

# Results of a Benchmarking Exercise for Primary Care Teams in Barcelona, Spain

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**Objective.** To identify primary care teams (PCT) with the best overall performance and compare these with other PCT with benchmarking methods.

**Design.** Descriptive, cross-sectional study of a set of indicators for the year 2002.

**Setting.** City of Barcelona (northeastern Spain).

**Participants.** Thirteen seven PCT with more than 2 years' experience, and 771 811 inhabitants in the catchment area.

**Main measures.** Indicators were chosen from among those proposed by an advisory group, depending on feasibility of obtaining information. A total of 17 indicators in 4 dimensions were studied: accessibility, clinical effectiveness, case management capacity, and cost-efficiency. Each PCT was scored for each indicator based on the percentile group in the distribution of scores, and for each dimension based on the mean score for all indicators in a given dimension. Overall score for PCT performance was calculated as the weighted sum of the scores for each dimension. As descriptive variables we analyzed time operating under the revised administrative system, patient visits per population served, the population's economic capacity and age of the population.

**Results.** Nine PCT were identified as the *benchmark* group. Teams in this group had been operating under the revised administrative system for significantly longer than other PCT. In comparison to other PCT, the benchmark group obtained higher scores on all four dimensions, better results on 14 separate indicators, the same results for 1 indicator, and worse results for 2 indicators.

**Conclusions.** Benchmarking made it possible to identify PCT with the best performance, and to identify areas in need of improvement. This approach is a potentially useful tool for self-evaluation and for stimulating a dynamic for improvement in primary care providers.

**Key words:** Evaluation. Benchmarking. Results. Synthetic scoring. Indicators. Primary care.

RESULTADO DE LA APLICACIÓN DEL *BENCHMARKING* EN LOS EQUIPOS DE ATENCIÓN PRIMARIA DE BARCELONA

**Objetivo.** Identificar los equipos de atención primaria (EAP) con mejores resultados globales y compararlos con el resto de los EAP mediante la aplicación de una metodología de *benchmarking*.

**Diseño.** Estudio descriptivo, transversal, de un conjunto de indicadores del año 2002.

**Emplazamiento.** Ciudad de Barcelona.

**Participantes.** Un total de 37 EAP con más de 2 años de funcionamiento y 771.811 habitantes de referencia.

**Mediciones principales.** La selección de indicadores se realizó a partir de las propuestas de un grupo asesor y la factibilidad de la información. Se seleccionaron 17 indicadores agrupados en 4 dimensiones: accesibilidad, efectividad, capacidad resolutoria y relación coste-eficiencia. Cada EAP obtuvo una puntuación por indicador, asignada según el percentil que ocupó en la distribución de valores, y una puntuación por dimensión, que era la media de la puntuación de los indicadores que agrupaba. Se elaboró una puntuación sintética del resultado del EAP a partir de la suma ponderada de las dimensiones. Como variables descriptivas se analizaron el tiempo de reforma, las visitas por población atendida, la capacidad económica de la población y el envejecimiento.

**Resultados.** Se identificaron 9 EAP como grupo *benchmark* (BM). El BM presentó más tiempo de implantación de la reforma que el resto de los EAP, con diferencias estadísticamente significativas. El BM obtuvo puntuaciones más elevadas en las 4 dimensiones, mejores resultados en 14 indicadores, igual resultado en 1 e inferior en 2.

**Conclusiones.** El *benchmarking* permitió reconocer a los EAP con mejores resultados e identificar los ámbitos de mejora. Puede ser un instrumento útil de autoevaluación y para estimular dinámicas de mejora de los proveedores de atención primaria.

**Palabras clave:** Evaluación. *Benchmarking*. Resultados. Puntuación sintética. Indicadores. Atención primaria.

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## Introduction

Recent decades have seen the development of different methods and strategies aimed at formulating the outcomes of health services so that these can be measured and the quality of care enhanced.<sup>1-3</sup> Some of these strategies have been designed to establish supplier profiles, compare services and identify those that yield the best results (called “benchmarks”). Identifying benchmarks has made it possible to establish goals for improvement which have been used, in the absence of standard values, as alternative reference systems.<sup>4</sup> The theoretical basis for benchmarking in health care has been laid out in a number of articles dealing mainly with hospital care.<sup>5-8</sup> Experiences in the primary care setting, in contrast, are scarce.<sup>9</sup>

In Barcelona, finalization of the administrative reforms in the primary care service has given way to efforts centered on fomenting high-quality service and improving service evaluation.<sup>10-12</sup> In this connection the Consorci Sanitari de Barcelona (CSB) developed a benchmarking method as a strategy for improving the performance of primary care teams (PCT) and for increasing the transparency of the findings obtained by public health services. This latter aspect facilitates cooperation and commitment by members of a given community, and thus potentiates the social capital generated by public services.<sup>13</sup>

In developing this new dynamic it was considered fundamental to involve professionals through the formation of an advisory group.<sup>14</sup> In accordance with the indicators and recommendations proposed by the advisory group, we aimed to identify the PCT that produced the best overall results and to compare their performance with that of other PCT.

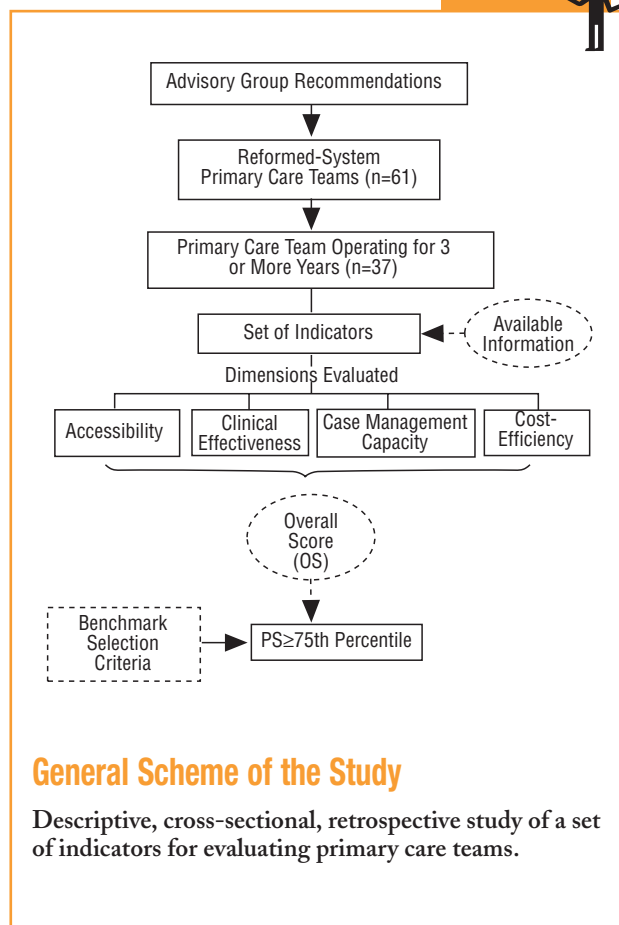
## Methods

This was a descriptive, cross-sectional, retrospective study of a set of indicators for evaluating PCT, carried out in 2002. A total of 37 PCT in the city of Barcelona (northeastern Spain) that had been operating for more than 2 years were included in the evaluation; this period was considered the minimum time needed for quality improvement activities to be implemented. The PCT served a reference population of 771 811 inhabitants, i.e., 51% of the city’s population.

Indicators were chosen from a set of factors identified by an advisory group in 2003 as having high priority.<sup>14</sup> A total of 57 indicators were eventually chosen for study (Annex).

Because of the retrospective nature of the study, the choice of indicators was conditioned by the information available in different databases used by the CSB to evaluate PCT. The databases provided sufficient information for 20 of the indicators. Three indicators of prescribing practices were excluded to avoid overrepresentation, and the 17 final indicators chosen were grouped into 4 basic primary care dimensions:<sup>2,15</sup> accessibility, clinical effectiveness, case management capacity, and cost-efficiency (Table 1). To

### Material and methods



### General Scheme of the Study

Descriptive, cross-sectional, retrospective study of a set of indicators for evaluating primary care teams.

develop the indicators and identify benchmarks we followed the recommendations for minimum methodological requirements proposed by the advisory group (Table 2).

The benchmark group was identified from the overall score for the results for each PCT, defined as the weighted sum of the scores in each of the four dimensions. In accordance with the advisory group consensus, the weighting assigned to each dimension was 30% for accessibility, 40% for clinical effectiveness, 10% for case management capacity, and 20% for cost-efficiency.

At the benchmark group we chose PCT above the 75th percentile for overall score. We excluded from the benchmark group those PCT that scored below 5 on any of the dimensions.

As descriptive variables for the PCT we used time operating under the reformed administrative system, number of visits by the population served, percentage of the population >64 years of age, and familial economic capacity index (FECI), an overall indicator incorporating information from the census (income, telephone bills, type of vehicle, property value, etc).<sup>16</sup>

The results for the benchmark group and the other PCT in each dimension are reported. Mean value and 25th, 50th, and 75th percentiles were calculated with the Tukey method, and percentage variation in the results between groups was reported. Student’s *t* test was used to compare mean values, and the differences were considered significant at *P* < .05. All statistical analyses were done with version 9.0 of the SPSS.

**TABLE 1**  
**Selected Indicators and Information Sources\***

Indicator	Information Source	Best Results: Interpretation
<b>Accessibility</b>		
AC1 % users who waited >48 hours to see their family doctor	Primary health care questionnaire and follow-up	High values
AC2 Inhabitants per family doctor	Numerator: central registry of patients covered/census Denominator: primary health care questionnaire and follow-up	Low values
AC3 Inhabitants per nursing professional	Numerator: central registry of patients covered/census Denominator: primary health care questionnaire and follow-up	Low values
AC4 Population served, adjusted by age (direct method)	Numerator: primary health care questionnaire and follow-up Denominator: central registry of patients covered/census	High values
<b>Clinical effectiveness</b>		
EF5 % patients with hypertension whose most recent blood pressure measurement was <169/95 mm Hg	PCMR1 computerized/PCMR audited	High values
EF6 % patients with COLD2 with diagnosis confirmed by spirometry (preceding 2 years)	PCMR computerized/PCMR audited	High values
EF7 % patients older than 64 years who received influenza vaccination	Numerator: Barcelona public health registry Denominator: Census	High values
EF8 Prescription of long-acting benzodiazepines in patients older than 64 years	Numerator: Datamart Denominator: primary health care questionnaire and follow-up	Low values
EF9 Prescription of antibiotics in patients 0 to 14 years old	Numerator: Datamart Denominator: primary health care questionnaire and follow-up	Low values
EF10 % patients receiving palliative care through a home care program	Primary health care questionnaire and follow-up	High values
<b>Case management capacity</b>		
CR11 % referrals to specialist non-hospital care per population seen	Primary health care questionnaire and follow-up	Low values
CR12 % referrals to specialist hospital care per population seen	Primary health care questionnaire and follow-up	Low values
<b>Cost-efficiency</b>		
CE13 Cost of team per population seen	Numerator: funds budgeted for primary care team salaries Denominator: primary health care questionnaire and follow-up	Low values
CE14 Cost of complementary tests per population seen	Numerator: funds budgeted for primary care team salaries Denominator: primary health care questionnaire and follow-up	Low values
CE15 Age-adjusted pharmaceutical costs per population seen (indirect method)	Numerator: Datamart Denominator: primary health care questionnaire and follow-up	Low values
CE16 Cost of defined daily dose of antihypertensive medication	Datamart	Low values
CE17 % generic drugs prescribed	Datamart	High values

\*PCMR indicates primary care medical record; COLD, chronic obstructive lung disease; Datamart, database for pharmaceutical costs in the Catalanian health service.

## Results

We identified 9 PCT as benchmark teams (Table 3). Two PCT that scored above the 75th percentile were excluded because they scored below 5 on case management capacity. The benchmark group comprised teams that had been operating for longer under the reformed administrative system, with a mean of 12 years (95% CI, 8.64–14.36 years), whereas mean time for the other teams was 8 years

(95% CI, 6.56–9.58 years); this difference was statistically significant ( $t: 2.24; P < .031$ ). The FECI indicated that the population served by the benchmark group had a higher economic capacity (50th percentile for the benchmark group: 75.9; for the population served by other PCT: 93.3). The percentage of the population older than 65 years was similar in the 2 groups (benchmark: 20.14%, 95% CI, 16.90–23.39; other PCT: 21.60%, 95% CI, 20.32–22.88), as was the usage rate of the population (benchmark group: 8.02 visits per per-

**TABLE 2** Minimum Recommendations for Methodological Rigor in Preparing Indicators Proposed by the Advisory Group

Unit of analysis
Primary care team
Indicators taken from data registries
Numerator
Denominator
Information sources
Data collection
Denominators of choice
Population served
Population identified from data in the central registry of patients covered or from the population census
Indicators calculated
Age-adjusted
Specific age groups

**TABLE 3** Overall Score for Benchmarks for Improvement and Score for Each Dimension Evaluated\*

Primary Care Team	Clinical Effectiveness	Case Management Capacity	Resolutive Capacity	Cost-Efficiency	Overall Score
8-G	8.5	5.3	7.0	6.8	6.7
9-F	8.5	5.0	7.0	7.2	6.7
2-B	6.5	7.0	8.0	5.6	6.7
9-D/9-G	6.0	7.3	7.0	6.8	6.8
1-A	7.5	7.0	6.0	8.0	7.3
7-C	7.5	7.0	8.0	7.6	7.4
9-E	8.0	7.0	7.0	9.2	7.7
1-D	10.0	5.3	9.0	8.8	7.8
Mean*	6.1	5.8	6.0	6.1	5.9
50th percentile*	5.5	6.0	7.0	6.0	6.1
Maximum*	10.0	9.3	9.0	4.2	7.8
Minimum*	2.5	2.3	2.0	2.4	3.2

\*Estimates for the entire group of primary care teams.

**TABLE 4** Results for Indicators for Primary Care Teams in the Benchmark Group and Other Teams

Code	Benchmark n=9				Other Teams n=28				Total n=37	
	Mean	Standard Deviation	Percentiles		Mean	Standard Deviation	Percentiles		Mean	Standard Deviation
			50	25-75			50	25-75		
Accessibility										
AC1	29.53	24.17	25.07	16.24-36.60	32.44	25.01	24.07	12.69-49-81	31.74	24.46
AC2	1580.62	128.03	1553.83	1480.03-1664.46	1747.84	207.08	1763.25	1637.1-1868.58	1710.00	203.30
AC3	1609.78	552.73	1412.99	1223.7-1990.71	1836.15	753.02	1640.20	1446.63-1766.20	1785.84	712.49
AC4	89.44	11.51	93.05	85.85-94.75	79.59	9.13	80.50	72.3-84.05	81.78	10.40
Clinical effectiveness										
EF5	84.64	12.98	85.24	78.29-95.05	69.23	18.45	75.00	63.71-84.46	72.75	18.39
EF6	51.02	24.18	53.25	32.99-64-29	50.18	34.53	50.00	18.94-82.14	50.36	32.20
EF7	62.33	10.23	60.11	56.48-72.40	55.52	8.21	55.92	49.33-61.03	57.03	9.01
EF8	0.62	0.17	0.66	0.46-0.73	0.53	0.18	0.50	0.44-0.60	0.88	0.18
EF9	0.99	0.30	1.03	0.72-1.25	1.03	0.36	0.96	0.74-1.32	1.02	0.35
EF10	7.22	2.79	7.49	5.57-8.67	8.00	4.39	7.25	5.69-9.89	7.78	3.96
Case management capacity										
RCR11	43.55	10.64	45.75	33.52-52.84	54.86	24.36	45.32	35.92-74.63	52.35	22.43
CR12	4.40	2.35	3.67	2.95-6.27	6.99	3.30	6.07	4.59-8.88	6.40	3.27
Cost-efficiency										
CE13	88.60	17.27	83.26	75.04-96.77	88.43	13.91	86.03	81.27-93.01	88.47	14.45
CE14	15.97	3.63	15.83	15.07-16.71	18.34	2.14	18.49	17.23-19.56	17.82	2.68
CE15	261.52	19.78	259.80	251.72-271.36	268.34	35.47	269.83	244.82-285.93	266.83	32.51
CE16	33.20	3.66	32.24	30.58-35.23	37.05	3.17	37.60	34.38-39.31	36.19	3.61
CE17	14.43	4.28	13.61	11.38-16.91	9.54	3.32	8.56	7.09-11.65	10.63	4.05

son, 95% CI, 7.02-9.01; other PCT: 7.92, 95% CI, 7.31-8.53).

Table 4 summarizes our descriptive analysis of the 17 indicators for the 37 PCT together, and for the 9 teams in the benchmark group and the 28 teams in the other group. Figure 1 shows that the benchmark group obtained higher scores than the other PCT on all four dimensions analyzed, with the greatest difference between groups for the clinical effectiveness dimension.

Of the 17 indicators evaluated here, scores were higher in the benchmark group than in the other PCT for 14, the same in both groups for 1, and lower in the benchmark group for 2. The benchmark group obtained better results for indicators of generic drug prescribing (51% better), hospital referrals (37%), follow-up of patients with hypertension (23%), and non-hospital referrals (21%). The indicators that showed a higher score in the group of other PCT was prescribing of benzodiazepines for patients more than 64 years of age and patients receiving palliative care at home (Figure 2).

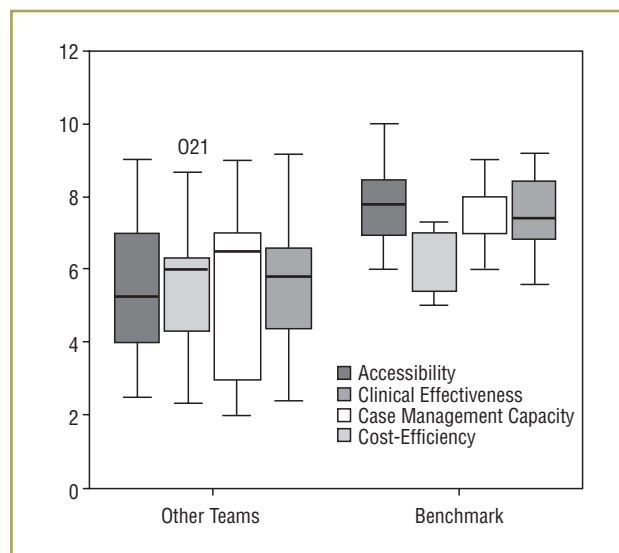
## Discussion

The methodological proposals incorporated through the benchmarking strategy made it possible to compare PCT and to identify a group of PCT that obtained better overall results in the dimensions evaluated here. The novel aspect of the system we used is that it integrated a number of indicators into a single overall score. This provided a general evaluation of PCT and also identified areas needing improvement with regard to basic attributes of primary care as the backbone of the health system.<sup>2,15</sup>

We excluded 2 PCT from the benchmark group because they did not reach the minimum score on one dimension—a criterion also used by the National Health Service in Britain.<sup>17</sup> As in similar studies, the benchmark group did not always obtain the best results for all indicators.<sup>18</sup> It is interesting to note that PCT in the benchmark group had been working under the reformed administrative system for significantly longer than other PCT.

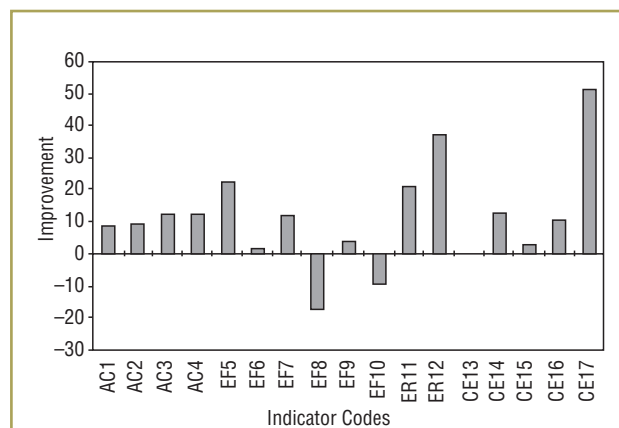
The dimension for which the largest number of indicators could be studied was cost-efficiency, followed by accessibility. It was not possible to evaluate the continuity of care and user satisfaction/health outcomes dimensions. This indicates that information collection and follow-up in PCT places more emphasis on indicators of activity, structure, pharmaceutical practice, and cost indicators than on process and outcome indicators.

The lack of studies on benchmarking for primary care services limits the comparisons that can be drawn; however, indicators similar to those analyzed here are usually chosen for outcome evaluations.<sup>2,3</sup> Influenza vaccination,<sup>2,3,19,20</sup> the number of inhabitants per physician and nursing professional, waiting time,<sup>2,19</sup> and the



**FIGURE 1**

Box and whisker plot of the dimensions evaluated here in the benchmark group and the group comprising other primary care teams.



**FIGURE 2**

Percentage variation of the mean for the benchmark group and all other primary care teams.

prescribing of antibiotics, benzodiazepines, and generic drugs<sup>2,21,22</sup> are some of the outcomes identified to date.

Among the limitations of this study we note those related with a large part of the data obtained from internal registries used by the PCT, as these registries have not been validated. The representativeness of the variables obtained by sampling medical records may be affected by size of the record, and by underrecording in medical records held in computer-readable form. Nevertheless, this information was obtained from the system to evaluate contract

Discussion  
Key points



### What Is Known About the Subject

- Benchmarking aims to measure and enhance the quality of services by reference to external criteria.
- Experiences published thus far center on the hospital setting.
- Publication of our results may help improve the process and the outcomes.

### What This Study Contributes

- The use of benchmarking makes it possible to incorporate the results of clinical practice into analyses of the quality of primary health care.
- Implementation of systematized, validated information-collecting systems would improve the performance of benchmarking strategies.
- Benchmarking is a quality improvement strategy that can be promoted through the health service administration.

fulfillment, which is regularly monitored, and thus no specific data recording measures were needed for the purposes of our benchmarking exercise. Another problem noted frequently is the difference in demographic characteristics between the populations being compared, and adjustment for disease severity.<sup>8,23-25</sup> In the present study some indicators were adjusted for age of the population, others were recorded by age group, and in still other cases the indicator could not be adjusted, or adjustment was considered unnecessary. Data on morbidity in patients seen at the centers that took part in this study were not available, so it was not possible to adjust the data for disease severity.

Earlier studies showed that among the promoters and users of benchmarking results, including health care professionals, health authorities, service users and service providers, it is the latter who benefit most from such studies, as the results allow service providers to generate and stimulate internal dynamics for improvement.<sup>6,26</sup>

Dissemination of the results is a fundamental feature of benchmarking strategies, and the finding of our study have been sent to primary care health professionals and service providers, scientific societies, and the media. In addition, the results of the benchmarking exercise reported here are available on open access from the CSB website.<sup>27</sup>

We feel that the importance of this benchmarking experience lies in the fact that in our setting, this is the first such exercise to be promoted by the health administration in the area of primary care.<sup>28,29</sup> The CSB should undertake further studies to determine whether the results improve after this strategy is implemented. This will require evaluation of its acceptability, the results of clinical practice, and the impact on decision-making by health care providers. Improvements will be needed in the validation of data used to measure clinical effectiveness, and in some cases it will become necessary to use a larger sample of medical records. Methods and techniques will need to be developed to measure aspects related with accessibility, case management capacity and continuity of care, among other elements. In this connection the CSB, in its further efforts to improve primary care services, is now analyzing telephone access to PCT, the use of protocols to coordinate care between the primary care center and the reference hospital, user satisfaction, and other outcome indicators that will allow us to obtain a view of the PCT for all dimensions requiring evaluation. Additional studies will be needed to determine the effectiveness of this strategy.

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## COMMENTARY

# Benchmarking in Organizations

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Benchmarking has been defined in many ways, and the best-known definition considers it a continuous process of measurement and comparison of products, services and practices against the best (benchmark).<sup>1</sup> It has been conceptualized basically as a way to conceive continuous learning. We owe the initial definition of the concept of benchmarking to Robert C. Camp, who noted that when someone in an organization opens a package and observes how it is wrapped, how it was delivered, how the addressee was identified, or how its contents were protected, and applies an idea or a practice to improve ways to send his own packages, it can be said that a culture of benchmarking has been integrated into his organization.

It is of course entirely wrong to think that anyone has a monopoly on good practice, good ideas or good strategies, and if we consider that the principles of continuous improvement are founded on systematic review of what we do and how we do it, we soon reach the conclusion that new ways to rethink ourselves need to be found.<sup>2</sup>

### Key Points

- Benchmarking is a continuous process of measurement and comparison against best practice.
- The 4 main types of *benchmarking* are internal, comparative, functional, and generic.
- The main challenge facing organizations is to become convinced that further improvement is always possible.

The first application of the concept to an actual business setting was undertaken by Xerox in 1979, when market needs forced the firm to examine and compare processes and costs with their Japanese competitors.

Different types of benchmarking have been developed. Internal benchmarking is used by organizations to compare the results of groups or systems with similar functions in

**TABLE 1**  
**Types of Benchmarking**

Types of Benchmarking	Internal	Competitive	Functional	Generic
Innovative practices			*	*
Usefulness to the organization	*	*		
Ease of obtaining data	*		*	*

order to identify best practice. Competitive benchmarking is aimed at identifying key aspects that make the competition better. Functional benchmarking makes it possible to learn functions used by specialized businesses (logistics, purchasing, or information systems, for example) and apply them to their own operation. Generic benchmarking refers to the internal culture of systematic learning.<sup>1</sup> The different types are classified in Table according to how they contribute to the development of innovative practices, their usefulness to the organization, and the ease of obtaining data.

Articles published to date<sup>2,3</sup> can be considered examples of internal benchmarking at the Consocio Sanitario de Barcelona, and of competitive benchmarking for different primary care teams that took part in the exercise.

The entire benchmarking process comprises four fundamental steps: planning or observation, data collection or research, analysis or comprehension of the results, and finally actions aimed at improvement. The article provides an appropriate description of the first 3 steps, and thus the study can be considered solidly based on planning, consensus, and participation.

The main challenge for organizations may well be the final step: real action. For a real response to occur, we may need to accustom ourselves to turning back up paths that seemed inevitable, questioning our truths, looking at ourselves from a different angle, and even abandoning practices that brought us success<sup>4</sup> in the past.<sup>3</sup>

The challenge does not lie in the process of change in itself. Everything that is needed is already available, even benchmarking. The main obstacle lies fundamentally in feeling a real need for change, no matter how small.<sup>4</sup> Another obstacle lies in identifying the benchmarks that are actually relevant for our organization. And finally, we need the courage to revolutionize our day-to-day practices. The changes in the outcomes depend on how we consider our structures and processes, and on how we manage even small details.<sup>5</sup> Discreet improvements in our practices can have considerable repercussions on the overall results anticipated.

In summary, it is evident that the first step in learning from our betters is self-criticism—the ability to see and feel ourselves as capable of constant improvement.<sup>6</sup> It is this manifest urge to change that ultimately gives rise to the need for benchmarking.

Work done to date is fundamental and necessary, but it will not be sufficient if it does not inspire further efforts for improvement. This is the challenge primary care teams must now rise to.

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**ANEX  
1****Indicators Agreed on by Consensus and Based on Feasibility of Obtaining Information From the Evaluation and Follow-up Database for Primary Care Teams, 2002**

	Feasibility of Obtaining Information	
	Yes	No
<b>1. Accessibility dimension</b>		
Telephone access		X
Mean number of calls to the primary care center to obtain an appointment		
Waiting time to see assigned physician	X	
Percentage of users able to see the physician within 48 hours		
Waiting time to be seen at the health center by another physician		X
Waiting time for users unable to see their physician within 48 hours		
Waiting time to admission		X
Mean waiting time from arrival at the center to admission		
Inhabitants per family physician	X	
Number of inhabitants >14 years old per family physician position (a position consists of a 36-hour working week; longer or shorter working hours recorded as the closest fraction)		
Inhabitants per nursing professional	X	
Number of inhabitants per nursing position (a position consists of a 36-hour working week; longer or shorter working hours recorded as the closest fraction)		
Time spent by primary care team on each visit		X
Number of minutes providing care per year for all family physicians, pediatricians and nursing professionals, including visits on Saturdays		
Population served	X	
Percentage of the population served related to total population assigned according to the census or covered according to the central registry, adjusted by age		
<b>2. Clinical effectiveness dimension</b>		
<b>2.1 Interventions for cardiovascular risk factors</b>		
Control of hypertension	X	
Number of patients with hypertension whose latest measurement was <140/90 mm Hg with respect to the total number of patients with hypertension seen, and the number of patients with diabetes whose latest measurement was <140/90 mm Hg with respect to all patients with diabetes seen		
Control of diabetes mellitus		X
Number of patients with diabetes whose latest laboratory values were HbA1c<8.0 or HbA1c<6.5 mg/dL, with respect to all patient with diabetes seen		
Treatment with anti-platelet aggregants in the population with ischemic heart disease		X
Number of patients with ischemic heart disease on antiaggregant treatment recorded or followed in the preceding year with respect to the total number of patients with ischemic heart disease seen		
Cardiovascular risk or coronary risk		X
Total population seen with cardiovascular risk factors (smoking, hypertension, hypercholesterolemia, diabetes mellitus) whose cardiovascular or coronary disease risk was evaluated in the preceding year and who were found to be at moderate or high risk for the next 10 years, with respect to the total population seen with cardiovascular risk factors		
Smokers in the population at risk for cardiovascular disease		X
Population of smokers seen with hypertension or diabetes or hypercholesterolemia with respect to the total population with hypertension, diabetes or hypercholesterolemia		
<b>2.2 Influenza prevention and COLD care</b>		
Influenza vaccination	X	
Population seen >64 years old with influenza vaccination with respect to the assigned population >64 years old according to the census or the central registry of users covered		
Confirmation of the diagnosis of COLD with spirometry		X
Patients with a diagnosis of COLD confirmed with spirometry during the preceding 2 years with respect to the total number of patients seen with COLD		
Smokers with COLD		X

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**ANEX  
1**
**Indicators Agreed on by Consensus and Based on Feasibility of Obtaining Information From the Evaluation and Follow-up Database for Primary Care Teams, 2002 (Continuation)**

	Feasibility of Obtaining Information	
	Yes	No
Patients seen with COLD with influenza vaccination with respect to the total number of patients seen with COLD		
<b>2.3 Care for mental disorders, degenerative bone and joint disease, the pediatric population, and home care</b>		
Prescription of long-acting benzodiazepines for persons >64 years old	X	
Number of prescriptions for long-acting benzodiazepines for the population >64 years old with respect to the total population seen >64 years old		
Prescription of NSAID	X	
Number of prescriptions for NSAID for the population >64 years old with respect to the total population >64 years old		
Classification of asthma in children		X
Population seen <15 years old with a diagnosis of asthma and evaluation of degree of severity (mild, moderate, severe) during the preceding year		
Prescription of antibiotics in the pediatric population	X	
Number of prescriptions for antibiotics for the population <15 years old with respect to the total population seen <15 years old		
Pressure ulcers		X
Number of patients >64 years old with pressure ulcers receiving home care with respect to the total population of patients >64 years old receiving home care at risk for pressure ulcers		
Palliative care	X	
Number of patients receiving palliative care through a home care program with respect to the total number of patients seen in home care		
<b>3. Case management capacity dimension</b>		
Referrals to specialist non-hospital care	X	
Referrals to the specialist non-hospital team per population seen		
Referrals to specialist hospital care	X	
Referrals to specialist hospital care per population seen		
Use of hospital emergency services		X
Population rate of use of hospital emergency services per population covered according to the census or central registry, adjusted by age and sex		
Referrals to hospital emergency services		X
Percentage of hospital emergency service visits referred by the primary care team with respect to total number of hospital emergency room visits		
Home care provided by PADES		X
Referrals from primary care teams to PADES teams per population receiving home care (ATDOM program), adjusted by age and sex		
<b>4. Continuity of care dimension</b>		
Place where the patient usually received health care		X
Percentage of the population surveyed who stated having the same general practitioner as 3 years ago		
Change in general practitioner		X
Percentage of the population seen who requested a different general practitioner during the preceding year (not including changes for administrative reasons)		
Home care visits (ATDOM program) for persons >74 years old		X
Home care visits in the population >74 years old covered, according to the census or the central registry		
Evaluation of social and health risks		X
Percentage admissions at social and health centers referred by the primary care team in which prior evaluation by the team was recorded		
Pre-Discharge care according to the PREALT5 protocol		X

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**ANEX  
1****Indicators Agreed on by Consensus and Based on Feasibility of Obtaining Information From the Evaluation and Follow-up Database for Primary Care Teams, 2002 (Continuation)**

	Feasibility of Obtaining Information	
	Yes	No
Percentage of hospital discharges from acute care and social and health centers included in the PREALT program with contact with the primary care team within 48 hours of the date of discharge		
Evaluation of acute care hospital readmissions from the PREALT program	X	
Percentage of acute care hospital readmissions from the PREALT program in which prior evaluation by the primary care team was recorded		
Care and follow-up of patients with severe mental disorder		X
Percentage of patients with severe mental disorder for whom a case evaluation was recorded within the preceding year		
<b>5. Cost-efficiency dimension</b>		
Cost of human resources	X	
Cost of human resources per population seen		
Cost of complementary tests	X	
Cost of complementary tests per population seen, adjusted by age		
Pharmaceutical costs	X	
Pharmaceutical costs per population seen, adjusted by age		
Prescription of new products that provide no significant benefits	X	
Percentage of packages of new products that provide no significant benefits with respect to the total number of packages prescribed		
Cost of the daily defined dose of antidepressants	X	
Cost of a single daily defined dose of antidepressants		
Cost of the daily defined dose of antihypertensives	X	
Cost of a single daily defined dose of antihypertensives		
Cost of the daily defined dose of antiasthmatics	X	
Cost of a single daily defined dose of antiasthmatics		
Prescription of generic drugs	X	
Number of packages of generic pharmaceutical specialties prescribed with respect to the total number of packages prescribed		
<b>6. User satisfaction/health outcomes dimension</b>		
<b>6.1 User satisfaction</b>		
Satisfaction with staff characteristics		X
Rate of satisfaction related to physician's personal characteristics		
Satisfaction with staff professional competence		X
Rate of satisfaction related to professional competence		
Satisfaction with medical care		X
User's degree of satisfaction in relation with care, explanations, information and personal treatment from the physician		
Satisfaction with nursing care		X
User's degree of satisfaction in relation with care, explanations, information and personal treatment from nursing staff		
Satisfaction with handling of user complaints		X
User's degree of satisfaction in relation with care, explanations, information and personal treatment from user services staff members		
Satisfaction with organization		X
User's degree of satisfaction in relation with overall organization, scheduling, general information about the center, and telephone manner		
<b>6.2 Mortality</b>		
Mortality from hypertension and cerebrovascular disease		X
Aggregate mortality from hypertension and cerebrovascular disease, adjusted by age and sex		
Perinatal mortality		X

*(Continue in next page)*

**ANEX  
1**

**Indicators Agreed on by Consensus and Based on Feasibility of Obtaining Information From the Evaluation and Follow-up Database for Primary Care Teams, 2002 (Continuation)**

	Feasibility of Obtaining Information	
	Yes	No
Aggregate perinatal mortality		
Mortality from lung cancer		X
Aggregate mortality from lung cancer, adjusted by age and sex		
6.3 Processes related with prevention		
Discharges after cerebrovascular accident		X
Rate of discharge from acute care hospitals after cerebrovascular accident, adjusted by age and sex		
Discharges after ischemic heart disease		X
Discharge rate after ischemic heart disease, adjusted by age and sex		
Discharges after lung cancer		X
Discharge rate after lung cancer, adjusted by age and sex		
Pregnancies in women <20 years old		X
Pregnancy rate in women <20 years old		
Preventable hospitalizations		X

Rate of preventable hospitalizations adjusted by age and sex, for the following categories: cerebrovascular disease and hypertension, heart failure, pneumonia, acute pyelonephritis, asthma in children, etc.

\*COLD indicates chronic obstructive lung disease; NSAID, nonsteroidal antiinflammatory drugs; PADES, *programa de atención domiciliaria, equipos de ayuda* (home care and support team program); ATDOM program, home care program; PREALT, *preparación del alta hospitalaria* (hospital discharge preparation).