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Conference Item

Original citation:

Originally presented at [Barber, Nick and Cornford, Tony and Klecun, Ela and Lichtner, Valentina and Takian, Amirhossein (2011) *User-centered healthcare IT: meaningful or meaningless?* In: MIE 2011, 28-31 August 2011, Oslo, Norway.

This version available at: <http://eprints.lse.ac.uk/39256/>

Available in LSE Research Online: August 2012

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User-Centered healthcare IT: Meaningful or Meaningless?

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Abstract. This panel aims to discuss concepts, assumptions and visions of user-centered information technology for healthcare. It presents two opposite views on the subject. The discussion is informed by findings of three research projects evaluating the implementation of e-prescribing systems, electronic transmission of prescriptions, and electronic health records in the UK. The timeliness and perhaps urgency of such a debate are due to the incessantly increasing worldwide computerization of healthcare, concurrent to an ambiguity of the effect of IT on care processes, outcomes and user satisfaction.

Keywords. Health information systems, user-centered design, user-centered implementation, patient-centered care

Introduction

Information technology (IT) is advocated as panacea for costly and risky healthcare processes. A user-centered approach to the design and implementation of IT in healthcare is seen as a determinant for its successful diffusion. Arguments in favor of user-centered design (UCD) claim that its application “ensures that designed [electronic healthcare records] are efficient, effective, and satisfying to the user”[1]. Yet, users are heterogeneous, rarely fully engaged in the design or implementation of healthcare IT and they are reported to be variably satisfied with the technology. In the meantime, healthcare processes are being increasingly computerized worldwide. The effect of healthcare IT on work processes and health outcomes remains ambiguous (e.g. [2]), and incentives have to be put in place to achieve ‘meaningful use’ of such systems [3].

Solutions to these contradictions and dilemmas are not expected to be easy. We propose a debate on the meaning, usefulness and feasibility of user-centered information technology (UC IT) in healthcare. We start by unpacking the idea of the ‘user’ and clarifying the motions pro or against user centeredness. Our objective is to make explicit embedded values and assumptions in UC IT, and uncover specific challenges or solutions (pro-)posed by the healthcare context for achieving UC IT. The debate will be informed by findings of three research projects we have been involved in.

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Two of those evaluated the English NHS National Programme for IT initiatives and the third independent hospital e-prescribing implementations². By this debate, we aim to contribute to a greater awareness of UC IT among developers, implementers and users.

The following pages suggest directions for a discussion in the form of purposefully polarized positions in favor of UC IT, and against it. We close this proposal with the outline of the debate and approaches to engage the audience in the debate.

1. User-Centered is meaningful and necessary

We argue that user-centered design and implemented IT is an unquestionable principle and a golden rule for a technology that is: *effective* for both users and organizations, *satisfactory* for the end-users and, most importantly, *safe* for patients. Furthermore, we believe that UC IT is an ethical call.

Technology in healthcare can kill [4]. Safety should be the number one priority for any technology used for processes of care. Research in human factors has demonstrated how user-centered design contributes to a safer technology [5] and therefore, ergonomic principles and UCD methods “should be applied to most informatics and systems development projects” [6]. Users will inevitably find ways to work around IT otherwise designed on the basis of wrong assumptions on workflows and processes of care, or generally unfit to the context of use. We have seen in our research how clinicians were asked to use electronic patient record systems implemented with a top-down approach and very limited user involvement. User had to devise workarounds to get the patient-caring job done, and these lead to data quality issues down the line, with organizational and patient care repercussions.

IT in healthcare contributes to changing clinicians and admin roles redistributing tasks and risks [7], potentially alerting power and identity of those involved and displacing jobs. It is an ethical imperative to involve the end-users who will be most affected in design and implementation processes.

2. 1. User-Centered is meaningless and impossible to achieve

But who are the users in UC IT? Let’s unpack this deceptive concept. When we open the box, we find that healthcare IT affects and is affected by a large variety of stakeholders. We have been involved in mapping stakeholders for the evaluation of the English Electronic Prescription Service and our maps were multiple and complex, with a variety of interested parties whose business were expected to be affected by the introduction of this new infrastructure [8].

In more simple models of hospital IT, stakeholders can comprise: *direct end-users*, such as nurses and doctors asked to use electronic patient record systems; *indirect users*, such as clinical coders interested for billing purposes in using the information recorded by clinicians in these systems; and *non-users* such as patients whose information is

² The three projects are: “An Evaluation of the Implementation and Adoption of the NHS Care Records Service (NHS CRS) in Secondary Care in England” (CfHEP005), “Evaluation of the Electronic Prescription Service in primary care” (CfHEP004) and “Electronic prescribing in hospitals – challenges and lessons learned”. Three of the authors (NB, TC and EK) have been involved in all three projects, one author (VL) has been involved in both CfHEP004 and CfHEP005, and one author (AT) in CfHEP005.

recorded and exchanged and who are affected by others using IT. Different users might (and often do) have different views on IT. Which user should be at the center of UC IT and who is to decide? Should patients be involved in design and implementation of health IT for the sake of patient-centered care? A 'pure' user-centered design is, if not a fairytale, then a vision almost impossible to achieve.

Furthermore, end-users do not have to have been involved in the design of the technology to find it usable and useful. The implementation of the Picture Archiving systems (PACS) in the UK is an exemplary success story of this kind.

Involving users can be expensive and time consuming, and it may give rise to hard to fulfill expectations. At times it may also be politically undesirable.

3. The panel debate

The authors of this paper will be the panelist (TC will chair). The chair will make a short introduction, then representatives of the motion pro- and against- UC IT will make a short presentation of their positions, upon which the audience will be invited to contribute with questions and comments. The event will be accompanied by an online blog space and a conference poster, where participants will be able to post their comments, experiences and ideas on UC IT. We hope the debate will continue online after the closing of the conference.

Acknowledgements

We thank our colleagues from the London School of Economics and Political Science, The School of Pharmacy, University of Nottingham, University of Edinburgh, Imperial College Healthcare NHS Trust, and Burton Hospitals NHS Foundation Trust, who have contributed to the research projects informing this proposal.

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