

# Developing Quality Indicators for IT Interventions in Health Care

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**Abstract.** In this workshop we will present and discuss a methodology for developing quality indicators for IT interventions. The method combines scientific evidence and expert opinion using a rating and consensus technique. The proposed methodology will be presented based on a case study of indicators for CPOE systems. The audience will work in smaller groups (based on their interest in a particular type of health IT system) on how to apply the methodology on certain types of health IT systems.

**Keywords.** Evaluation, assessment, quality indicator, health IT

## Introduction

It's impossible to imagine health care today without information and communication technology (ICT). The IOM Health Care Quality Initiative underscores the importance of a dramatically improved information technology infrastructure to support a 21st century health system which is safe, efficient and of high quality [1]. On a global level the European Union and WHO recognize that ICT solutions in health care are prerequisites for modern, patient-centered and efficient health care services [2]. Although the potential benefit of health ICT is widely endorsed, various studies have indicated that software used in health care is not necessarily inherently safe [3]. Interventions in health care, medical as well as ICT interventions, should therefore be thoroughly evaluated on their effect on health care before they can be implemented and used on a regular basis. Dissemination of successful ICT interventions is only possible if quality and success of the ICT intervention can be measured. For this quality indicators are needed. An indicator can be defined as a measurable element of practice or system for which there is evidence or consensus that it can be used to assess a defined aspect of the practice or system in question (based on [4])

## 1. Aim of the discussion

The purpose of this workshop is three-fold: 1) to inform the audience on a methodology defined by the EFMI Eval WG for developing quality indicators for health IT systems and discuss this methodology; 2) to draw up the interest within the

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community to develop quality indicators for health IT systems; 3) to recruit leaders and members for groups that will develop indicators for a specific type of health IT systems such as (national infrastructures for) EPR, telemedicine applications, Decision Support Systems etc; 4) to start working on indicator development within such a group.

## 2. Methodology for developing quality indicators for health IT systems

The workshop will start with a definition of quality indicators as a specific indicator type within generic eHealth success indicators covering IT systems' access, use, usability and impacts for service structures, processes and outcomes [5]. A methodology for developing quality indicators for health IT systems is then presented and discussed as a case of and extension to a generic indicator methodology proposed by the EFMI Eval WG [6]. The starting point is a procedure developed by the Rand Corporation [7] to develop health care quality indicator sets. Like other quality indicator development methods, it combines scientific evidence and expert opinion using a consensus technique, where preliminary indicators extracted from the literature are anonymously rated by an expert panel. In a next round the panel meets to discuss, rerate and gain consensus. Criticisms of the Rand procedure include the lack of transparency in applying the definition of *appropriate* care, or in our case *successful* health IT, and weak reliability of the rating and consensus procedures. To overcome these criticisms, the Rand procedure has been modified by van Engen et al with successful elements of rating and consensus procedures from other quality indicator development methods [8]. The methodology therefore comprises following steps:

1. **Expert and stakeholders panel** – A questionnaire about quality characteristics of the system is sent to an expert panel representing all stakeholders of a particular system. Panel members are asked to mention characteristics of excellent system performance and what they would need to know about such a system when it was implemented in another environment in order to assess its quality. If relevant the panel members are asked to describe positive and negative experiences during their use of the system.
2. **Literature Search** – Search terms concerning the field of interest (e.g. CPOE), are combined with MeSH terms and keywords referring to effectiveness, outcome, quality assurance or quality indicators, to identify (scientific) papers. From all included articles indicators related to high quality of the Health IT system are abstracted.
3. **Review of standards and guidelines** – The prevailing guidelines or (ISO/CEN) standards in the field of interest are reviewed to identify procedural and structural properties of high quality system implementation.
4. **Translation of Results** – The results of step 1-3 are translated into a draft set of indicators using the OECD framework on quality indicators [7]. This framework groups concepts to be measured into dimensions (e.g. for a CPOE system authorization, medication ordering, default packages, medication administration, alerts etc) and formulates them according criteria of importance, scientific soundness and feasibility.
5. **Individual rating** – The draft set of indicators is presented to the expert panel for rating on a 1-5 Likert scale based on three criteria: (i) The concept has a clear

relationship with one or more aspects of quality of the system; (ii) The concept can be a departure point for improvement actions; (iii) Information regarding the concept is easy to record or obtain [9]. The rated set is ranked and shortened by mean score.

6. **Group Discussion** – The Nominal Group Technique (NGT) is used to lead the expert panel towards consensus through rounds of debate, discussion and an anonymous voting process [10]. Input for the discussion is the ranked set of indicators and review criteria, the experts discuss the set and select the final QIs.

### 3. Case study on applying the method for CPOE systems

The proposed methodology will be presented using a case study developing quality indicators for CPOE systems. Preliminary results will be shared and barriers and difficulties in the methodology will be discussed. The aim is to familiarize the audience with the methodology, and to clarify unclear parts in the methodology. After the presentation of the case study on CPOE, the audience will work in smaller groups (based on their interest in a particular type of health IT system) on how to apply the methodology on certain types of health IT systems. Working questions will be: Which experts should be included in a panel (step 1 of the methodology)? Which literature is already available on indicators for this type of health IT system (step 2)? Which standards are relevant and should be analysed (step 3)? Volunteers who want to stay involved make a plan for next steps to be performed after the workshop.

### 4. Expected outcome

Discussions on the proposed methodology might lead to refinement of the methodology. A final version of the methodology will be shared by the EVAL WGs website and mailing list. Step 1, 2 and 3 will be continued after the workshop by those who indicate to stay involved and groups per specific type of health IT system will be indicated.

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