Alert information sharing – a proposed model

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Abstract and Objective

Some types of information in Electronic Health Records can have a particular significance to ensure patient safety e.g. notes on severe hypersensitivity to medicines. In order to ensure that all health professionals take note of this, it is important that Alert Information is structured and can be shared between providers and systems. A defined structure is also a prerequisite for the use of such information for automatic decision support. This paper presents an analysis of requirements and describes a conceptual model and a visual symbol for presentation. This paper also discusses how alert signals can be generated. The first implementation of this has been made in the context of the Swedish National Patient Summary project and it is the basis for ongoing formal standardization in CEN and ISO.

Keywords:

Alert information, Decision support systems, Computerized medical records systems, Adverse drug reaction

Methods

This study is based on four types of data: a literature review, a set of interviews with health professionals representing different perspectives, a pilot test using different visual symbols, partly reported previously, discussions of the ISO/TC 215 and CEN/TC 251 working groups, and finally a pilot implementation in the course of the Swedish national patient summary.

Results

Alerts and alert information

Alert is state of attention which indicates preparedness to act on a possible threat. Information about threats is called alert information. The following categories were identified:

Hypersensitivity, Medical condition, Special treatment, Communicable disease, Requested deviation from usual care process.

The severity of the alert could be divided in three levels:

Life-threatening, Harmful and Discomforting.

Alert signal function

These signals can be classified into visual (text or icons) and auditory signals.

A display text message is a structured text using defined terminologies and possibly complemented by narrative. A visual icon in this proposal is intended to be one graphic symbol which can express several characteristics dependent of the instantiated alert information. Auditory signals can be of type tone or voice messages.

A number of basic alert symbols for medical information are used worldwide. We propose that an alert symbol should be able to convey not only that there is some alert information recorded but also something about the category of alert and the seriousness of that alert. A multidimensional icon is proposed and used in the Swedish national project.

Interaction between integrated decision support and the alert information

One important function of advanced EHR systems is to provide decision support to guide the user in selection of therapeutic interventions. In particular the use of decision support for prescribing of medication has demonstrated its importance for improved patient safety.

Conclusion

Alert information can be systematized and structured in order to allow consistent and effective visual presentation, automatic decision support particularly for medication ordering and exchange between different EHR systems. Global implementation depends on standardization of the general principles which has been started and the detailed structuring of exchange information which is on-going in the openEHR archetype co-operation.