

# The World Health Organization Performance Assessment Tool for Quality Improvement in Hospitals (PATH): An Analysis of the Pilot Implementation in 37 Hospitals

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## Abstract

**Objective.** To evaluate the pilot implementation of the World Health Organization Performance Assessment Tool for Quality Improvement in hospitals (PATH).

**Design.** Semi-structured interviews with regional/country coordinators and Internet-based survey distributed to hospital coordinators.

**Setting.** A total of 37 hospitals in six regions/countries (Belgium, Ontario (Canada), Denmark, France, Slovakia, KwaZulu Natal (South Africa)).

**Participants.** Six PATH regional/country coordinators and 37 PATH hospital coordinators.

**Intervention.** Implementation of a hospital performance assessment pilot project.

**Outcome measure.** Experience of regional/country coordinators (structured interviews) and experience of hospital coordinators (survey) with the pilot implementation.

**Results.** The main achievement has been the collection and analysis of data on a set of indicators for comprehensive performance assessment in hospitals in regions and countries with different cultures and resource availability. Both regional/country coordinators and hospital coordinators required seed funding and technical support during data collection for implementation. Based on the user evaluation, we identified the following research and development tasks: further standardization and improved validity of indicators, increased use of routine data, more timely feedback with a stronger focus on international benchmarking and further support on interpretation of results.

**Conclusions.** Key to successful implementation was the embedding of PATH in existing performance measurement initiatives while acknowledging the core objective of the project as a self-improvement tool. The pilot test raised a number of organizational and methodological challenges in the design and implementation of international research on hospital performance assessment. Moreover, the process of evaluating PATH resulted in interesting learning points for other existing and newly emerging quality indicator projects.

**Keywords:** evaluation, hospitals, indicators, performance assessment, World Health Organization

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## Introduction

Throughout Europe and worldwide, hospital performance assessment is becoming a common topic [1, 2] and is one of the main issues addressed in the upcoming World Health Organizations' (WHO) Regional Office for Europe Health Systems Conference in June 2008 [3]. Motivated by concerns such as supporting professionals in quality management, improving accountability of hospital boards to purchasers or informing the public, many governments have initiated projects on hospital performance assessment. In addition to the governmental sector, non-governmental institutions and the private sector are engaging in hospital performance assessment and a wide range of strategies, mechanisms for participation and feedback mechanisms is being applied in the projects presented in the international literature [4]. While the Organisation for Economic Cooperation and Development (OECD) is coordinating an international project to compare health system performance of its member states (the Health Care Quality Indicator (HCQI) Project) [5], few initiatives exist to compare hospital performance internationally [6].

In 2003, the WHO Regional Office for Europe initiated a project to provide Member States with a practical tool to monitor and improve the quality of hospitals (PATH) [7, 8]. PATH was designed as an internal tool for quality improvement in hospitals to support hospitals in collecting data on their performance, identifying how they are doing in comparison to their peer group and initiating quality improvement activities [9]. The PATH conceptual model, which is based on six dimensions (clinical effectiveness, efficiency, staff orientation, responsive governance, safety and patient centeredness) and 18 performance indicators, was pilot tested between February 2004 and August 2005, with data collection taking place between May 2004 and February 2005. Regions and countries participating in the pilot were selected on a convenience basis; all had contributed to the PATH development and were able to comply with the requirements. Regional and country coordinators were responsible for the selection of piloting hospitals based on previously defined criteria such as considering geographical and institutional diversity (university and community hospitals). Out of the 66 hospitals from eight regions/countries initially registered for participation in the pilot, 51 hospitals from six regions/countries completed the self-assessment and reported data through their country coordinator. Participating regions/countries were: Belgium, Ontario (Canada), Denmark, France, Slovakia and KwaZulu Natal (South Africa). Data was reported back to hospitals between November 2005 and March 2006. Hospitals were compared to peer-groups, which were derived from an assessment of hospitals structural characteristics, and a performance report was prepared for each participating hospital, including an analysis for each indicator, an analysis of each performance dimension and an overall table indicating the number of indicators below, on average or above the performance in the peer-group [10].

In view of the diverse experience in implementing the project at regional/national and hospitals level and considering the recent initiatives in European health systems to engage in external hospital performance assessment, we decided to carry out a systematic evaluation of the PATH pilot test. The objective was to identify factors facilitating or obstructing implementation and to involve users at hospital level in the revision of indicator descriptions, data collection and reporting procedures.

## Methods

The evaluation addressed two levels: PATH coordinators at regional/country level and PATH coordinators at hospital level. The experience of regional/country coordinators was captured by a semi-structured interview carried out between April and May 2006, addressing the context (project organization and links to existing quality initiatives), process (reporting of results, difficulties and adaptations of indicators) and perceived benefits and future plans (resources required, selling points and limiting factors). Interview transcripts were reviewed for emerging themes, which were then summarized and compared for each region/country.

The experience of hospital coordinators was captured by a standardized questionnaire, which was filled in online in June 2006. The questionnaire consisted of three parts. The first part consisted of 10 items using a five-point Likert-type scale ranging from a score of 1 for 'strongly agree' to 5 for 'strongly disagree'. These 10 items address the overall experience with the pilot test, such as testing underlying assumptions of PATH, assessing reporting methods and assessing intentions for future use. In the second section of the questionnaire, each of the indicators was assessed in terms of data availability, clarity of descriptive sheets, burden of data collection and indications on the need for revision, using a dichotomous scale. For these criteria, we searched for major agreement (>80% of the respondents) or disagreement (<50%) between the respondents in order to set priorities for the development of the project. Due to the fact that Belgian hospitals contributed with a much higher number of hospitals to the pilot test and to the evaluation, a sensitivity analysis was carried out and data were analysed separately for the whole data base (all hospitals) and without the Belgian hospitals. Since this analysis did not reveal major differences, we report in this paper only the data for the whole data base. Additional tests for statistical significance were not carried due to the small sample size. Finally, the hospital questionnaire included three textboxes for comments on difficulties in data collection, the use of the results and recommendations for improving PATH.

## Results

In Table 1, we indicate the number of hospitals participating from each region/country in the PATH pilot test and the

**Table 1** Regions/countries and hospitals participating in the pilot test and the evaluation

Region/ country	Number of hospitals completing the self-assessment for the pilot test	Number of hospitals completing the evaluation questionnaires	Response rate (%)
Belgium	22	19	86
Ontario (Canada)	4	2	50
Denmark	1	1	100
France	13	5	38
KwaZulu Natal (South Africa)	3	3	100
Slovak Republic	8	7	88
Overall	51	37	73

PATH evaluation. All regional and country coordinators (6 out of 6) participated in the semi-structured interviews for the evaluation and 37 (73%) out of the 51 hospitals that participated in the pilot test filled in the electronic evaluation questionnaire.

### Evaluation at regional/national level

Results of the semi-structured interviews with regional/country coordinators were summarized by main theme (context, process of implementation and benefits and future development) based on the conceptual outline of the interview guideline.

### Context

A coordinator was appointed for each region/country to facilitate contacts with hospitals and act as an interface between WHO and the participating institutions. In four of the six regions/countries (Belgium, France, Slovakia and KwaZulu Natal (South Africa)), the PATH coordinator had a strong link to governmental activities/structures. Hospitals were selected by different means, usually by open calls (Belgium, France, Slovak Republic) or by directly establishing a contact with hospital managers (Ontario (Canada), KwaZulu Natal (South Africa)). While resource requirements differed, seed funding to kick start the project, convene meetings and workshops, distribute and translate working material were considered indispensable in all countries.

In all regions/countries, PATH was linked to some extent to existing initiatives, in some of which this yielded benefits, in others the project suffered from competition. For example, in France, parallel to piloting PATH, another performance indicator project (COMPAQ) was introduced,

which caused some competition. In Ontario (Canada) and Denmark, well-established systems for hospital performance assessment were already in place, and it was more difficult to find a niche for the PATH project. In the Slovak Republic, the ministerial agenda on quality improvement and performance assessment provided a good environment and opportunities to improve visibility of PATH and involvement of hospitals.

### Process of implementation

A general difficulty reported by the regional/country coordinators was the lack of personnel, expertise and time for participating hospitals to collect data. Furthermore, competing priorities and reorganizations in hospitals endangered the project, in particular, if participation was not solely on a voluntary basis. In some cases (Ontario (Canada) and Denmark), some of the PATH indicators were already collected with slightly different definitions in existing initiatives, which caused major problems and led either to a revision or exclusion of the indicator.

The second general issue was that the International Statistical Classification of Diseases and Related Health Problems (ICD, 10th edition) codes and the Canadian Classification for Health Interventions (CCI) codes for the selected tracer conditions/procedures were not provided timely and sufficiently standardized enough resulting in local adaptations of the indicators. Certain issues addressed by the indicators were felt to be too vague and difficult to operationalize (i.e. definition of health promotion activities that promote healthy behaviour).

Feedback to hospitals was organized in different ways (such as electronic or print distribution, teleconferences or workshops), depending on the resources available in different regions/countries. Regional/country coordinators mentioned that not all aspects of the performance reports were fully understood by the hospital coordinators, particularly those parts attempting to address the assessing of performance dimensions or overall performance.

### Benefits and future development

One of the benefits of participating in PATH stated by regional/country coordinators was that the PATH conceptual framework facilitated integrating different quality assessment activities (such as quality improvement activities in different departments or initiated by different professional groups) and led to improved knowledge on data systems available in the hospital (e.g. by integrating data from clinical databases, human resources databases and databases used for billing of services rendered in the hospital).

In some regions/countries (Belgium, Slovakia), PATH was a stepping stone for further developing quality indicator projects. In other countries (Denmark, France, KwaZulu Natal (South Africa)), it was not very clear yet whether the project can be continued in the future, due to competing and overlapping projects. In Ontario (Canada) and in Denmark, due to the well-established system in place, participation in PATH

seems only feasible if it focuses much stronger on international comparisons and improved validity. Different stages of development of existing systems, resource availability and cultural differences between regions and countries may slow down further implementation of PATH. For example, at hospital level PATH may require a research assistant and specialized data capturers and not all institutions may be able to release resources to provide these human resources. In addition, in some regions/countries hospitals will expect some sort of remuneration to continue in the project, whereas in others hospitals would be expected to contribute from their own budget.

### Evaluation of hospital experience

Of the 51 hospitals participating in the PATH pilot test, 37 (73%) filled in the electronic questionnaire.

### Hospitals' general experience with pilot implementation

Table 2 shows the hospitals' responses to 10 Likert-scaled questions reflecting the general experience with the pilot test.

Question 1 to 4 addressed the main orientations of the PATH conceptual model (for details on these orientations,

see reference 9): There was high agreement among hospital coordinators that PATH is a useful tool to (i) raise awareness on different quality dimensions, (ii) address interrelations between indicators and (iii) integrate different databases in the hospital. However, there was less agreement on the appropriateness of the burden of data collection.

Questions 5 to 7 addressed the tools to report results to users (indicator-specific comparison, relative performance index, overall performance index): While in general users assessed the way of reporting of results rather positive, a number of observations can be made. The perceived usefulness decreases from the indicator-specific comparisons (mean 2.65 (1.36 SD)), over the relative performance index (2.89 (1.51)) to the overall performance index (2.97 (1.59)). Secondly, some of the qualitative remarks in the questionnaire suggest that the relative performance index and overall performance index were not fully understood.

Questions 8 to 10 addressed the context of implementing PATH in the pilot phase and in the future. 'Competitiveness of the tool' receives the second lowest evaluation (3.24 (1.44)); however, this does not seem to be strongly associated with the wish to participate in the next round of data collection (2.78 (1.8)) or the recommendations to other hospitals to use the tool (2.76 (1.66)).

**Table 2** General experience with the PATH pilot test in 37 hospitals

Question	Mean (SD)	'Strongly agree'	'Agree'	'Neither agree/disagree'	'Disagree'	'Strongly disagree'	Missing
The participation was useful to raise awareness on different quality dimensions	2.41 (1.34)	4 (10.8%)	26 (70.3%)	—	—	—	4 (10.8%)
The participation was useful to address interrelationships between indicators	2.73 (1.53)	5 (13.5%)	19 (51.4%)	4 (10.8%)	4 (10.8%)	—	5 (13.5%)
PATH is a useful tool to integrate different quality assessment activities	2.51 (1.33)	5 (13.5%)	21 (56.8%)	4 (10.8%)	4 (10.8%)	—	3 (8.1%)
The workload for data collection is appropriate	3.35 (1.40)	1 (2.7%)	11 (29.7%)	11 (29.7%)	7 (18.9%)	2 (5.4%)	5 (13.5%)
PATH indicator-specific comparisons are useful <sup>a</sup>	2.65 (1.36)	2 (5.4%)	24 (64.9%)	4 (10.8%)	3 (8.1%)	—	4 (10.8%)
The PATH relative performance index is useful <sup>b</sup>	2.89 (1.51)	2 (5.4%)	21 (56.8%)	4 (10.8%)	4 (10.8%)	1 (2.7%)	5 (13.5%)
The PATH overall performance index is useful <sup>c</sup>	2.97 (1.59)	5 (13.5%)	14 (37.8%)	7 (18.9%)	4 (10.8%)	2 (5.4%)	5 (13.5%)
In our country, PATH is a competitive tool for hospital performance assessment	3.24 (1.44)	2 (5.4%)	12 (32.4%)	9 (24.3%)	8 (21.6%)	1 (2.7%)	5 (13.5%)
We would like to participate in the next round of data collection	2.78 (1.80)	7 (18.9%)	18 (48.6%)	4 (10.8%)	—	—	8 (21.6%)
We recommend other hospitals to use the PATH tool	2.76 (1.66)	8 (21.6%)	13 (35.1%)	8 (21.6%)	—	2 (5.4%)	6 (16.2%)

<sup>a</sup>The dashboard on 'indicator-specific comparisons' included a tabular and graphical representation of the hospital score for each indicator as compared with the peer group and country averages.

<sup>b</sup>The dashboard on the 'relative performance index' illustrates graphically for each of the six performance dimensions the relative, indicator-specific performance as compared to the country average. <sup>c</sup>The dashboard on the 'overall performance index' provides a tabular overview over the number of indicators statistically below or above average performance.

## Hospitals' assessment of PATH indicators

PATH hospital coordinators assessed each of the indicators according to four criteria: whether data was collected in their hospital, whether the descriptive sheets were clear, whether the burden of data collection was high and whether the indicator should be reconsidered (Table 3). We were interested in identifying major agreement (>80%) and disagreement (<50%) between hospital responses to these criteria in order to set priorities for the development of the project.

None of the hospitals reported on all of the 18 indicators in the PATH set; however, hospitals did collect indicators reflecting the overall PATH conceptual model and not, for example, only those indicators related to clinical effectiveness. Indicators collected by most (>80%) of the hospitals were the following: caesarean section rate, mortality rate for selected tracers, length of stay for selected tracers, inventory on stock, surgical theatre use, training expenditure and absenteeism rate.

In terms of the descriptive sheets provided to the indicators, many hospitals judged the definitions to be not sufficiently specific for their operational purpose. Only for one indicator (mortality), more than 80% of the hospitals agreed that the descriptive sheet was clear. There were major disagreements regarding the definitions for three indicators: training expenditure, health promotion budget and patient-centeredness.

Regarding the burden of data collection, there was major agreement that for four indicators, the burden of data collection was too high: prophylactic antibiotic use, surgical theatre use, training expenditure and absenteeism.

In terms of the need to reconsider some of the PATH indicators for future application, respondents did not fully agree in identifying indicators. However, a high proportion of users suggested reconsidering the following indicators: readmission, surgical theatre use, training expenditure, health promotion budget and patient-centeredness.

We also observe that for the four least frequently collected indicators (day surgery, admission after day surgery, needle-injuries and work-related injuries), the descriptive sheets were considered relatively clear and the burden of data collection not very high. Decisions to collect indicators may thus be more motivated by local practices and organizational priorities rather than data collection issues.

## Discussion

We evaluated the experience with pilot implementing the PATH project at regional/national and hospital level and identified many contextual factors that possibly hinder or facilitate the implementation of a hospital performance assessment project. We also gathered useful data that helped us in the design of the strategic directions and operational processes for the project. A limitation of the evaluation is the time lag from data collection in hospitals to carrying out the evaluation, which was due to the delay in analysing the data and reporting on performance to individual hospitals. Furthermore, while the general response rate to both interviews and questionnaire study was good, the high participation of Belgian hospitals participating in the evaluation needs to be considered in the interpretation of results.

**Table 3** Assessment of the PATH indicators by 37 hospitals

Indicator	The indicator was collected in the hospital	Descriptive sheet considered clear	Burden of data collection considered high	Indicators should be reconsidered
Caesarean section rate	30 (81.1%)	28 (75.7%)	6 (16.2%)	10 (27%)
Prophylactic antibiotic use	27 (73%)	21 (56.8%)	18 (48.6%)	14 (37.8%)
Mortality	34 (91.9%)	30 (81.1%)	9 (24.3%)	11 (29.7%)
Readmission	28 (75.5%)	22 (59.5%)	10 (27%)	17 (45.9%)
Admission after day surgery	24 (64.9%)	24 (64.9%)	8 (21.6%)	12 (32.4%)
Return to intensive care unit	28 (75.7%)	23 (62.2%)	11 (29.7%)	12 (32.4%)
Day surgery	25 (67.6%)	26 (70.3%)	6 (16.2%)	9 (24.3%)
Length of stay	33 (89.2%)	26 (70.3%)	5 (13.5%)	10 (27%)
Inventory in stock	32 (86.5%)	21 (56.8%)	9 (24.3%)	10 (27%)
Surgical theatre use	32 (86.5%)	22 (59.5%)	16 (43.2%)	15 (40.5%)
Training expenditure	32 (86.5%)	17 (45.9%)	15 (40.5%)	17 (45.9%)
Health promotion budget	26 (70.3%)	16 (43.2%)	12 (32.4%)	18 (48.6%)
Absenteeism	32 (86.5%)	22 (59.5%)	21 (56.8%)	14 (37.8%)
Excessive working hours	27 (73%)	21 (56.8%)	17 (45.9%)	13 (35.1%)
Needle injuries	25 (67.6%)	25 (67.6%)	9 (24.3%)	12 (32.4%)
Work-related injuries	25 (67.6%)	19 (51.4%)	8 (21.6%)	11 (29.7%)
Breastfeeding	29 (78.4%)	24 (64.9%)	9 (24.3%)	13 (35.1%)
Patient-centeredness	29 (78.4%)	18 (48.6%)	14 (37.8%)	18 (48.6%)

It needs to be emphasized that the evaluation should be understood as a strategy to understand the main strengths and weaknesses of the project and to facilitate user involvement in the redesign of the project. The quantitative results should not be misunderstood to reflect the overall situation of hospitals in the participating regions and countries.

In general, the feedback showed that the PATH project facilitated quality improvement activities at regional/national and hospital level and was highly valued by the stakeholders and demonstrated, despite methodological limitations, the applicability of generic indicators to improve the quality of care in different settings [6]. The role and responsibilities of the regional/country coordinator proved crucial, and a broad acceptance of the coordinator by hospitals is a requirement for success, in particular given the self-improvement nature of the PATH tool. Moreover, the institutional embedding of the project at regional/national level and the consideration of the interests of different stakeholder groups are paramount for the successful implementation of a quality indicator project [11].

In some regions/countries, the lack of resources and organizational mechanisms set hurdles for hospitals to adapt PATH to their context. While resource requirements were difficult to quantify, clear responsibilities, seed funding and technical support during data collection were considered essential [12]. The quantitative results further support that the burden of data collection seems to be a major factor obstructing the implementation of performance assessment systems.

For hospital coordinators, the timeliness of feedback proved to be an essential element in the implementation, and hospital management expressed a clear expectation to reduce the time lag from reporting of data to user feedback. In order to translate the performance assessment in quality improvement, it is in fact paramount to reduce delays in reporting, in addition to offering additional tools to stimulate learning. Furthermore, considering that both the results from both regional/country coordinators' interviews and the standardized hospital assessment suggests that not all hospital performance dashboards were understood equally, further attention needs to be put on the user-friendly design of the dashboards.

Hospital users gave concrete recommendations for the further development of PATH. In some regions/countries and for some indicators, considerable local adaptations were undertaken, mostly as existing data systems did not allow for the collection of PATH data. However, adaptation processes and continuous revision are a natural phenomenon and a prerequisite for successful implementation of indicators for hospital performance assessment [13–16]. Efforts were made in the preparation of the second wave of data collection for PATH to improve standardization of indicators. To this end, a mapping exercise was carried out to compare PATH indicators with those of the Agency for Health Care Research and Quality (AHRQ) and the indicators included in the Joint Commission dataset [17, 18]. Furthermore, we improved comparability of indicators descriptions using ICD-9 and ICD-10 versions [19–21] and included codes for

the classification of surgical procedures (NCSP) suggested by the Nordic Medico-Statistical Committee (NOMESCO) [22]. The indicators used in the second wave of data collection reflect major improvements [23]; however, there is still work ahead to make indicators comparable across countries (O. Groene, unpublished results).

Despite the limitations of this evaluation, important lessons can be learned for future development and evaluation of quality indicator projects, which are surprisingly similar to the experience from the OECD Health Care Quality Indicator Project. On the one hand, both the HCQI and the PATH project are confronted with considerable methodological challenges. This includes making data collected in different systems and in different contexts comparable: 'detailing specifications, reconciling differing data sources, understanding differences in health care systems and their mandates, and separating differences in performance from differences in measurement' [24]. On the other hand, from a project management perspective both initiatives reflect how resource demanding international consensus-building is and signal the importance of clear communication strategies, procedures for the revision of indicators and mechanisms to maintain project momentum.

## Conclusion

We evaluated the pilot test of the PATH tool in order to identify factors facilitating or obstructing implementation and to involve users in the revision of the measurement procedures. The major factors identified that affect successful implementation were the institutional embedding of the regional/national project coordination, the timeliness of feedback to hospitals and resources for the project management and data collection.

The involvement of users at regional/national and hospital level led to a revision of indicators and reporting tools, as well as a review of the procedures for data collection and analysis. Further research has been commissioned to test the assumptions of the conceptual model (interrelations of indicators and impact on quality improvement activities).

## Acknowledgement

We would like to thank the following PATH regional/country coordinators for the support in identifying hospitals, adapting indicator definitions to the local context, providing training on data collection issues and participating in the phone interview: Belgium: Pascal Meeus, Denmark: Paul Bartels, France: Pierre Lombrail, Slovak Republic: Viera Rusnakova, South Africa: Mohammed Hoosen Cassimjee.

Furthermore, we would like to express our gratitude to all professionals that supported the data collection in the participating hospitals and provided constructive feedback on the development of PATH during the evaluation period.

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Accepted for publication 25 February 2008