

Computer-Based Delivery of Health Evidence: A Systematic Review of Randomised Controlled Trials and Systematic Reviews of the Effectiveness on the Process of Care and Patient Outcome

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Acknowledgements

- Partners:
 - The Alberta Research Centre for Child Health Evidence, Department of Paediatrics, University of Alberta
 - Centre for Community Child Health Research, University of British Columbia
- Funding:
 - Alberta Heritage Foundation for Medical Research

Background

- Health care providers are encouraged to practice Evidence Based Medicine to optimise clinical outcomes and quality of life.
- Evidence Based Medicine is the integration of the best research evidence with clinical expertise and patient values.

Background

- Searching for, reviewing, and appraising the research evidence can be time consuming, incomplete, and/or inaccurate.
- Computer-based health evidence delivery systems (e.g., decision support software) can assist health care providers and consumers in searching for, translating, and integrating the best clinical evidence to optimize clinical care.

Background

- High quality evidence on whether and to what extent these systems are effective is required, prior to implementing them.
- Systematic review methodology allows for a high quality summary of existing evidence.

Objective

To systematically identify and synthesize randomised controlled trials (RCT) and systematic reviews (SR) that evaluate the effectiveness of computer-based health evidence delivery systems on the process of care (e.g., compliance with evidence) and/or patient outcomes (e.g., blood pressure).

Methods

- Comprehensive search for relevant RCT's and SR's.

Searched:

- Electronic databases
- Reference lists of relevant studies
- Contacted experts and authors
- Contacted health care software companies

Methods

- Two reviewers applied specific selection criteria to potentially relevant studies.
- Two reviewers assessed the quality of relevant studies.
- One reviewer extracted data from the relevant studies and another reviewer checked this data.

Data Analysis

- Data was analysed quantitatively and qualitatively.
- Due to heterogeneity, the only question the quantitative analysis can answer is: “Can the average computer-based health evidence delivery system work?”

Results

- Identified 57 relevant RCT's and 10 relevant SR's.

Results from RCTs

- Overall, compliance with evidence was 57% for individuals who used the system and 52% for individuals who did not.
- Providers/Patients complied with the evidence significantly more often when they used a computer-based health evidence delivery system.

Results from RCTs

- Evidence did not show that computer-based health evidence delivery systems enhanced patient health outcomes.

Results from SRs

- 7 of the 8 reviews that investigated the effects of these systems on compliance found a benefit.
- 4 of the 8 reviews that investigated the effects of these systems on patient health outcomes found a benefit.

Discussion

- Overall, the results suggest that these systems “can” enhance compliance with the evidence.
- However, compliance was low with and without the use of a computer-based evidence delivery system.

Discussion

- The use of these systems was not found to enhance patient health outcomes. However, few studies assessed this as an outcome so there may not have been enough power to detect an effect.

Limitations

- Low quality of included studies
 - Introduces a bias in favour of the intervention.
- Publication bias
 - Introduces a bias in favour of the intervention.

Limitations

- Heterogeneity
 - Quantitative analysis only answers “can” these systems work not if they “will” work.
- Choice of primary outcome
 - For some studies the primary outcome was inferred by the data extractor.

Conclusions/Recommendations

Great variability among these systems and the findings of the studies. Thus,

- There may not be one generic system that works in all environments.
- Need to identify factors that contribute to successful and unsuccessful systems.
- Every system needs to be evaluated in the environment where it is implemented.

Conclusions/Recommendations

Compliance with evidence is low with and without the use of these systems.

Therefore,

- Need to identify barriers to the uptake of evidence.
- And where the barriers are inappropriate, identify methods to remove them.