Electronic health information System (EHIS) implementation models – a review

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‘And it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things.’

Reference: Machiavelli, N. 1515. The Prince, Chapter VI.
Background & literature review

- Barriers to implementation
- Health information technology failures
- Low levels of adoption, especially hospital settings
- Sociological aspects of implementation 80%
- Technological aspects 20%
What is the CIS / EPR / CPR / EHR / EMR / EHIS?

- Very satisfying for some
- Very expensive for most people
- Not the same thing to everyone
Objective

To identify electronic health information system implementation models via literature search and assess their content and scope
Literature review strategy

Data sources searched

Searched 1980 to 2010 limited to English language only

SET 1
Medical Records or Medical Records Systems, Computerized or Electronic Health Records health informatics.tw or Medical Informatics (electronic medical record* or electronic health record* or electronic patient record*).tw (health information system* or clinical information system* or medical information system* or patient record system* or client record system* or electronic health system*).tw (EHR or EMR or EPR).tw
NOTE: Variations of these terms were used according to the database used.

SET 2
framework*.tw
model*.tw
Model

SET 3
implement*.tw
adopt*.tw

NOTE: .tw = text word search (searches title and abstract only) - Ovid databases only
* is the truncation symbol which retrieves terms with the starting letters

1,670 citations identified

Total 299 titles and abstracts initially selected:

231 Medline
8 Embase
18 CINHAL
36 AustHEALTH
6 Health Business Elite

210 excluded

Total 87 abstracts selected for more detailed screening of full article:

66 Medline & Embase
5 CINHAL
13 AustHEALTH
3 Health Business Elite

73 excluded

7 additional articles detected

Total of 21 articles meeting study selection criteria
Categorisation of models

- 21 health implementation models
- Categorisation according to type and other features:
  - country of origin
  - applied v’s conceptual
  - socio-technical, individual / behavioural or success
  - used by others
  - benefits identified
- Other features identified - poorly reported
Results

- Total of 21 EHIS implementation and 5 non-health models
  - country of origin non-health - 4 USA, 1 Canada
  - country of origin health implementation models:
Results - continued

- 12 applied 9 conceptual
- 17 socio-technical
  - 2 individual / behavioural
  - 2 success
- 8 used by others
- 3 identified benefits
- 0 cost-savings identified
- limited inclusion of patient / client
<table>
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<tr>
<th>Model</th>
<th>Applied</th>
<th>Concept</th>
<th>Socio-technical</th>
<th>Ind/Beh</th>
<th>Success</th>
<th>Others used</th>
<th>Benefits</th>
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EHIS implementation models - origin

- 6 categories:
  - Technology Acceptance Model (TAM)-Davis (6)
  - IS Success Model-Delone & McLean (4)
  - Diffusion of Innovation Theory - Rogers (4)
  - PRECEDE/PROCEED framework – Green, et al (1)
  - Task Technology Fit Model–Goodhue & Thompson (1)
  - No links or reference to other models (7)

Note: 2 EHIS models were categorised into two categories
Discussion

- Variety of EHIS implementation models
- Repeated use of EHIS models not evident
- Diversity in development, creation, application and evaluation
- Cost savings and benefits poorly reported
“Health services do not have a good history of cost effective implementation IT and especially of EMRs. The potential for increasing safety and productivity of this ‘quality intervention’ is largely unrealized.”

Conclusion

- Poor evidence of what is required to ensure a successful EHIS implementation
- Success and system longevity need to be increased
- Further research
- Next stage analyses EHIS implementation model attributes
Questions?