



DECLARATION OF INNSBRUCK.

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SYSTEMATIC EVALUATION OF HEALTH INFORMATION SYSTEMS (HIS-EVAL),
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Participants:

Jos Aarts, Elske Ammenwerth, Andrea Berghold, Marie-Catherine Beuscart-Zépher, Jytte Brender, Thomas Bürkle, Martina Deibl, Martin Denz, Nina Eminovic, Rolf Holle, Mathew Jones, Joe Liu, Christian Nøhr, Pirkko Nykänen, Ulrich Prokosch, Michael Rigby, Cornelia Ruland, Heike Sander, Nikki Shaw, Arjen Stoop, Jan Talmon, Vivian Vimarlund, Jeremy Wyatt

Initiator and contact point:

*Elske Ammenwerth, UMIT - University for Health Informatics and Technology Tyrol,
elske.ammenwerth@umit.at*

DECLARATION

Health Information Systems are intended to improve the functioning of health professionals and organisations in managing health and delivering healthcare. Given the significance of this type of intervention, and the intended beneficial effect on patients and professionals, it is morally imperative to ensure that the optimum results are achieved, and any unanticipated outcomes identified. The necessary process is **evaluation**, and this should be considered an essential adjunct to design and implementation of information systems.

DEFINITIONS

- §I. A **system** is a set of components (e.g. actors and artifacts), together with their attributes and relationships, which as a whole is needed to accomplish an objective. A health information system (HIS) is made of the actors (e.g., health care providers) and the artifacts (the information and communication technology - ICT - as well as the implemented algorithms and procedures) that together process health-related information in a health care organization. It operates in an organizational environment made up of people (e.g. system developers, politicians, managers, patients) and procedures which influence its development and operation.
- §II. **Evaluation** is the act of measuring or exploring properties of a health information system (in planning, in development, in implementation, or in operation), the result of which informs a decision to be made concerning that system in a specific context. Evaluation of health information systems has to deal with the actors, the artifacts, and their interaction to best support the decisions to be made.

OBSERVATIONS

- (i) **Evaluation generates information to improve knowledge.** By doing this, evaluation of health information systems will ensure effective current health information systems, and contribute to better future ones. Since practicing medicine is an information intensive activity, a better health information system may also lead to an improved quality of care. This also implies that, except for research purposes, evaluation of ICT in health care only has a value within a contextual information need, i.e. there has to be a question to be answered (e.g. on design, procurement, development or routine operation of a HIS).
- (ii) **Evaluation supports reflective practice.** Every successful organisation and conscientious practitioner evaluates the outcome of their decisions to see whether the intended goals are obtained. Evaluation of health information systems supports the continuous monitoring, review, and adjustment of their planning, development, implementation, and/or operation. Evaluations also support reflective practice in health informatics in general, enabling the emergence of an evidence-based health informatics profession.

- (iii) **Evaluation is a challenging endeavour.** Many actors in a health organisation are affected by ICT. Hence, various viewpoints and aspects that can be considered in an evaluation. In addition, the organisational, economic and legal environment in which the health information system has to operate is in a constant change. To complicate issues further, technological developments enable functionalities that could not have been foreseen when the information system was planned. Evaluation of health information systems therefore has the challenging task of selecting an adequate methodology to derive valid and timely answers to given questions despite the continuously changing conditions.
- (iv) **Evaluation is not free.** Proper evaluations require skills and resources which need to be planned, procured, and applied; in return the results of evaluation should be anticipated to have added value. This added value need not to be of monetary nature, but can also be of a functional, psychological or social type as well as in terms of the value of the knowledge gained.

RECOMMENDATIONS

1. **Evaluation should be seen as an ethical imperative.** Information systems and their applications are complex, commit scarce resources, directly affect patients' records and the delivery of their care, and apply developing solutions to changing needs. It should be seen as an ethical imperative for evaluation to be undertaken, in the same way that in clinical care evidence and audit are seen as essential parts of practice. Furthermore, and in a similar way, it should be seen as desirable to share findings as learning points and knowledge development for the common good across the health informatics and healthcare communities.
2. **Evaluation should be sufficiently funded.** The funding authorities of health information systems (e.g. hospital management) should require – and fund – explicit and continuous evaluation activities during their planning, development, implementation and operation.
3. **Evaluators should be free from pressure.** Planning and execution of an evaluation should be based on professional expertise and be free from any political, managerial, or other pressure with regard to the conclusions of the evaluation. The main concern of the evaluator should be to perform an independent, objective and proficient study that provides the answer to the questions asked.
4. **Evaluation studies should be grounded on scientific theory and rigorous approaches.** Only rigorous scientific grounding will increase their credibility and ease the interpretation of their results. On the one hand they need to respect the need to comply with the practical information needs and constraints of the actual situation; on the other hand they should objectively provide evidence for the derived conclusions.
5. **Evaluation methods should be selected with an open mind.** The choice of methods should not be limited by a single research paradigm, but take into consideration the variety of information needs, available approaches and methods from different professional and research domains.
6. **Reports on methodological and methodical studies¹ should be encouraged.** Scientific journals and conferences should promote further development of evaluation methodologies. Flexible and trans-disciplinary approaches are needed that allow for the complexity of the evaluation to be managed whilst also accommodating changes in the environment during the evaluation study.
7. **Guidelines for good evaluation practice should be made available.** To strengthen future evaluation studies recommendations for best practice should be prepared through a consensus-making approach based on existing experience and sources of knowledge. The recommendations should be widely published, not only in journals for the medical informatics community, but also in journals directed towards other stakeholders in health information systems and health care delivery.

¹ 'Methodology' means the 'knowledge (logos) of methods', i.e. how to deal with methods, while 'methodical' means that stringency is applied throughout, which is not necessarily implied by the methodology or methods applied.

8. **Terms, concepts and guidelines for reporting on results of ICT assessment studies should be developed.** These should include a set of well-defined common evaluation terms and concepts; they should be agreed and widely published, then adopted by scientific journals and beyond, as presentation standards, and as the criteria for acceptance for publication.
9. **Evaluation should be promoted by centres of excellence.** Such centres should operate on a not for profit basis, not having other commercial interests in health informatics. They can provide consultancy for health care organisations and promote both theory and good practice of evaluation.
10. **Evaluation networks should be established.** These will support the exchange of experience. They should include participants from different professional and theoretical backgrounds as to encourage the trans-disciplinary synergy of evaluation approaches and theories from different domains.
11. **An open access repository about evaluation studies should be established.** This repository should contain information on planned, active and finalized (and also terminated) evaluation studies. Whether or not the outcomes of such studies are (to be) published through the traditional channels, it is important for evaluators to have access to templates or paradigmatic approaches with contact information as well as lessons learned on methodological and practical issues.
12. **Appreciation of methods of evaluation should be part of health informatics curricula.** It should be noted that evaluation is such a complex endeavour that only extensive experience in the real world will make a health care or health informatics professional a professionally qualified expert in evaluation. However, a firm theoretical foundation is needed. Health Informatics curricula can provide such a foundation, preferably with practical exercises included.