An investigation of an integration tool to improve access to information resources in clinical software

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Presentation Overview

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Background

• Health system challenges
• Increasing reliance on evidence-based information to achieve best practice
• Promise of decision support
  • Variability of implementation approaches
  • Effectiveness
  • Approach in different settings
• Other NPS experience
Challenge of information use

- Amount and complexity

- Challenge of information integration into clinical software
  - Few standard approaches or specifications
  - Low frequency of access of computerised information
  - Little user experience
  - Poorly investigated area

- Clinical software on General Practitioners’ desktops
- Potential for improved decision-making
Project Aims

• Enable a context-based information search based on triggers in GP clinical software

• Information from high quality clinical resources

• Inform decision-making at the point of care
Conduct of the project

• Observational study
• Project Reference Group
  • Clinical pharmacologist
  • Two experienced GPs
  • GP Registrar
  • GP Academic
• Prototyping and User Needs Assessment
  • Demonstration
  • Testing using clinical scenarios
  • Observation of workflow and information use
  • Validation of findings
Knowledge Linked into Clinical Software (KLICS) Prototype

- Proof of concept
- Independent information integration
  - Clinical software systems
  - Information resources
- Monitoring of clinical system
  - Unobtrusive
  - Mechanisms transparent to user
- Searching of context relevant information
  - Parameters from ‘triggers’
    - e.g. diagnoses, medication
- Passive information display
  - ‘floating window’
  - No interference to workflow
Scenarios for prototype testing

• For GPs
  • Recall for HbA1c result and ongoing diabetes
  • Influenza immunisation & question about osteoporosis
  • New mother, tiredness and fatigue (breast feeding)
  • Otitis media (paediatric)
  • Rash and itching, scabies (pregnancy)

• Clinical pharmacologist
Recall for HbA1c result and ongoing diabetes
Jocelyn, 65 year old retiree presenting for review.

History
• History includes hypertension and Type 2 Diabetes.
• She has no known allergies
• Non-smoker, consuming 2 glasses of wine per week and walks daily. Is careful with her diet.
• Over the last 6 months, self-monitored daily blood sugars have increased to between 11.0 and 13.0 mmol/L in the last three weeks.
• Her HbA1c six months ago was 8.5% but a recent reading two weeks ago was 9%.

Her medications for the past 6 months have been:
• aspirin 100 mg daily, perindopril 4 mg daily, metoprolol 25 mg twice daily, simvastatin 20 mg daily, metformin 850 mg three times a day; and gliclazide 120 mg twice daily with food

Current presentation
Examination reveals:
• blood pressure is 135/80 mmHg, heart rate regular 65 beats per minute, weight 68 kg, height 170 cm (BMI 23.5 kg/m2), waist circumference 76 cm.
Technology

- Delphi 7 (incorporating XML, XSL, HTML, JavaScript and CSS)

- Four major modules
  - User Interface (presents results to the user and allows the user to control the application)
  - Controller (coordinates search activity)
  - Sources (manages searching and presentation of search results)
  - Links (manages links)
Some key findings - Information resources

• Greater accessibility equates to greater likelihood of use

• Speed and perceived ‘usability’

• This information a complement to that existing in clinical software

• Information resources that best suit inclusion
  • support clinical areas of least experience
  • likely to be updated regularly

• General information resources may be of limited use for specialists
Some key findings - Search tool

• Useful as a combined search over a range of resources

• Potential refinements?
  • Partial string searching, search string completion etc.?
  • Preferences for resources searched?
  • Highlight the search item in the returned document?

• Additional use as an educational tool
Some key findings – Software triggers

• Limited (routine) use for more experienced prescribers

• Decisions about treatment will often be made without use of the clinical software (especially where there is more experience)

• Opportunistic use of triggers will be limited because of the individuals’ workflows

• Particular trigger points may often be turned off by individual GPs within a general practice

• Use unlikely to help diagnosis, but more likely to help decisions about treatment

• Input of ‘trigger data’
  • retrospectively may improve quality of the patient record?
  • possibly influence workflow over time?
Some selections from the ‘10 commandments’

- Speed is everything
- Anticipate needs and deliver in real time
- Fit into the user's workflow
- Little things can make a big difference
- Recognize that physicians will strongly resist stopping
- Simple interventions work the best
- Monitor impact, get feedback, and respond
- Manage and maintain your knowledge-based systems

Conclusions

- Limitations
  - time frame and small number of participants

- Independent information is valued by GPs
- Complements existing information in software
- Federated searching over evidence-based information resources is useful
- **Access**, simplicity and speed are critical
- Workflow will be a major determinant of how a tool is used
- Triggers seem to offer few opportunities for information interventions

- The outcomes from this project are first steps towards providing clinicians with independent evidence-based information resources to support decision-making during patient
Update

- Evaluation of the interface
- Redevelopment using .NET

- Pilot project
  - Roll out for field testing
  - Wider GP engagement (up to 50)
- Additional GP systems
- Evaluation
  - Use and useability
  - Information use
  - Effect on decision-making
Knowledge Linked into Clinical Software (KLICS) Project

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