction with the standard of services received, including the opportunity to actively participate in the processes surrounding the provision of services, and to have a central role in healthcare pathways (McLaughlin Curtis P., Kaluzny A.D. 2000);

b) Health and clinical quality of services provided;

c) Appropriacy and continuity of healthcare pathways as strategic results (Nuti S. 2001) in line with guidelines laid down by the regional healthcare plan;

d) Capacity to maintain a balanced financial status in the health authority management.

In the model put forward these results can be achieved through various modes and actions according to the individual health authority. The determinants therefore require a specific examination at each of the three healthcare levels in Tuscany’s healthcare authorities:
a) Hospital;

b) District healthcare, including primary care and paediatrics, diagnostic and outpatient activities, as well as all services coordinated by the districts (Drug department, Handicap, adults’ and children’s mental health, health guidance centre...);

c) Prevention, including the fields of veterinary care, public health and hygiene, sports medicine, occupational medicine, and legal medicine.

Within these three contexts, the most important areas to monitor in the provision of services can be summarized as follows:

• Structural efficiency, meaning the standard of buildings, facilities, public areas and furnishings, and their suitability to the type of services required of the health authority within the regional health system.

• Operational efficiency, as regards the ways in which available resources are used. Particular attention is paid to the analysis of system productivity and its factors;

• Access, meaning the ways in which access to health services is guaranteed and facilitated, with emphasis on equality and transparency.

• Security and risk management: the capacity to operate while guaranteeing security to all the system’s players, operators and users alike.

The process of delivering health services is influenced by both the environmental context and specific input factors (see the left-hand side of the diagram in figure 2). The type of population, the arrangement of the area, the evolution of services provided up to now and the specific objectives identified at a regional level clearly influence the choices made and methods adopted by each health authority to serve its particular area.
Each healthcare authority liaises with the Region to agree on the strategic objectives to be pursued, depending on the characteristics of the population and the area, and in the light of regional health plan guidelines. Therefore, besides the indicators of result and process, the model also foresees the measurement of strategic efficiency, that is, the capacity to plan and program activity in line with local needs and those of the user; it also aims to measure the authority’s capacity to operate within the regional health system context and to follow guidelines laid down in the Regional Healthcare Plan and subsequent resolutions.

Although the research group and the regional health councilor both approve the representation in the model of the processes with which the healthcare authorities pursue their objectives, and want the project to keep its local health authority dimension, they have agreed to focus attention on the monitoring of results (the areas with a colored background in fig. 2) and only on a small number of macro indicators of process, giving the health authorities the autonomy and responsibility of monitoring process indicators by care level, so as to be able to understand and manage the determinants of the results themselves.

An exception to this choice, within the regional system of performance measurement, is the decision to consider “management” evaluation, that is, the group of choices and policies adopted by management to manage and control the health authority system. The reason for this exception is the that management, in the form of the general manager, is chosen by the regional health councilor. The management action should therefore be considered an important object in regional assessment.

**The multidimensional result reporting system**

After having selected which results could be monitored at regional level, the research group identified six areas to represent performance. These were considered capable of highlighting the essential aspects of performance in a complex organization like a healthcare authority (table 1).
They are:

• *Assessment of the population’s state of health* (see outcome results of figure 2). Although this type of figure, referring for example to mortality rates in the first year of life or to mortality rates for various pathologies, is slow-moving in time, and although an improvement recorded today is often determined by management decisions, it was considered important to maintain at least three synthetic indicators to keep managers’ attention focused on the ultimate aim of every effort made; in other words, the improvement of the population’s state of health.

• *Assessment of capacity to follow regional guidelines* (see strategic efficacy of figure 2). Tuscany’s health authorities are not only required to demonstrate their ability to function efficiently and effectively as autonomous bodies, but also as units making up the regional healthcare system, working as a team in order to make the most of synergies and to guarantee access and equality to all the region’s population. It is therefore important that the health authorities take care to implement strategic regional guidelines, that is, to apply regional resolutions in the time and manner indicated.

• *Assessment of economic and financial performance* (see output results of figure 2). This is the verification of each health authority’s capacity to pursue the three conditions of balance in the economic and financial sphere: the income balance, the monetary balance, and the financial balance. This assessment requires the use of indicators which give both an accurate picture of the year examined and an assessment of trends. In addition there are other indicators linked to the efficiency of health authorities: average wage costs, pharmaceutical expenditure government, compensation rating and the level of satisfaction with management (it regards the employee evaluation about
internal services strictly linked to the economic and financial area);

- **Clinical and health assessment** (see output results of figure 2). This area includes results regarding quality, appropriacy, efficiency, clinical risk, the capacity to govern supply and demand of the health system for hospital, regional and preventative activities.

- **External assessment** (see output results of figure 2). This is the evaluation of health authority activity by citizens, users or otherwise of the health service. Also taken into consideration here is the efficiency of the health authorities’ external communication processes.

- **Internal assessment** (see management of figure 2). This area deals with the levels of employee satisfaction. Having up to date equipment and high level of clinical professionals is not sufficient to ensure high quality service to patients and citizens. You need more. You need a whole organization able to work as a team, enforcing on one side clinical performance and, on the other, efficiency, i.e. the correct use of the available resources and above everything a patient centred care (Ford, Fottler, 2000). Many studies now show an important correlation between employee satisfaction levels, the organizational climate of an authority and user satisfaction with services provided. The decision to include this area of investigation is based on the consideration that the “organizational climate”, the employees’ motivation and the level of utilization of management tools strongly affect the institution’s global performance and is often the true element that makes the difference.

**Table 1 – multidimensional result reporting system**

<table>
<thead>
<tr>
<th>CONSISTENCY VS. REGIONAL STRATEGIES</th>
<th>POPULATION’S STATE OF HEALTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1 - The constitution of <strong>CORD</strong> (Oncological District Centre) for the defence and coordination of the oncological pathway;</td>
<td>A1 - Mortality within the first year of life;</td>
</tr>
</tbody>
</table>
### Evaluating Performance in the Tuscan Health Care System

<table>
<thead>
<tr>
<th>B2</th>
<th>The constitution of a specific office (SUP) to facilitate processes of access and communication regarding prevention services;</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2</td>
<td>Mortality due to circulatory disease;</td>
</tr>
<tr>
<td>B3</td>
<td>Waiting lists of up to 15 days for 7 of the more important outpatient’s services;</td>
</tr>
<tr>
<td>A3</td>
<td>Mortality due to tumors.</td>
</tr>
<tr>
<td>B4</td>
<td>Rate of consumption of drugs with generic active principles</td>
</tr>
<tr>
<td>B5</td>
<td>Rate of consumption of drugs for pain control</td>
</tr>
<tr>
<td>B6</td>
<td>Oncological screening response rate</td>
</tr>
<tr>
<td>B7</td>
<td>Maternity and childhood process</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXTERNAL ASSESSMENT</th>
<th>INTERNAL ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Level of satisfaction for users of colon-rectum oncological services;</td>
</tr>
<tr>
<td>E1</td>
<td>Internal climate survey response rate</td>
</tr>
<tr>
<td>D2</td>
<td>Level of patient satisfaction with primary care;</td>
</tr>
<tr>
<td>E2</td>
<td>Rate of absenteeism</td>
</tr>
<tr>
<td>D3</td>
<td>Level of patient satisfaction with outpatient’s services;</td>
</tr>
<tr>
<td>E3</td>
<td>Rate of accidents (n. accidents / number of employees)</td>
</tr>
<tr>
<td>D4</td>
<td>Level of patient satisfaction with diagnostic services;</td>
</tr>
<tr>
<td>E4</td>
<td>Management level of satisfaction with working condition</td>
</tr>
<tr>
<td>D5</td>
<td>Level of satisfaction for users of preventative services;</td>
</tr>
<tr>
<td>E5</td>
<td>Management evaluation expressed by senior executives</td>
</tr>
<tr>
<td>D6</td>
<td>Public awareness of the existence of the public relations office</td>
</tr>
<tr>
<td>E6</td>
<td>Workers level of satisfaction with their working condition</td>
</tr>
<tr>
<td>D7</td>
<td>Level of satisfaction for oncological patients of primary care</td>
</tr>
<tr>
<td>E7</td>
<td>Level of satisfaction of the workers with their management</td>
</tr>
<tr>
<td>D8</td>
<td>Level of satisfaction for users of emergency services;</td>
</tr>
<tr>
<td>E8</td>
<td>Level of authority internal change and evolution</td>
</tr>
<tr>
<td>D9</td>
<td>Level of satisfaction for users of maternity and childhood services</td>
</tr>
<tr>
<td>E9</td>
<td>Level of satisfaction with training activities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CLINICAL AND HEALTH ASSESSMENT</th>
<th>ECONOMIC AND FINANCIAL ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Need assessment in inpatients and outpatients (capacity for demand management)</td>
</tr>
<tr>
<td>F1</td>
<td>Financial Viability</td>
</tr>
<tr>
<td>C2</td>
<td>Efficiency assessment for inpatient activities</td>
</tr>
<tr>
<td>F2</td>
<td>Trend of Financial Viability</td>
</tr>
<tr>
<td>C3</td>
<td>Efficiency assessment for pre-surgical activities</td>
</tr>
<tr>
<td>F3</td>
<td>Cash Management</td>
</tr>
<tr>
<td>C4</td>
<td>Appropriacy assessment</td>
</tr>
<tr>
<td>F4</td>
<td>Trend of Cash Management</td>
</tr>
<tr>
<td>C5</td>
<td>Clinical Quality assessment</td>
</tr>
<tr>
<td>F5</td>
<td>Assets and Liabilities Management</td>
</tr>
<tr>
<td>C6</td>
<td>Clinical Risk and Patient Safety assessment</td>
</tr>
<tr>
<td>F6</td>
<td>Trend of Assets and Liabilities Management</td>
</tr>
<tr>
<td>C7</td>
<td>Maternity and childhood process assessment</td>
</tr>
<tr>
<td>F7</td>
<td>Level of satisfaction with internal services;</td>
</tr>
<tr>
<td>C8</td>
<td>Emergency activities assessment</td>
</tr>
<tr>
<td>F8</td>
<td>Level of satisfaction with management systems (budget and control systems, training, etc.)</td>
</tr>
<tr>
<td>F9</td>
<td>Average wage costs</td>
</tr>
</tbody>
</table>
In order to provide an adequate representation of the results reported by the health authorities in each of the areas identified, a “target” diagram was used, divided into five assessment bands. The more a local health authority is capable of reaching objectives and obtaining results in the various performance areas, the nearer the centre (the green area) is the performance indicator (figure 3). Each indicator is represented by a code, as illustrated in table n.1, and by a symbol: a circle or a bell. The indicator code is in a circle if the data source has statistic relevance; it is near a bell if the data source is an “ad hoc” assessment (see § 3.2).

Figure 3 – The “target diagram” to represent the authority performance

Assessment levels were divided into five different bands:
• Dark green band, closest to the centre of the target, corresponding to excellent performance; on a five-band assessment scale, it represents a score of between 4 and 5;
  
• Light green band, corresponding to good performance and a score of between 3 and 4;
  
• Yellow band, where assessment is between 2 and 3 and performance, although not negative, leaves plenty of room for improvement;
  
• Orange band where assessment is between 1 and 2 and shows a worrying situation; performance can and must be improved;
  
• Red band, where performance assessment is below 1.

In order to be able to classify measurements regarding the indicators in each area the following reference criteria were taken into consideration:

• Where this exists, a recognized international standard was considered;
  
• Where no international standard exists, the regional average was considered, corrected with any risk adjustment factors to make it possible to compare the health authorities;
  
• In some cases, especially in the ad hoc assessment processes described below, the positioning in a band was carried out with the involvement and endorsement of the General Managers who defined the “score” on the basis of the existence or otherwise of elements looked for by the survey and specified in the descriptions of assessment objectives; if, for example, the object of assessment was the application of a regional resolution regarding the setting up of a Oncological District Centre for the coordination of oncological care pathways, the research group and directors gave the green band, representing a score of 5, to
those health authorities which could actually count on an active and recognizable Oncological District Centre in their area.

Each local health authority therefore has its own target which summarizes its six-area performance results into 47 overall indicators. The areas of the assessment framework include indicators supplied by data from the regional information system, health authority budgets and systematic surveys of statistical significance.

Each indicator in most cases actually represents the synthesis of a “tree” of indicators, which feed the synthetic result, as shown in following paragraphs as examples (see § 4.1;4.2).

“Ad hoc” assessment processes

In methodological terms, the research group intended for the performance assessment system of Tuscan health authorities to be supplied by systematic information flows, from reliable and definite sources and processing methods.

However, the provision of a systematic information flow that is both certain and reliable on a regional level requires a considerable amount of time and effort on the part of all the players in the system. This investment should therefore only be made for those aspects which require long-term attention and where regional monitoring is essential in order to assess the overall processes involved in improving the health system and the population’s health.

Often, however, on both the individual health authority and the regional level, it can be extremely useful and necessary to have fast access to information and data capable of showing the impact of certain decisions or the reality of certain situations in the organization or provision of some services. These may be precise situations considered to be both critical and significant by management. In these cases the idea of setting up a systematic survey is not feasible; instead, an integrated survey can be set up within the systematic assessment framework, named by the research team as “ad hoc assessment”.
These are processes with an extremely precise and specific range of analysis (figure 4), within which a simple response to the basic question is sought for, and where the expected result may even be of a qualitative type, subsequently transformable into quantitative terms if necessary.

Figure 4 – Evaluation processes

The response times expected are short, and the modalities used to activate the survey process can also be of an external type, that is, without the involvement of internal players involved in the delivery of services or in the carrying out of the activities under analysis. The logic behind these ad hoc assessment processes is that of providing a picture of the situation rather than a “film” with a before, during and after. The measurement gives a picture of the situation at the moment it is analyzed.

The indicators revealed through this type of survey can be considered as “sentry signals”, useful for the activation of any
subsequent more in-depth surveys. In the context of the Tuscany Region, this methodology can be useful for:

- Verifying to what extent a highly critical Regional Resolution has been implemented;
- Verifying the presence of certain critical situations in the delivery of services, perhaps following reports from associations, citizens or local bodies;
- Analyzing the state of a service or activity and the differences between various local situations in order to guide and support the planning process at a regional and health authority level.

Many kinds of tools can be used for ad hoc assessments. In the performance assessment framework for the health authorities of Tuscany the following tools were employed:

- **Focus groups**, consisting of qualitative surveys with the involvement of a selected group of users in order to discuss opinions, assessments and perceptions regarding the health care received (Holloway B., Mobbs D., 1994; Krueger R.A, 1994; Mitchell K., Branigan P., 2000);
- **Structured observations**: qualitative surveys based on the passive observation of the delivery of a service or activity according to a specific scheme, sometimes including photographic images of the situation under observation;
- **Simulated user experience**, a qualitative survey during which the researcher takes on the role of a user in order to try out the service in question either directly or by telephone;
- **Structured interviews**, consisting of qualitative surveys in the form of in-depth interviews with users/patients, following a pre-established line of questioning.
Results

In the following paragraphs are shown in details some of the indicators concerning the clinical and health assessment area and external area as reporting examples of the evaluation performance system.

Clinical and health assessment

In the clinical and health assessment area, some of the indicators corresponds to a summary of more indicators, while others are representative of themselves. For example, the appropriacy measurement is done by a tree of determinants (see figure 5). The latter includes important indicators such as:

- the percentage of medical DRGs discharged by surgical wards;
- the rate of surgical interventions performed in outpatient settings, such as the carpal tunnel release and the procedure on the cataract;
- the rate of operating room procedures performed in day surgery for 21 surgical DRGs, for which the Region identifies a percentage to reach;
- the inpatient recovery reduction rate for 29 medical DRGs identified by the Region as well;
- the rate of laparoscopic cholecystectomy treated in day surgery.
Figure 5 – Appropriatness

Clinical and health assessment

APPROPRIACY

% medical DRGs discharged by surgical wards
Outpatient surgical DRGs rate
Day surgery rate
Inpatient recovery reduction for medical DRGs
Day surgery rate for laparoscopic cholecystectomy
Carpal tunnel
Cataract

Figure 6 shows, for example, the performance of health authorities in Tuscany (AUSL) regarding one of the indicators in the appropriacy tree i.e. the percentage of medical DRGs discharged by surgical wards.

Figure 6 – Tuscan Health Authorities performance about

Clinical and health assessment

Appropriacy indicator:
percentage of medical DRGs discharged by surgical wards

<table>
<thead>
<tr>
<th>AUSL 3 PT</th>
<th>AUSL 5 PT</th>
<th>AUSL 11 EM</th>
<th>AUSL 10 FT</th>
<th>AUSL 2 LU</th>
<th>AUSL 6 LI</th>
<th>AUSL 7 SI</th>
<th>AUSL 4 PO</th>
<th>AUSL 1 MC</th>
<th>AUSL 9 GR</th>
<th>AUSL 9 AR</th>
<th>AUSL 12 VI</th>
<th>AOU CAREGI</th>
<th>AOU PUGNA</th>
<th>AOU SENESE</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,68</td>
<td>8,49</td>
<td>8,57</td>
<td>8,65</td>
<td>9,71</td>
<td>10,61</td>
<td>10,67</td>
<td>10,68</td>
<td>10,88</td>
<td>11,16</td>
<td>12,40</td>
<td>14,52</td>
<td>8,64</td>
<td>9,57</td>
<td>11,93</td>
</tr>
</tbody>
</table>
appropriacy

The indicator concerning the efficiency assessment for inpatient activities considers the average length of stay across medical and surgical patient groups. The pathologies taken into account were heart failure, stroke, acute myocardial infarction, cholecystectomy (traditional and laparoscopic), malignant uterus neoplasia, malignant prostate neoplasia, pneumonia, gastrointestinal bleeding, politrauma, hysterectomy, and prostatectomy. For each of them, the average length of stay, standardized by age and sex, and the coefficient of variation were calculated, even if only the first one was considered to assign the performance evaluation; the second one was expressed to deepen the analysis but it is not considered in the score calculation.

Figure 7 illustrates the average length of stay of stroke patients, that is one of the longest of all patient groups; the regional value in 2004 was 10,34 days, with a large variability among Tuscan Health Authorities, and a slight increase as to the precedent year. Trends over time are presented for most of the indicators, even if the performance is attributed considering only the last available value.
Figure 7 – Tuscan Health Authorities performance about efficiency for stroke patients

Clinical and health assessment

Efficiency assessment for inpatient activities: average length of stay of stroke patients

Regarding the maternity and childhood process, that was one of the particular focus of the study, the tree is made up of several indicators about hospital delivery (illustrated in figure 8):

- the rate of standardized Caesarean deliveries, that includes only women at their first, non-twin birth, after the thirty-eight week of pregnancy and with the baby in a vertex position;
- the spontaneous delivery rate, that concerns deliveries performed spontaneously, without a pharmacological induction;
- the episiotomy rate, standardized with the same criteria as the Caesarean rate;
- the Newborn Apgar rate, that takes account of the newborns with a Apgar score below 7 at the 5th minute.

Moreover, it is pointed out an indicator about the vaginal birth after caesarean section; this is not included in the maternity and childhood
process evaluation because of the different medical prospective about the issue, but it is indicated to show the large differences among the Tuscan Health Authorities.

Figure 8 –Maternity and childhood process

Clinical and health assessment

MATERNITY AND CHILDHOOD PROCESS

- Standardized Caesarean rate (NTSV)
- Spontaneous Delivery rate, without pharmacological induction
- Standardized Episiotomy rate (NTSV)
- Newborn Apgar rate
- Vaginal Births After Caesarean Section rate

In particular, the rate of NTSV (Nullipar, Terminal, Simple, Vertex) Caesarean deliveries, is illustrated in Figure 9. It has to be observed the great variation between the values, which underlines a difference in the behavior of the medical doctors. Data source, as well as for all maternity and childhood process indicators, is the CAP Regional data flow, which registers all Tuscan deliveries. The year of pertinence is 2003, because data of the last year are not available before September.
Figure 9 – Tuscan Health Authorities performance about maternity and childhood process.

**Clinical and health assessment**

**Maternity and childhood process assessment:**

**NTSV Caesarean rate**

The external assessment involves various types of users for gathering the level of satisfaction about some services received.

The subjects involved in the user satisfaction survey were:

- Users of primary care services
- Users of preventative services
- Users of services making up care pathways; in line with regional health plan guidelines, particular attention was paid to strategic pathways for the monitoring of oncological, maternity and childhood, and emergency pathways.

Table 2 shows the tools used for gathering data regarding satisfaction of each type of users.
Table 2 – Tools utilized for external assessment

<table>
<thead>
<tr>
<th>TYPE OF USERS</th>
<th>TOOLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary care services; Preventative services</td>
<td>Telephone survey to citizens</td>
</tr>
<tr>
<td>Maternity and childhood pathway</td>
<td>Telephone survey to women who have recently delivered</td>
</tr>
<tr>
<td>Emergency pathway</td>
<td>Telephone survey to users of ED</td>
</tr>
<tr>
<td>Oncological pathway</td>
<td>Focus group</td>
</tr>
</tbody>
</table>

All telephone surveys were conducted by using the CATI (Computer Assisted Telephone Interviewing) method in collaboration with the Statistic Sector of Tuscany Region. The scale adopted for the satisfaction questions is a five choices scale: extremely satisfied; very satisfied; fairly satisfied; not very satisfied; totally dissatisfied. In the implementation phase the median choice “fairly satisfied” has switched in “partially satisfied” under the request of local authority managers who affirm that it’s more helpful.

As regards the oncological pathway, considering the type of patients involved and the delicate nature of the emotional aspects of the pathology, it was more appropriate to employ a qualitative tool in the form of the focus group.

The people interviewed for the assessment of primary care, diagnostic, outpatients and preventative services were citizens resident in the areas covered by the L.H.A. structures (who had made use of preventative and/or care services in that area in the 12 months preceding the survey). Two surveys were performed in this theme: the
first on June 2004, in the pilot study that involved three health authorities and the second in March 2005, in the implementation phase at which participated all the local authorities of Tuscan Region left.

This survey gathered the indicators from the number D2 to the number D6 of the external assessment section.

The sampling of 560 citizens for each health authorities was calculated by the Statistic Sector of Tuscany Region to get statistical relevance for the primary care satisfaction (D2), diagnostic satisfaction (D3), outpatients services satisfaction (D4), public awareness of the existence of the public relations office (D6) and the other preventative services supplied by local authority. The indicator D5, that is the level of satisfaction for users of preventative services, is not statistically significant and it is classified as an indicator of the ad hoc assessment, represented in the target diagram as a bell.

The telephone interviews about maternity and emergency services were structured in order to realize how many patients, actually follow the pathway suggested by the regional guidelines. Then, for each step of the path, was investigated the level of satisfaction; all the answers about level of satisfaction are summarized in the indicators D8 and D9. The samplings were calculated by the Statistics Sector of Tuscany Region approximately in the number of 400 women who have recently delivered and 600 users of emergency department per health authority. The women who delivered and users of emergency services were recruited in the hospitals.

This process needed 3-4 months for maternity and childhood path and 2-3 weeks for the emergency path in according to the number of births and accesses to the emergency department.

In pilot study the surveys were performed in July and September 2004, respectively for emergency care and maternity and childhood services. In the implementation phase, these surveys are still in progress.
In regard to the survey addressed to citizens, in figure 10, it is reported as an example in the figure 12 it is represented the tree of the level of patient satisfaction with primary care.

In the global level of patient satisfaction with primary care, as well as the outpatient’s and diagnostic services, the patients (citizens that are users of services) expressed their own global judgment of services.

Figure 10 – Level of patient satisfaction with primary care.

External assessment

- Organizational aspects and waiting times
- Health communication
- Kindness and availability
- Professional competences
- Capacity to address patient through paths and services
- Availability for home visits

In the tree there are some of the aspects that can determine the global satisfaction: from the organizational aspects to the availability for home visits as in the case of satisfaction with primary care. The survey revealed that the global level of satisfaction is stronger correlated with “soft” aspects such as communication and the kindness of physicians than with the “hard” ones such as availability for home visits and waiting times.

In general, the indicators carried out by citizens surveys are positioned in the green and dark green bands of the target. The best performance is reached by the primary care: in each health authority more than 80% of patients are totally or very satisfied.
Even if the results show that all patients are satisfied, there are differences among the health authorities as the confidence intervals show: two authorities have a performance below average and one is positioned above average (with 99% of c.i.), see figure 11.

**Figure 11 – Global assessment of primary care.**

**External assessment – Primary care**

In regard to the satisfaction indicators of maternity and childhood path it is reported as an example the tree of the maternity satisfaction indicator D9, in figure 12.
Evaluating Performance in the Tuscan Health Care System

Figure 12 – Level of global satisfaction of maternity and childhood pathway.

**External assessment**

Each box below the global satisfaction level contains, just like the Chinese boxes, a pool of items regarding to the specific phase of the pathway: as example, the average satisfaction before birth is formed by the satisfaction perceived with the obstetrics, physicians and nurses concerning the care received, the kindness and professional skills; the satisfaction with the comfort, with the health communication (concerning several points) and the satisfaction with the pain control during the hospital stay.

**Some final considerations.**

The tool employed will undoubtedly be extended and improved in the future, both in terms of the choice of indicators and the definition of the object of measurement. However, the setting off of this initial experience and its conclusion in a sufficiently complete manner was essential in order to be able to assess the validity of the tool.
Although the research team is fully aware that the system needs improving, the results obtained up to now allow us to highlight the following aspects:

• For the first time data and measurements capable of representing various aspects of health authority trends have been made available, integrating data from the regional information system and field surveys;

• The system has provided indications from a very recent timescale, referring to information regarding 2004 for the economic financial and health areas, and even the first part of 2005 for the internal and external assessments for the local health authorities in the implementation phase. The system will therefore be able to provide rapid support for management decisional processes and the regional council;

• Handled and represented in a uniform manner, the information obtained allowed an effective and constructive comparison between the various health authorities. The system was made “unassailable” by the decision not to use data and information from the cost accounting system of health authority, but only from the general accounting system, which it’s public, or from regional information flows regarding hospital discharge forms or specific field surveys conducted by external players. It also prevented the occurrence of justification processes and requests for specific information in considering health authority data;

• The system also made it possible to obtain a clear picture of aspects of health authority management where problems are of a regional nature, and those where they are created by the individual health authority. In fact, where a negative performance was indicated for all health authorities, there is clearly a general problem that requires attention at a regional level. When, instead, performance is variegated and differentiated, it is clear
that some of the health authorities can learn from the others, and solve the risk of being self-referential.

• Lastly, the system offers the regional council a more refined tool, one that is more suited to the assessment of health authority management, especially if the assessment can be repeated systematically and coherently with the board of directors. The assessment system is clearly not intended to replace the relationship based on trust between councilor and directors, but it is undoubtedly capable of providing definite, multidimensional elements which can explain more clearly the bases of the mission.

While there are certainly many positive elements in the assessment system implemented, there are also many aspects, which the Tuscany Region will continue to work on over the next year. In fact, specific attention needs to be paid to the systematic assessment of primary care and preventive activities about which the system is, up to now, only capable of giving ad hoc assessments because of the lack of uniformity and reciprocity in the ways in which services are measured. Furthermore, there are plans for the setting up of a performance assessment system that is better calibrated to the specific mission of the university hospitals (Careggi, Mayer, Pisa and Siena) where research and teaching aspects also deserve an analytical approach.

In conclusion, the performance evaluation system proposed in Tuscany seems to have a fair equilibrium between the regional government’s need to control the local health institutions and the local institutions’ need to control their own performance. “New strategic health authorities should have a coordinating role for performance measurement, and still collect hard data about performance in healthcare organizations, but also recognize the need to use soft information and not forget the socio-economic context within which health organizations are working” (Greener, 2003). To avoid the risk that local managers may manipulate data or that they will not use the
performance evaluation system because they don’t believe in the relevance and significance of the indicators proposed by the regional government, it is important that all the actors of the healthcare system, local managers and regional administrators, participate and share their opinions in projecting the evaluation indicators.

Health care institutions must be encouraged to measure their performance locally, creating an appropriate culture of evaluation and learning, focusing attention not only on final results but also on the causes and processes that determined them. The regional administration can support this process coordinating a benchmarking system to help local organizations learn from other experiences, overcome the self-reference and improve even without the presence of a competitive environment.
References


Ford Robert C., Fottler Myron D.; *Creating Customer-Focused Health Care Organizations*; Health Care Management Review; Fall 2000; 25; 4; page 18 - 33.

Greener J.; (2003) *Performance in the national health service, the insistence of measurement and confusion of content*, Public Performance & Management Review; March 2003; 26; 3; page 237 - 250.


