Updating a computerised clinical observation entry form according to the pattern of its previous use and to the evolution of medical knowledge

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Structured data entry Benefits

Improves data reliability, availability and reusability for:

- Patient care
- Audit
- Activity coding
- Clinical research
- Teaching

Structured data entry
Costs

- Needs a sound clinical information model
- Requires dedicated hardware and software
- Changes users' habits:
  - Data entry by physicians (typing skills)
  - Templates may be too close-ended
  - ➔ Disrupts the patient – physician relationship
- Must be maintained

Structured data entry Maintenance

- Correction of initial modelling errors
- Adaptation to contextual changes:
  - Patients recruitment
  - Clinical circumstances
  - Medical knowledge and practice

Purpose

To update a computerized record form used in a hypertension clinic, considering:

1- the physicians needs in actual practice, as ascertained by their use of the record

2- the evolution of medical knowledge, as synthesized in guidelines

Material

1- A computerized clinical record form used for hypertension management since 1975

- 5.109 forms completed in year 2005
- 176 optional questions, either date, numeric, Boolean, checklist or free-text
- Free-text answers from year 2005 make a 350.000 words corpus

2- Eight guidelines for hypertension management, making a 56.000 words corpus

Methods

1- Statistical analysis of the answer rate of each question and of the use of each predefined answers in checklists during year 2005

- ➔ Seldom used questions / answers are candidates for deletion

2- Terminological analysis of the two text corpora (free-text answers and guidelines)

- ➔ Recurrent or new clinical concepts are candidates for inclusion as structured items

Statistical results

- 19/176 questions were completed less than 50 times in 2005 and 16 were deleted
- 78/203 predefined answers for 39 checklist questions were ticked less than 50 times in 2005 and 47 were deleted
- Questions and predefined answers of significant value for patient care or clinical research were not deleted, even if seldom used

Terminological results

- 166 clinical concepts not already found as structured items in the form were identified:
  - 103 occurred more than 50 times in free text answers
  - 95 were extracted from guidelines
  - 32 were common to both sources

- These concepts lead to 50 new items the form:
  - 8 numeric and 4 free text questions
  - 6 checklist questions with 28 associated answers
  - 4 new answers for pre-existing checklist questions

Strengths of the approach

- It relies on empirical data providing clues for changes, which are critically appraised for validation by senior clinicians
- Analysis of previously filled forms reflects the clinicians' actual needs in practice
- Analysis of guidelines reflects the evolution of medical knowledge

Limits of the approach

- It suits well hypertension management, which is highly repetitive and standardized. To which extent and with which results it can be adapted to other settings must be investigated.

- It does not address the issue of vague or ambiguous question labels, which are also amenable to improvements. In this regard, inputs from naïve users should be helpful.

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