



Artificial Intelligence in Medicine (Elsevier)

Call for Papers: Special Issue on
Evaluation of Clinical Decision Support Systems (CDSS) in Health Care

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Background and motivation

Clinical Decision Support Systems (CDSS) in Health Care have a long history going back to the 1970s, with recent reviews showing that their number and uptake increases. CDSS can support many different activities such as diagnosis, therapy, monitoring or prevention and are used in all kinds of medical domains such as chronic illness, acute care, primary care, and patient advice lines. CDSS may provide many different services such as access to knowledge, statistical calculations and individual adaptations, recommendations, reminders or alerts to different user groups including physicians and nurses but also addressing self-management by patients. In some areas, CDSS have been found to increase clinical performance and guidelines adherence, while evidence on improvement of patient outcome is still limited. There are even examples of negative impact. Overall, the number of published CDSS evaluation studies is still limited given their` rising uptake, and the evaluation design and/or reporting of the evaluation studies is often weak, which makes judgment of their cost-benefit ratio difficult.

The momentum surrounding CDSS is even more increasing with the more widespread implementation of electronic patient records enabling CDSS implementation; however health care providers and organizations and development agencies require more intensive evaluation and research for better informed investments, to ensure patient safety, and to recognize clinician anxieties as to their professional liability. Evidence from early CDSS deployments should be informing

and guiding subsequent projects to ensure that ineffective approaches are not duplicated and early successes can be replicated and scaled. Building up such an evidence base requires reproducible and well designed evaluation studies of CDSS. Guidelines for evaluation of health informatics interventions in general and their reporting are available although these need to be adapted and extended for the specific case of CDSS evaluation. Also the updated EU Medical Device Directive now defines “medical” software a medical device. This has implications for the way CDSS are developed and evaluated. Safety for patients, users and others is a key aspect of the evaluation of CDSS in the context of the Medical Device Directive.

As with any aspect of healthcare, policies and practice should be firmly based on evidence, and informatics should be no exception. Evaluation of systems is a robust source of such evidence, provided the evaluation is scientific. Whilst generic guidelines now exist for health informatics systems evaluation, application within CDSS is limited, not least because of the methodological issues arising, especially for pilot studies preceding wider general roll-out. In particular, user populations may be dispersed and hard to reach, user profiles and patterns of use are important factors and patient (and organizational) outcomes are hard to track. This special issue will give opportunity to focus on these challenges.

Topics for the special issue

We are inviting people from health care, academia and industry to submit original articles or systematic reviews relevant to the following topics:

- Case studies on evaluation of CDSS
- Meta analyses or systematic reviews on CDSS
- Methodology of CDSS evaluation
- Verification, Validation and testing of CDSS
- Impact of CDSS
- Costs of CDSS
- CDSS and patient safety
- Barriers and challenges to CDSS implementation and evaluation
- User acceptance and usability of CDSS
- Adoption of CDSS in health care environments
- Issue of “brittleness” of CDSS
- Quality indicators for CDSS
- Certification of CDSS
- Future of CDSS evaluation

Deadline of submissions:

Deadline for the submission of manuscripts is June 30th, 2012.

We advise all authors interested to contribute to this special issue to contact Elske Ammenwerth beforehand (contact data see below) to indicate the topic of the planned manuscript.

Instruction for authors:

Please consult the Guide for Authors of AIM available at the journal homepage at:

<http://ees.elsevier.com/aiim/>

The length of manuscripts should not exceed 20 – 25 manuscript pages (1.5-spaced lines).

When submitting the paper, please use the Electronic Manuscript Submission at

<http://ees.elsevier.com/aiim/>

Clearly indicate that it is a submission to the special issue by adding “Special Issue: CDSS Evaluation” to the title of the manuscript.

All papers are refereed through an international peer review process by at least three reviewers.

Artificial Intelligence in Medicine carries no page charges.

The corresponding author, at no cost, will be provided with a PDF file of the article via e-mail or, alternatively, 25 free paper offprints. See instructions for authors for details.

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