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Costs of Quality Management Systems in Long-Term Care Organizations: An Exploration

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ABSTRACT

The article describes a method for measuring and reporting the costs of quality management in 11 long-term care organizations (nursing homes, home health care organizations, and homes for the elderly) and a national survey in 489 organizations providing long-term care. Site visits and a questionnaire were used to measure the existence of quality management (QM) activities and investigate the costs per QM activity in more detail. Health care organizations differentiate between regular activities and QM activities. The costs of QM activities were found to vary between 0.3% and 3.5% of the budget in three nursing homes. An extrapolation of the costs of QM activities to the entire sector shows that the long-term care sector spent between 0.8% and 3.5% of the overall budget for QM in 1999. The costs of developing and implementing QM activities are higher than the costs of monitoring. Most long-term care organizations have no insight into failure costs (i.e. the costs of quality deviations). This makes it impossible for health care organizations to draw conclusions about the cost-effectiveness of QM.

In the Netherlands considerable effort is directed toward improving the quality of care through quality management systems (QMS). Since 1996, every health care organization in the Netherlands is obliged by law to have a QMS. These systems involve many extra activities and thus extra costs. However, insight into the cost-effectiveness of QMS is lacking. Even general information about the cost of QMS is scarce. One reason for this is most likely that in the health care sector there seems to be no available methods to measure quality costs and (even more challenging) the cost-effectiveness of quality management systems. To develop such methods, two resources are available: (1) the body of theory and the methods used for medical

technology assessment and (2) the methods that have been developed to assess quality management systems in industry.

In studies focussing on medical technology assessment (MTA), considerable efforts have been made to measure and report the quality effects of (new) medical technology, and standards have been developed to allow comparisons between the results of different studies. However, although this is a valuable source, the information obtained from MTA studies is not compatible with the information obtained from quality of care programs in health care organizations. This incompatibility is not only because of a difference in the intrinsic concept of quality of care, but also because of the perspective of the investigation. In MTA studies, the quality of care is related to specific medical interventions, and the costs and effects of interventions are determined from a societal perspective. Health care organizations often consider quality of care as a broad concept. Not only the quality of specific interventions, but also the entire process of disease management is an object of quality improvement programs. The description of organizational processes, the training of staff, and peer review is also considered to be part of a quality improvement program in health care organizations. However, the perspective of health care organizations is limited in another way. If costs and effects are measured and reported, they are restricted to the health care organization itself, thus the societal perspective is almost always neglected.

The other source of information can be found in methods that have been developed for industry. These methods have even found their way into the guidelines of the American Institute of Management Accountants (IMA). The IMA has special guidelines for estimating and reporting the costs of quality measurement. In accordance with these guidelines, the cost of quality is defined by Campanella as: "It represents the difference between the actual costs of a product, and what the reduced costs would be if there were no possibilities of failure of the product nor defects in its manufacture."¹(p.16) Feigenbaum, who distinguishes control costs and failure costs, gives a further refinement of the definition. Control costs are further divided into prevention costs and monitoring cost, and the costs of failure are split into internal and external failure costs.² Prevention costs are incurred to prevent quality variations. Examples are developing and implementing procedures and guidelines for process control and quality education. Monitoring costs are incurred to detect quality deviations, such as input control, end-product inspection, and the collection, processing, and interpretation of control information. Prevention and monitoring costs are management-dependent costs and are incurred because they result from deliberate, planned actions to keep the risk of losses as low as possible. Internal failure costs are incurred when a deviation in quality is detected before the product or service is delivered to the client. Examples are waste, repair, double work, and inspection. External failure costs are incurred after the product or service is delivered to the client. Examples are costs of dealing with complaints, claims, and opportunity costs as a result of bad reputation with regard to quality.

The goal of this article is to demonstrate how the costs of quality management systems can be determined and to describe the measurement of these costs in three case studies involving long-term care organizations. These organizations developed a

sector-specific framework for a QMS consisting of 58 activities and procedures. Some of these activities and procedures are new; others have already been in existence for years. Until now, long-term care institutions have not received more funding from the government because of the implementation of QMS. Because resources are scarce, insight is needed into the cost-effectiveness of these efforts. Furthermore, long-term care institutions are looking for ways to convince the government and health insurance companies that quality management implies greater costs. However, information about the costs of quality management in health care organizations is very scarce. This article discusses a method that can be used for measuring and reporting the cost of quality management systems in line with the guidelines issued by the IMA. Until now, these guidelines have rarely been used in the health care sector, but they are discussed here because they seem to be most relevant when measuring and reporting the costs of quality programs at organizational level. This method provides an opportunity to obtain insight into the cost of developing and implementing a quality management system for health care. This means that the costs of activities are measured and that it is possible to compare costs between different organizations.

The following research questions are discussed:

1. Is it possible to differentiate between regular costs and the costs of implementing a quality management system?
2. Is it possible to measure the costs of developing, implementing, and monitoring a quality management system?
3. What are the costs of quality management systems in long-term care organizations?

METHODS

The study was divided into three parts: (1) a multiple case study in long-term care organizations (nursing homes, home health care organizations, and homes for the elderly), (2) focus group meetings with quality coordinators, and (3) a cross-sectional national survey of long-term care organizations.

SAMPLE

For the case studies, 12 long-term care organizations were selected, based on the various stages of the implementation of a QMS (i.e., preparation, implementation, or establishment). Of the 12 long-term care organizations approached, 11 participated in the study: 3 homes for the elderly, 3 home health care organizations, 3 nursing homes, and 2 combinations of a nursing home and a home for the elderly. The quality coordinators in the 11 health care organizations participated in the focus group meetings.

A total of 696 questionnaires were sent to all home health care organizations, all nursing homes, and a random sample of 20% of all homes for the elderly. A total of 489 questionnaires were returned: 101 (78%) home health care organizations, 193 (66%) homes for the elderly, and 195 (71%) nursing homes. The mean response was 70%. The medical director or the quality coordinator completed the questionnaires.

DATA GATHERING

In part 1, the multiple case study site visits and interviews with the quality coordinator were held in the participating 11 health care organizations to divide the 58 activities described on the questionnaire into “regular activities” and “QM activities” from the perspective of the organization.

In part 2, the focus group meetings, the results of the site visits were used to reach consensus about the QM activities. For each of these activities, the quality coordinators from the 11 long-term care organizations defined the personal and material costs of development, implementation, and monitoring. The costs are expressed in euros (at press time, 1 euro = US\$1.08).

In part 3, the national survey, a questionnaire was used to gather information about the implementation of QMS at national level. The questionnaire contained 58 activities assessing the existence of a QMS. The items on the questionnaire were derived from the Dutch accreditation manual for long-term care that distinguishes nine focal areas: assessment, care delivery, evaluation, organizational policy, human resources, research and development, environment and materials, outsourcing of activities, and documents. To determine the developmental stage of the implementation of the QMS, three stages can be distinguished.

1. Stage 1, preparation: creating the necessary conditions by developing a quality policy, setting up a steering group and training the managers and professionals in quality management
2. Stage 2, implementation: implementation of various quality improvement projects, guidelines and procedures, and peer review
3. Stage 3, establishment and monitoring: quality procedures have been developed and integrated into all areas of activity within the organization 3

In this study a health care organization is considered to have reached stage 3 if the organization has implemented nearly all the activities (N = 58) described in the accreditation manual. If an organization has implemented two thirds of the activities and is still developing the other activities, then the organization has reached stage 2. If an organization has implemented less than two thirds of the activities, it was classified as being in stage 1.

COST CALCULATION

The costs of QMS at national level were calculated via two scenarios. For the first scenario, the percentage of health care organizations reporting the implementation of a QM activity was multiplied by the lowest costs reported by the three homes for the elderly (cases). For the second scenario the highest costs were used for the calculation. To calculate the overall costs of a QMS at national level, the costs of the separate QM activities were counted. To improve the comparability of health care organizations the salaries for the various staff groups (e.g., quality coordinators, nurses, heads of department) were standardized on the basis of the national salary scale for the health care organizations in question.

RESULTS

Regular activities and QM activities

According to reports made by the quality coordinators during the focus group meeting, the activities mentioned in the Dutch accreditation manual can be divided into two categories (Table 1): (1) regular care activities and (2) activities to prevent failures and nonoptimal care, to assess the QMS, and to make possible improvements in the quality of care through improvement projects. Ideally these activities are structurally embedded in the organization to continually improve the care provided. When new activities are considered for implementation, opportunities to replace existing activities should be investigated (substitution). To determine the costs of a QMS, the distinction between regular activities (pertaining to normal production costs) and QM activities is important, because the latter are considered to be “extra activities” by the quality coordinators.

Development, Implementation, and Monitoring

Activities mentioned in Table 1 as QM activities could, depending on the stage of implementation, incur development, implementation, or monitoring costs. In principle, when the monitoring stage is reached, all activities will have become routine and will possibly have replaced older routines or improved the efficiency of existing practices. Development and implementation costs are investments that are often made in only one period, whereas costs of maintaining and monitoring the existing quality practices are structural and therefore continuous. Health care organizations are expected to continually improve their quality. Because this is often done through quality improvement projects, the costs are therefore structural. Table 2 shows fictive examples of activities of this kind, with each example indicating the possible efforts required from the staff and the frequency of occurrence.

The detail of the cost calculation also depends on its purpose. To calculate costs for developing and implementing quality management systems and their maintenance, it is sufficient to determine extra activities and their costs. When determining the cost-effectiveness of quality systems, cost reductions resulting from a decrease in failure costs have to be taken into account (e.g., repair costs, less repeated work, abolition of old routines and less time needed for contacts between staff members as a result of increased transparency in the organization). Unfortunately, the participating organizations could provide no information on failure costs.

An example: prevention and monitoring costs in three nursing homes

Because of the small sample size, the results can not be generalized. The figures solely demonstrate that costs can be measured and standardized and that comparisons can be made. The costs have been calculated on the basis of the personnel and time involved (see Table 2).

From Table 3 it appears that the organization in stage 1 has not yet deployed all activities. Some activities are occasional and others are structural. For almost all activities a quality coordinator is involved.

The costs of the quality coordinator are calculated only once. The costs reported for other staff members, such as managers and health care professionals, are incurred in the remaining activities. The organization that is in stage 2 has higher costs than the

organization in stage 1, mainly because of the greater number of written procedures that have to be monitored and evaluated. Moreover, more staff is being trained in quality management and more money is being spent on a full-time quality manager. The last column of Table 3 shows that the maintenance of the quality management system is cheaper than its development.

The second part of the table (assessment activities) shows which activities the three nursing homes have carried out in 1999 to evaluate the quality of care or the quality management system, and the direct costs involved. The organizations in stages 1 and 2 deploy only a few assessment activities relating to the quality management system. They have, for example, carried out a client survey and have had their organization audited. The organization in stage 3 has, in particular, incurred costs for conducting internal audits and having the organization reevaluated after obtaining a quality accreditation. By carrying out more activities, costs of monitoring costs of the quality management system are higher than the costs involved in the development and implementation of the system. The percentage of the budget shows that the size of the organization also determines the proportion of costs. The organizations in stages 2 and 3 spend much more on monitoring activities, but the percentage of the organizational budget is lower, compared with the organization in stage 1. If the direct personnel costs in Table 3 are added together and compared with the total budget of the organization, it appears that the organization in the first stage spends 0.6% of its budget on prevention activities and 0.2% on monitoring activities. The organization in the second stage spends 0.5% on prevention activities and 0.05% on monitoring activities, whereas the organization with a quality management system spends 0.2% on prevention activities and 0.1 % on monitoring activities.

Costs of quality improvement projects

In addition to implementing prevention and monitoring activities, many organizations carry out improvement projects aimed at improving the quality of care. The number of projects per organization varies between 1 and 53. Most organizations carry out 2 or 3 projects per year. The mean cost for improvement projects is 2500 euros for salaries. The variation between projects is extremely high: between 300 euros for adapting an existing procedure to 70,000 euros for a project to improve information and communication with the client and 120,000 euros to have the existing facilities reconstructed to adapt better to the needs of the clients.

Costs of quality management systems at sector level: an extrapolation

To obtain better insight into the direct costs of quality management systems at sector level, data on the costs of prevention and monitoring activities in the individual organizations should be aggregated. As an example, Table 4 illustrates this aggregation based on the three case studies. The estimated costs for prevention activities are presented for long-term care organizations (N = 489). For this calculation it is assumed that the activities are carried out on a structural basis. In scenario 1 the minimum costs are calculated, and in scenario 2 the maximum costs are calculated.

Table 4 can be read as follows: 71% of all organizations train employees in quality management. This is approximately 346 of a total of 489 organizations. If according

to scenario 1, 1000 euros are spent on average, then 346,000 euros are spent at sector level. In scenario 2, it is assumed that organizations spend an average of 4500 euros on training. For the entire sector this means $346 \times 4500 = 1,557,000$ (scenario 2). The costs of total activities in the sector have been estimated in the same way. The total estimated costs of prevention activities for 1999 in scenario 1 are approximately 2.25 million euros and in scenario 2 approximately 27.5 million euros. It is assumed that the real costs are within this range. However, if all organizations performed all the desired activities, the total amount would be relatively higher. In 1999, one quarter of all organizations spent 1.1 million euros in scenario 1 on monitoring activities and approximately 2.8 million euros in scenario 2. This amount would also be higher if more organizations performed all the desired activities. Because there is a great variety of improvement projects with an equally great range of costs, no calculations at sector level have been made, but it is clear that large amounts of money are involved.

CONCLUSION

Various health care organizations can be in different stages of the cycle of quality management. It appears to be possible to classify long-term care organizations in the Netherlands into various developmental stages by inquiring about activities related to a quality management system. The quality coordinators in the 11 long-term care organizations could explicitly differentiate between regular activities and QM activities. The general opinion was that each organization had to carry out at least the regular activities. Working on QM therefore means developing and implementing the relevant QM activities. An important remark that has been made is that the difference between regular activities and QM activities will change over time. For example, 5 years ago a client council was a new concept in the Netherlands; client participation was still growing. Now, every health care organization is obliged by law to have a client council. In general, it appears that the QM activities described in the accreditation manual focus more on control than on continuous quality improvement, such as the Plan-Do-Study-Act cycle.

By estimating the costs of each activity, not only the costs in each stage, but also the total costs of quality management systems can be calculated. It appeared that the small health care organizations spent a greater percentage of their budget on quality management. The results show the implementation of a QMS costs more than the development or monitoring of the system. Furthermore, the results show that even if a QMS is implemented considerable costs are still involved in maintaining and assessing the activities. Extrapolation to a national level shows that a quarter of all long-term care organizations in the Netherlands have spent between 2.25 and 27.5 million euros on prevention activities. Together with the monitoring costs, the total estimated amount lies between 0.8% and 3.5% of the total budget of the sector. In this study the costs per type of activity are based on a small sample. Although this has provided substantial insight into QM activities in Dutch nursing homes, care should be taken when estimating the costs of quality management systems at sector level. To express uncertainty with regard to the costs, a minimum and a maximum scenario has been presented. The best solution would be to study a larger sample of organizations in which the costs of activities have been determined.

The question is: What is the added value of a QMS, and should health care organizations continue to develop and implement a QMS? The lack of insight into failure costs makes it impossible for health care organizations to draw conclusions about the cost-effectiveness of a QMS, and therefore also about its added value. Future studies should address this problem, because this information is needed to determine the cost-effectiveness of quality management systems.

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TABLE

Table 1

OVERVIEW OF REGULAR ACTIVITIES AND QM ACTIVITIES ACCORDING TO 11 QUALITY COORDINATORS

Regular activities	QM activities
<p>Examples:</p> <ul style="list-style-type: none"> General policy plan Written vision and mission statement Written information for clients Client council Overview of products and services System for care planning System for drug distribution Description of job functions Job assessment interviews Registration of incidents Complaint registration 	<p>Prevention activities:</p> <ul style="list-style-type: none"> Education of personnel in QM Introduction program for new personnel Peer review Written guidelines, procedures, and documents Quality manual with standard procedures Special days for reflection on quality Quality policy and plan Quality coordinator Communication on quality policy Quality working groups Annual quality report <p>Monitoring activities:</p> <ul style="list-style-type: none"> Internal audits Satisfaction survey of clients Satisfaction survey of personnel Accreditation and certification <p>Quality improvement projects (examples):</p> <ul style="list-style-type: none"> Project automatization care planning Project reducing waiting lists Project corporate image improvement

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