

**Quality management in hospitals
Case study in Croatia**

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— *Review of* —
**Integrative
Business &
Economics**
— *Research* —

ABSTRACT

Recent studies of the global health care industry show that patients' expectations frequently are not fulfilled for a variety of reasons. One way to improve patient satisfaction is to apply quality management techniques supported by an appropriate business information system. In this article we present one case in Croatia in which the government requires hospitals to apply accreditation standards that are based on quality management principles. In their role of consultants to the process, the authors encountered several problems with implementing the government's mandate, problems that occur frequently in situations where quality management is a novel concept.

Keywords: Quality management, ICT in hospitals, accreditation standards.

1. Introduction

In their role of health care providers, health care organizations are central to peoples' lives, so need to be as effective as possible in delivering care. One aspect of quality of

health care services is measured by the satisfaction of people who use those services. The people expect to receive appropriate health care in order to have long and healthy lives and to be protected against illnesses and accidents. Patients and health service consumers are becoming more sophisticated and better informed as their expectations and requirements grow over time.

Recent studies consistently show that these expectations frequently are not fulfilled due to medical errors. In the United States (US), for example, in one year more people die as a consequence of medical error than from motor vehicle accidents and breast cancer together.¹ In the European Union (EU), healthcare errors occur in around 10% of hospitalizations, and adverse events take place in all settings where healthcare is delivered - primary care, secondary care, community care, social care and private care, acute and chronic care.²

The conclusion should be that there is room to improve quality in delivery of health care services.

What does quality mean?

Quality is defined in many ways; each strives to emphasize some attributes, but no one definition is complete. This demonstrates the complexity of the concept and at the same time illustrates the challenges of attempting to manage quality.

- Juran defines quality as “customer satisfaction” and "fitness for use", then divides quality in two different views: 1) product features that meet customer needs, and 2) freedom from deficiencies.³
- Crosby defines quality as “conformance to requirements”, while the Six Sigma definition is the “number of defects per million opportunities”.
- International standard ISO 9000 defines quality as the “degree to which a set of inherent characteristics fulfills requirements” where requirement is defined as need or expectation.⁴

¹ B. Braun HealthNet,

<http://www.bbraunusa.com/index-A3866CA8D0B759A1E395A615A2C006AD.html>, accessed 12.3.12

² Health-EU, http://ec.europa.eu/health-eu/care_for_me/patient_safety/index_en.htm, accessed 12.3.12.

We haven't found medical error statistics solely for Croatia, but they probably do not differ significantly from those of the EU.

³ Juran, J.M & F.M. Gryna, *Quality Planning and Analysis*, 3rd Edition, McGraw –Hill, 1993

These definitions show that quality has many perspectives; all of them are correct, but maybe the most complete or most common in operational use is the ISO definition. ISO 9000 uses the term ‘product’ that isn’t included in the previous definitions, but the meaning is “inherent characteristic of the product”. According to ISO 9000, product means hardware, software, services or processed materials.

Although the general term ‘product’ includes services, in practice there frequently is a significant difference between quality management for products compared to service delivery. Table 1 illustrates the main differences.

Garvin’s Product Dimensions	Evans & Lindsay’s Service Dimensions	Parasuraman et al.’s SERVQUAL Dimensions	Chakrapani’s Dimensions	Coddington’s Dimensions	JCAHO Dimensions
Performance	Time	Tangibles	Service/Product/ Dependability/ Support	Warmth/Caring/ Concern	Efficacy
Features	Timeliness	Reliability	Exceeding Expectations	Medical Staff	Appropriateness
Reliability	Completeness	Responsiveness		Technology-Equipment	Efficiency
Conformance	Courtesy	Assurance		Specialization/ Services	Respect & Caring
Durability	Consistency	Empathy		Available Outcome	Safety
Serviceability	Accessibility & Convenience				Continuity
Aesthetics	Accuracy				Effectiveness
Perceived quality	Responsiveness				Timeliness
					Availability

Table 1: Dimensions of Quality

Source: Sower, V. et al, The Dimensions of Service Quality for Hospitals: Development and Use of the KQCAH Scale, http://www.shsu.edu/~mgt_ves/KQCAH.pdf, accessed 6.2.12

⁴ International Organization for Standardization, *The ISO Survey of Certifications 2010*

Unlike for products, services take place in direct contact with the customer, which is why in services quality, attributes are oriented more toward personal judgment regarding timeliness, courtesy, respect and caring, for example.

A more descriptive and self-explanatory definition of quality in health care services is in Stanford Hospital & Clinics, where quality attributes should be:⁵

- **Safe:** Avoiding injuries to patients from the care that is intended to help them.
- **Effective:** Providing services based on scientific knowledge and best practice.
- **Patient-centered:** Providing care that is respectful of and responsive to individual patient preferences, needs and values, ensuring that patients' values guide all clinical decisions.
- **Timely:** Reducing waits and sometimes harmful delays for both those who receive and provide care.
- **Efficient:** Avoiding waste, including waste of equipment, supplies, ideas and energy.
- **Equitable:** Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socio-economic status.

This definition can be used as a guideline when setting a hospital's objectives and targets regarding quality.

2. Social and Health care in Croatia

Croatia is in Southeastern Europe across the Adriatic Sea from Italy. It became independent from Yugoslavia in 1991 and expects to become a member of the EU in 2013. A condition for accession into the EU is that Croatia's legal system, including social and health care, should be in accordance with EU requirements.

Croatia's population is about 4,5 millions. The health of the people is relatively good, with low infant mortality (6.16 deaths/1,000 live births) and a good life expectancy (73,5 years for men and 79,6 for women) in 2010.⁶ The health care system provides

⁵ Stanford Hospital & Clinics, <http://stanfordhospital.org/quality/whatisquality/>, accessed 6.2.12.

⁶ Publikacije, http://www.hzjz.hr/publikacije/hzs_ljetopis/introduction.htm accessed 7.03.12

comprehensive universal national health care for citizens.

The basic aim of health policy is not only to extend life expectancy, but also to improve the quality of life. In addition to improving Health Services, this includes the promotion of healthier life styles, the reduction or elimination of preventable health risks, and improvement of the quality of life of chronic and disabled patients.

Facilities involved in health activities are either state- or county-owned, or private. Teaching hospitals, clinical hospital centers, and state Institutes of Public Health are state-owned. Health centers, polyclinics, general and special hospitals, pharmacies, institutions for emergency medical aid, home care institutions, and county institutes of public health are county-owned.

By the end of 2010 Croatia's health care had a permanent work force of 72,207. Of these, 54,873 were health professionals and associates, 5,117 administrators, and 12,217 technical staff.⁷ The social and health services sector employs about 7% of the total workforce in Croatia, compared to about 11% in the EU and USA, and has the potential to create further jobs.⁸

Government expenditures for social and health care are about 20% of the budget, but there still are many weak points in the system, such as long wait times for some examinations or services, outdated equipment, and poor infrastructure. With limited financial resources, the way to improve the deliverable in the social and health system is to increase its level of effectiveness and efficiency, or in other words the quality of delivery.

We found an interesting coincidence regarding ISO 9001 certification in the social and health care sector both in Croatia and in worldwide standards. In both cases the certification in the social and health care sector represents 2,1% of total certifications. We think this figure is low, considering employment levels of 7% in Croatia and 11% in the EU and US. The result may be due to the average size of the organizations. If for example the organizations in one sector have twice as many employees as the average for all sectors, that means there will be only half the expected number of

⁷ Ibid

⁸ EASPD, Employment in the Care sector in Europe, <http://www.easpd.eu/LinkClick.aspx?fileticket=4A2F4C7078436F44665A633D&tabid=2575&language=en-US&stats=false>, accessed 8.8.12

organizations in the sector.

The government enacted legislation to encourage health care institutions to improve the quality of services they deliver. The most significant legislation recently enacted includes:

1. *The law on protection of patients' rights* (2004) is based on principles of equality, humanity and availability. The principle of humanity emphasizes the respect to the patient as a human being, his physical and mental integrity, and the rights of privacy and moral and religious principles.
2. *Codex for medical ethics and deontology* (2008) that specifies the basic ethical principles for health care professional and associates.
3. *The law on quality of health care* (2007) that defines the quality vocabulary for health care and establishes the agency for quality and accreditation (Agency) on the national level which began work in 2009.

In addition, the ministry for health care published the *Rulebook for accreditation standards for hospitals* (2011), in which it defined ten areas of quality management:

1. Quality management system
2. Governing body
3. Medical staff
4. Review of health care services usage
5. Patients' rights
6. Medical records service
7. Nursing services
8. Discharge planning
9. Infection control
10. Security management system

These rules are very similar to the National Integrated Accreditation for Healthcare (NIAHOSM) Accreditation Requirements, Interpretive Guidelines and Surveyor Guidance for Critical Access Hospitals.⁹ One significant difference is that, unlike NIAHO, the

⁹ National Integrated Accreditation for Healthcare (NIAHOSM) Accreditation Requirements

Croatian standards don't mention ISO 9001 at all, and the agency staff doesn't encourage mentioning it in the documentation. We don't see any justifiable reason for this approach.

In 2011, the Agency invited tenders for accreditation, where the first 10 hospitals applying for accreditation would obtain the accreditation at the Agency's expense.

The Agency required the following documentation:

- Description of the hospital - size, capacity, organizational chart, etc.
- Quality policy statement
- Quality manual
- Documented procedures for control of:
 - Documents
 - Records
 - Internal audits
 - Patients safety

3. The accreditation procedure

Our consulting team assisted one hospital in preparing the required documentation to submit to the Agency for quality and accreditation. This hospital was one of the first ten to apply for accreditation, so the government would cover the expense of the application process.

The county government owns the hospital of 550 beds and 1300 employees.

In the course of putting the quality system into practice, we encountered several challenges.

In Croatia as in many countries, physicians are the dominant influence on management in health care institutions. Because of this tradition, 'management skill' is something that happens in an intuitive and non-systematic manner. In fact, people that in principle don't have a management education administer the complete health care system, from health minister to hospitals and their departments. According to one a physician, "Until a few years ago, I was convinced that nobody would ever ask me

Interpretive Guidelines and Surveyor Guidance for Critical Access Hospitals, Rev 6,
http://dnvaccreditation.com/pr/dnv/document/DNVHC_Critical_Access_Hospital_Accreditation_Requirements_and_Interpretive_Guidelines-Rev_6.pdf, accessed 8.03.12

‘Why did you do this?’ or ‘Why didn't you do this in a different way?’ Now I see that things are changing.”¹⁰

On the other hand, physicians tend to be self-reliant when performing their activities. They frequently have a paternalistic approach toward the patient, as if they know better than the patient what he really needs. For this reason, they don't always find it necessary to provide detailed explanations, an approach that is directly contrary to the customer satisfaction approach imposed by a quality management system. According to the University of Washington School of Medicine, “The historical model for the physician-patient relationship involved patient dependence on the physician's professional authority. Believing that the patient would benefit from the physician's actions, a patient's preferences were generally overridden or ignored. For centuries, the concept of physician beneficence allowed this paternalistic model to thrive.”¹¹

A quality management system is a management discipline that requires an integrated and systematic approach, where individual ambitions, and objectives, shall be subordinate to the objectives and targets of the organization.

The key is to start building a quality system in which the hospital's general manager determines to apply the ISO 9001 international standards. This general manager engaged an expert from a local university as consultant. Not long after engaging the consultant, the Agency published its accreditation standards and an Agency representative recommended that the general manager adopt the standards and abandon ISO 9001 as not appropriate for hospitals and the health system.

This result surprised the consultants for at least two reasons:

1. Of the more than one million ISO 9001 certifications worldwide, about 16.000 of them are in social and health care, representing a large source of experience that can be very useful
2. The Agency's accreditation standards are nothing more than an adjustment of ISO 9001 for the healthcare¹²

¹⁰ Interview with consultant, 6.11

¹¹ Ethics in Medicine, <http://depts.washington.edu/bioethx/topics/physpt.html#ques1>, retrieved 13.3.12

¹² For example in the NIAHO, ISO 9001 is mandatory after adopting the NIAHO standards

The result is that Croatia continues the process for building a quality system based on ISO 9000 principles but without recognizing the name ISO 9000.

After initial education of the hospital management by the consultant and the Agency staff, the hospital general manager formed a steering committee headed by the general manager, followed by an assistant for quality and other members of hospital management. The steering committee coordinates ten working groups that were established to create the documentation according to the ten topics in the *Rulebook for accreditation standards for hospitals*.

The first step was to conduct an inventory of existing documentation relating to hospital activities. There were nearly a hundred different documents, some valid and some outdated, that prescribed or described different activities in the hospital. Other documents were never published but were used by limited groups as unofficial guidelines.

Some of those documents, such as statutes, a rulebook for internal organization, and workplace descriptions, have been adopted as part of quality assurance (QA) documentation. Other documents have to be revised to meet accreditation standard requirements, while others will have to be rewritten entirely.

The working groups currently are preparing more than hundred new documents. It's a huge job because the documents must be connected to become part of a comprehensive quality assurance effort, much like connecting the pieces of a puzzle. Many people, most of them physicians, must think about the activities they perform relative to other member in the hospital's processes in order to build logical chains. All those activities are running at the same time as normal hospital operations, so the solution is complex.

Another potential problem is the measurement system. QA requires a feedback process in order to evaluate whether the targets and objectives are realized, known frequently as performance benchmarking. The benchmarking objective requires a standardized measure or indicator. This is particularly necessary to improve the quality of the system on the national level, where hospitals independently might adopt different measures. Some of these health indicators were standardized many years ago through national laws or through international organizations such as the World Health Organization. Now the Agency must review all these indicators and build a single measurement system for evaluating hospital performance in Croatia. In this way, the

government will be able to compare hospital and health care system effectiveness and efficiency on the national and international levels. From a QA perspective, the PDCA or Deming circle will be closed.

4. Information and communication technology (ICT) support for hospitals

As with all other activities, hospitals require ICT support in order to establish effective processes and obtain a certain quality of services. ICT support isn't standardized in Croatia even though most hospitals are controlled directly or indirectly by the government. Management at each hospital determines what kind of ICT support it will adopt, so this could be a weak point for quality improvement on the national level. On the other hand, in 2007 the government began the eHealth project as part of a larger project called eCroatia. The main objectives of eHealth are to:

- Increase the quality and efficiency of the healthcare system
- Enable controlled data access throughout the country
- Provide advanced prevention, medical treatment and improvement of quality of life to all citizens

Today most of the health service suppliers in Croatia are connected, so users can have online access to them. For example, it isn't necessary for medical prescriptions to be in paper form because physicians are connected with pharmacy networks. In the same way, the user can arrange an examination online or it can be done directly by the physician. This eHealth project will encourage hospitals to improve their information systems.

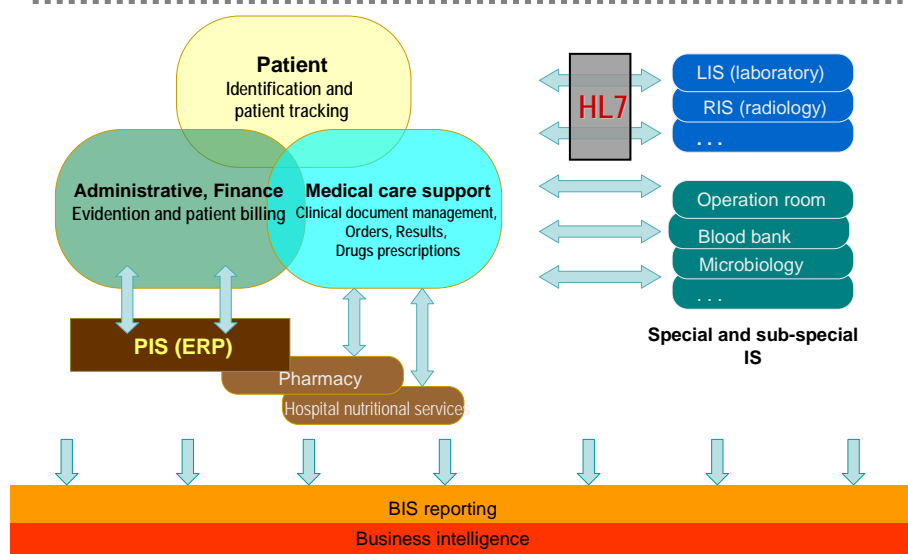
The hospital quality control system needs an appropriate measurement system as feedback or as part of a PDCA circle.¹³ That should be one of the more important tasks of a hospital information system.

Picture 1 shows the information system at the hospital we consulted.

¹³ Plan-Do-Check-Act (PDCA), also called a Deming circle.

BIS architecture

Hospital information system



Picture 1: Hospital information system

Source: Hospital documentation

The Hospital information system (BIS) consists of two main parts: 1) support for hospital operations, which is specific to hospitals, and 2) business support, shown on the picture as PIS (ERP), which is a standardized program used in a variety of businesses including health care institutions.¹⁴ The hospital operation support covers practically all hospital operation functionalities. Of course, it was built few years ago, before the quality management system was planned, but it is reasonable to expect that with minor modifications, it will provide reliable support to the quality management system.

5. Conclusions

The accreditation standards in Croatia were a good trigger to start important changes in the health care system, particularly for hospitals. In the consulted hospital, staff is rewriting more than 200 documents relating to procedures and work instructions, and about 100 of them have been completed. The medical staff, in particular the young ones, show enthusiasm for the process, so the hospital management are optimistic.

¹⁴ In the Croatian language, 'hospital' is 'bolnica', which is why the abbreviation is BIS

The Croatian government should provide additional support to the medical staff by 1) organizing education about management principles and techniques and 2) proposing a set of health indicators that will be the basis of a performance measurement system for hospitals. In this way they will facilitate establishing one solid benchmarking system at the national level, which will pull all hospitals and the entire health system towards a higher level of quality.

After completing the documentation, implementation will for sure be another big challenge. The process of creating documentation involved only a limited part of the hospital staff, but implementing the results will involve all staff members. This fact will bring more unknowns into the process.

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