

# Impact of computer use by patients: rapid review

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Aiming to make this as interactive as possible so that you , to some degree, get to choose what I talk about

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Great great grandmother from family tree; Eggs borrowed from Mark Scott flickr

# How do patients use computers?

- 'On their own' (for information or peer support)
- As an adjunct or replacement to a face to face consultation
- These, of course, can both happen

# A 'rapid review' for NHS Choices (Aug-Oct 2009)

- Report available: Google "nhs choices" report plymouth jones
- Terminology: NHS Choices use 'digital health services', today I will use 'e-health'

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Tender in July 2009 for 'Rapid Review' of:

1. improvement of access to care and supporting choice;
2. improving health literacy and enabling healthy living;
3. increasing the efficiency of GP consultations;
4. helping those with Long Term Conditions better manage their care;
5. increasing the uptake of preventative services such as screening and vaccination.

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# What do you want to hear about just now?

Evidence on....

1. E-health on changing 'lifestyle'
2. Computer-patient interviewing



**Is there evidence that people using e-health have an improved understanding of important health determinants such as calorific intake, fat, alcohol units, smoking, five-a-day?**

- |                        |     |
|------------------------|-----|
| 1. Yes, quite a bit    | 0%  |
| 2. Some, but not a lot | 33% |
| 3. Very little, if any | 67% |

# Knowledge

- Yes, quite a bit. For example, meta-analysis by Portnoy 2008.....

# **Portnoy (2008)**

## **Meta-analysis of 75 studies**

- Nutrition, weight loss, physical activity, sexual health, tobacco use, substance use, bingeing and general health maintenance.
- All included health information (eg diet, weight, alcohol), 88% included a motivational component, 89% included a skills training component.

# Examples in Portnoy meta-analysis

- Kypri (2004).
  - 10-15 minutes of web-based assessment
  - Personalized feedback on their drinking.
- Swartz (2006).
  - Video presented strategies for smoking cessation
  - Motivational materials tailored to user's race/ethnicity, sex, age.
- Winzelberg (2000).
  - Structured 8-week intervention.
  - Explanation and definition of eating disorders.
  - Text, audio, video, on-line self-monitoring journals, and behaviour change exercises.
  - Linked discussion forum.

- Portnoy et al concluded that CDIs can lead to *“immediate post-intervention improvements in health-related knowledge, attitudes, and intentions .....*

# Is there evidence of e-health bringing about healthy lifestyle changes such as improved diet, reduced tobacco and alcohol abuse, safer sexual behaviour?

- |                        |    |
|------------------------|----|
| 1. Yes, quite a bit    | 0% |
| 2. Some, but not a lot | 0% |
| 3. Very little, if any | 0% |

- Yes, there is evidence that at least in the short term people's health behaviours improve.
- Take one example. Kyp Kypri et al  
*Archives of Internal Medicine 2009*

#### 4. Primary healthcare setting has potential to reach large number of students



University of Otago Student Health Service - 42,000 consultations with  
>10,000 students per year (2/3 of population)

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- Students: 2435 scored in harmful range and were randomized, and 2050 (84%) completed at least 1 follow-up assessment.
- Intervention: 10 minutes of Web-based motivational assessment and personalized feedback.
- Follow-up assessments at 1 and 6 months
- **After 1 month, participants receiving intervention drank less often, smaller quantities per occasion, and less alcohol overall.**
- **At 6 months, intervention effects persisted for drinking frequency, and overall volume**
- Conclusion: Proactive Web-based screening and intervention reduces drinking in undergraduates

# Portnoy (2008)

- *.....as well as modifying health behaviours such as dietary intake, tobacco use, substance use, safer sexual behavior, binge/purging behaviors, and general health maintenance*

# Is there evidence of improved and sustained health outcomes?

- |                        |    |
|------------------------|----|
| 1. Yes, quite a bit    | 0% |
| 2. Some, but not a lot | 0% |
| 3. Very little, if any | 0% |

# Very little if any

- Most studies are on too short a timescale to show improved health outcomes, and there is less evidence on maintenance of changes in lifestyle.
- However, there is enough epidemiological evidence about lifestyle and health that would allow modelling of health impact.
- The marginal cost of patient participation in an e-health 'health promotion' intervention is very small.

Do you want to hear about methodological issues in this research or shall I move on?

- |  |    |
|--|----|
| 1. <u>Hear more about methods</u>          | 0% |
| 2. <u>Conclusions on lifestyle changes</u> | 0% |
| 3. <u>Computer patient interviewing</u>    | 0% |
| 4. <u>Finish</u>                           | 0% |

# What is the biggest problem in evaluating e-health promotion interventions and the literature?

- |  |    |
|--|----|
| 1. Attrition of participants   | 0% |
| 2. Projects reported but not implemented                                       | 0% |
| 3. What is the control group?  | 0% |
| 4. In ITT how have missing values been dealt with (eg carry forward, imputed?) | 0% |
| 5. Knowing exactly what the intervention was and if it was time/place specific | 0% |

Yes, any/all of those!

# Caution about interpretation and reading of studies

- Attrition can be high.
- For example, Linke, Murray et al have been conducting an ongoing randomised trial of a web-based promotion of sensible drinking.





USER NAM

PASSWOF

[HOME](#) | [ABOUT US](#)



## ▶ Are you drinking too much?

**Most of us drink. Some of us drink more regularly than others. But how often is too often? And how much is too much?**

The fact is, alcohol affects all of us differently. What is manageable for some can be a problem for others. Remember, drinking regularly may not mean it takes a small change to make a big difference.

**This site is designed to help you work out whether you're drinking too much, and if so, what you can do about it.**

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**Find out if you are drinking too much** ::::

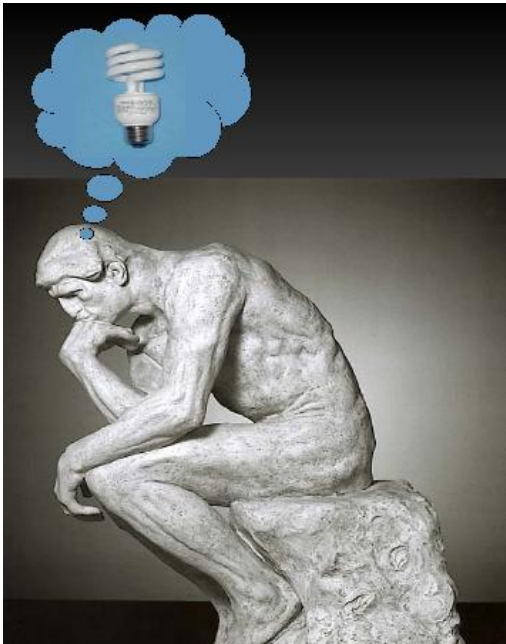
# Caution about interpretation and reading of studies

- Attrition can be high.
- For example, Linke, Murray et al have been conducting an ongoing randomised trial of a web-based promotion of sensible drinking.
- Down Your Drink is a web-based 6 week intervention aimed at heavy drinkers. Intervention is an on-line psychologically enhanced interactive computer-based intervention and the control a flat, text-based information web-site.
- Only 17% of registrants completed the whole 6 weeks but for those who did the final outcome measures, measures of dependency, alcohol-related problems, and mental health symptoms were all reduced (compared to baseline not to controls).

# Conclusion: lifestyle changes

There is evidence that e-health interventions in lifestyle changes can result in:

- improved understanding
- at least in the short term people have improved diet, tobacco and alcohol abuse, sexual behaviour
- most studies are on too short a timescale to show improved health outcomes, and there is less evidence on maintenance of changes in lifestyle.



# What are you thinking at the moment?

1. Referring or facilitating e-health promotion could be/is something that I do. 0%
2. What is all this got to do with me, I am a clinician dealing with consulting patients? 0%
3. What time is coffee? 0%

# Integrating patient computer user with the consultation

- Jones RB, Cawsey A, Al-Barwani F, Reynolds J, Knill-Jones R: **Researching a patient workstation.** In: *HC96 Current perspectives in Healthcare Computing. Edited by Richards B. Weybridge, Surrey: BJHC Boks; 1996: 678-686.*
- Jones R: **Consumer health informatics: the need to integrate with clinical practice.** Invited paper. In: *Primary Health Care Group of the British Computer Society: September 10, 1999; Cambridge: Primary Health Care Group of the BCS; 1999: 4-9.*

# Evidence on computer patient interviewing

- A branching series of questions is developed to assist the medical history taking of the clinician. Standard, carefully worded questions are used to collect a history, with systems having hundreds if not thousands of questions, but patients only answering those relevant.

# Landmark paper

Slack WV, Hicks GP, Reed CE, Van Cura LJ. A computer-based medical history system. *N. Engl. J. Med.* YEAR?;274:194-198

- |    |      |    |
|----|------|----|
| 1. | 1956 | 0% |
| 2. | 1966 | 0% |
| 3. | 1976 | 0% |
| 4. | 1986 | 0% |
| 5. | 1996 | 0% |
| 6. | 2006 | 0% |

- Some 200 studies of computer-patient interviewing (reviewed by Jones, Bachman, and Slack)
- Jones RB, Knill-Jones RP. Electronic Patient Record Project: Direct Patient Input to the Record. Report for the Strategy Division of the Information Management Group of the NHS Management Executive: University of Glasgow, 1994. (Updated 1997).
- Bachman JW. The patient-computer interview: A neglected tool that can aid the clinician. *Mayo Clinic Proceedings* 2003;78(1):67-78.
- Slack WV. Cybermedicine for the patient. *American Journal of Preventive Medicine* 2007;32(5):S135-S136.



# Some common conclusions

- A well designed computer system can be used to interview patients about their medical history, signs and symptoms.
- Such systems are acceptable to the majority of patients
- Systems give patients more time to think about questions

# A quick personal question.....do you have urological problems?

- |                           |    |
|---------------------------|----|
| 1. Yes                    | 0% |
| 2. No                     | 0% |
| 3. Not prepared to answer | 0% |

# Embarrassing topics

- CPI allows patients to more easily disclose information about embarrassing topics
- E.G. computer interviewing for pelvic floor symptoms in both primary care and hospital found 'Despite the taboo nature of many of the items, the questionnaire was well received by women in both settings.'
- Radley SC, Jones GL, Tanguy EA, Stevens VG, Nelson C, Mathers NJ. Computer interviewing in urogynaecology: concept, development and psychometric testing of an electronic pelvic floor assessment questionnaire in primary and secondary care. *BJOG* 2006;113(2):231-238.

# Completeness

- CPI ensures that lines of investigation are not forgotten, leading to more complete data and fewer errors in diagnosis and better agreement between patient and doctor.
- For example, a recent German hospital study found that computer histories reported an additional average of 3.5 problems per patient which were not recorded in corresponding physician histories. The authors recommended a combination of computer and physician histories as the best method.
- Zakim D, Braun N, Fritz P, Alscher MD. Underutilization of information and knowledge in everyday medical practice: Evaluation of a computer-based solution. *BMC Medical Informatics and Decision Making* 2008;8:12.

# Completeness

- A further study in Canadian emergency care, reported that the computer history asked 90%, and the emergency physician 55%, of important historical elements.
- Benaroya M, Elinson R, Zarnke K. Patient-directed intelligent an interactive computer medical history-gathering systems: A utility and feasibility study in the emergency department. *International Journal of Medical Informatics* 2007;76(4):283-288.

# Anecdotally and plausibly.....but no published evidence that I am aware of...

- CPI could 'enable' or 'empower' patients. By preparing patients better for their consultations, be 'enabled' or 'empowered', have more time in the consultation and may help patients to find more relevant information on the Internet by ensuring that they search with the correct keywords.

# Historical perspective and implementation

- When I produced the report for the Information Management Group of the NHS in 1997 I concluded that *“Computer interviewing of patients has been successful in those specialties such as psychiatry and common clinical conditions such as dyspepsia, backache, headache, where data collection relies heavily on patient reporting. ....<but>.... The majority of research has not been taken forward to routine use. ....<snip> .....there are just a few systems in routine use.”*
- Systems failed because they were not adopted by mainstream IT support systems of the time.

# Where to now?

- Evidence on e-health and 'lifestyle' 0%
- Finish with questions 0%



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# Some extra points for discussion

# Some medical/health curricula tend only to consider

