

A meta-narrative review of electronic patient records

Henry W W Potts, Trish Greenhalgh, Deborah Swinglehurst,
Pippa Bark & Geoff Wong
UCL Medical School

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e-mail: h.potts@chime.ucl.ac.uk

23 systematic reviews on the electronic patient record, so why do another one?

- No clear messages for practice and policy
- Research evidence growing, yet conclusions still:
 - evidence is conflicting
 - no definitive solutions
 - more research needed
- Gap between the rhetoric (be it Tony Blair ten years ago, or Barack Obama today) and the reality of ‘failed’ programmes
- Awareness of a broader literature, not indexed on Medline, not generally covered by existing reviews

□ FLIS HENWOOD & ANGIE HART

University of Brighton

 tions for Improving the
d Trials
BRT Group*

Not just heterogeneity, not just mixed methods, but incommensurability

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allion,

The article explores information and com explores how gender s combine to produce development of elec services. In particula computers, seeing IT philosophy of midwif

Eric Monteiro
Department of Computer and Information Science
Norwegian University of Science and Technology
Trondheim, Norway

Abstract

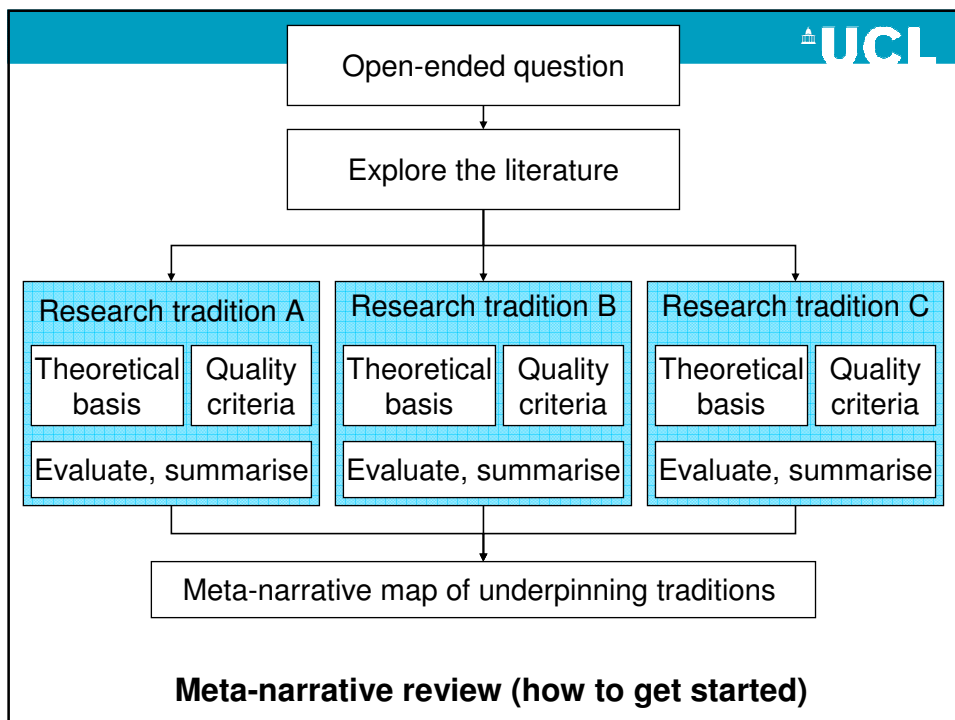
Western hospitals of some size are characterized by a proliferation of nonintegrated information systems, resulting in considerable frustration both among users and information technology personnel. Consequently there have been many integration efforts. Such efforts typically include some or all of the

The meta-narrative approach

- Heterogeneity and pluralism
 - Problems of heterogeneity multiply with more complex questions, with multiple outcomes, varying systems and different methodologies – different **paradigms**
 - Various approaches developed to review broad methods
- Meta-narrative review (developed from the realist review)
 - Greenhalgh, Robert, Bate, Macfarlane & Kyriakidou (2005). *Diffusion of Innovations in Health Service Organisations: A Systematic Literature Review*. Blackwell BMJ Books.
- Use a historical and philosophical perspective as a **pragmatic** way of making sense of a diverse literature

Key questions (from Kuhn, “The structure of scientific revolutions”, 1962)

- What research teams have researched this area?
- How did they CONCEPTUALISE the problem?
- What THEORIES did they use to link problem with potential causes and impacts
- What METHODS did they define as ‘rigorous’ and ‘valid’?



Meta-narratives on the EPR in an organisational context

- Health information systems (based in health informatics and EBM, literature generally covered in Cochrane-style reviews)
- Health services research (in the biomedical literature, but focus on change management)
- Patient safety (focus on error)
- Computer-supported cooperative work (developed from human-computer interaction)
- Information systems – positivist approaches
- Information systems – interpretivist approaches
- Information systems – technology-in-practice approaches (chiefly Orlikowski's technology structuration)
- Critical sociology (feminist and Foucauldian)
- Actor-network theory (recursive, post-structuralist approach, including work of Marc Berg and recent papers from Norway)

Health information systems

- Hopeful literature
- Technological determinism & utopianism
- System as 'black box'
- Little more than lip service to a socio-technical perspective

CSCW

- EPR not container of facts but tool supporting work
- Different healthcare practitioners do different work so need different records
- Challenges idea of an 'agreeable' record

Information systems

- 'Conventional' IS research is positivist: focus on models and 'resistance'
- Practice-based IS research is interpretivist: Orlikowski's technology structuration, based on Giddens' structuration theory

ANT

- Critical perspective
- Beyond dualism of reality vs. record-as-model
- SCOT: how codes & categories shape interpretation and use of technologies



Synthesis: A set of tensions

- EPR as tool or container vs EPR as actor
- Cognitive view of the human subject (user as an information-processor or decision-maker) vs. relational view (user defined primarily by their position within a social/socio-technical system)
- Context as setting within which EPR is implemented vs context as the EPR-in-use
- Clinical work as decision-making vs clinical work as situated practice; and knowledge as transferable facts vs knowledge as information-in-context
- Process of change: logic of determinism vs logic of opposition
- Success as objectively and prospectively defined vs success as socially negotiated and context-specific
- Scale: bigger the better vs small is beautiful

Conclusions... and beyond the EPR?

- Techno-utopian dream: *a Big Computer solves everything*
- Gap between policymakers' perspective and 'coal face' workers
- Failure of evidence-based approach
 - Search for evidence can be very blinkered
 - Gap between policymakers' perspective and many researchers'
 - Gap between research results and conclusions
- Focus on outcomes is good, but can obscure details about how something works → Importance of the realist approach, of theory
- The RCT has limits, in treating the intervention as a 'black box' and in controlling for the context, when it's the details of the technology and the context that matter

Or, as someone else recently put it...

- Anderson, Brown, Dowty, Inglesant, Heath & Sasse (2009), *Database State*, Joseph Rowntree Reform Trust, p. 47:

“We also need to wean Government off the idea that IT projects can substitute for effective policy action. For too long, ministers have used IT as a displacement activity. IT must rather be seen as just one of the tools of modern management; and often not be the most important tool (so neither ministers nor voters should expect too much).

“To paraphrase the late Roger Needham, **“if you think IT is the solution to your problem, then you don't understand IT, and you don't understand your problem either.”**”
(emphasis added)

Any questions?

Reflections on the meta-narrative approach:

- Very different picture to traditional Cochrane approach
- Rich array of theories and methods
- Systematic, but interpretive

The Internet in medical education: A realist synthesis

or

Making sense of complex medical educational interventions with realist synthesis: A case study

Dr Geoff Wong*

Professor Trisha Greenhalgh*

Professor Ray Pawson^

*Research Department of Primary Care and Population Health, UCL

^School of Sociology and Social Policy, Leeds

g.wong@pcps.ucl.ac.uk

Aim:

- Describe and explain why a realist synthesis may be a better review method for complex medical educational interventions compared to the 'standard' Cochrane-type review.

Contents

During this presentation, drawing on the use of the Internet in medical education, I will cover:

- Limitations of Cochrane-type systematic reviews
- Why realist synthesis may be a better approach
- Findings of our realist synthesis
- Some emerging issues
- Summary

What's the problem?

Limitations of 'standard' Cochrane-type reviews - 1

- Background
 - There is a vast literature base in the use of the internet in medical education which both described and evaluates it
 - This literature is very diverse – topics and learners, educational settings and is global (i.e. it is very heterogeneous!)

What's the problem?

Limitations of 'standard' Cochrane-type reviews - 2

- Several systematic reviews have been done, the most recent and most rigorous being by Cook et al.*
- There is a consistency in their findings which is that:
 - Internet based learning works better than nothing but is not superior to any other teaching medium
 - No consistent association between intervention variables and outcomes obtained
- Educators still do not know:
 - When should Internet-based learning be used?
 - How can Internet-based learning be effectively implemented?

*Cook D, Levinson A, Garside S, Dupras D, Erwin P, Montori V. Internet-Based Learning in the Health Professions: A Meta-analysis. JAMA 2008; 300(10):1181-1196.

What's realist synthesis and why might it be better?

– A different approach to complex interventions - 1

- There is a need to think about educational interventions as complex interventions. They have:
 - Multiple interacting 'human' components (e.g. researchers and participants)
 - Outcomes result from the way the 'human' components use the 'resources' provided – choices and actions
 - These choices and actions are influenced by the context in which the intervention takes place
 - The outcomes will therefore also be influenced by the context
- For example...

What's realist synthesis and why might it be better?

– A different approach to complex interventions - 2

- Implications are:
 - Any seemingly similar intervention will produce different outcomes in different contexts
 - It is not possible to produce a list of intervention variables (which if implemented) will always produce the desired outcomes

What's realist synthesis and why might it be better?

– The realist synthesis approach - 1

- Realist Synthesis is a review method that is more focussed on trying to explain as opposed to judge complex interventions
- Seeks not so much to answer 'If' it works, but 'How', 'Why', 'In what circumstances', 'For whom' and 'To what extent' it works

What's realist synthesis and why might it be better?

– The realist synthesis approach - 2

- Based on the premise that the choices and actions taken by the 'human' components of a complex intervention are not haphazard, but can be explained and (to an extent) predicted by sociological middle-range theory.
- Definitions:
 - Theory - An attempt to organise the facts – some 'proven', some more conjectural – within a domain of inquiry into a structurally coherent system (Klee)
 - Middle-range theory – lies between minor but necessary working hypotheses all-inclusive systematic efforts to develop a unified theory that will explain all the observed uniformities of social behaviour, social organization and social change. Middle-range theory involves abstraction but are close enough to observed data so as to permit empirical testing. (Merton)

What's realist synthesis and why might it be better?

– The realist synthesis approach - 3

- 'Successful' middle range theory (or theories) are:
 - The ones that are best able to explain and 'predict' the outcomes obtained in a group of seemingly similar complex interventions
 - 'Generalisable' across a group of seemingly similar complex interventions

What's realist synthesis and why might it be better?

– Our research question

- *What is it about the Internet that works in medical education, for whom, to what extent, in what circumstances, in what respect, how and why?*

What's realist synthesis and why might it be better?

– The realist synthesis method - 1

1. Search for 'candidate' middle range theories
2. Systematically / purposively search the relevant literature
3. Confirm, refute or refine 'candidate' middle range theories
4. Repeat Steps 1 to 3 until 'candidate' middle range theories adequately explains and 'predicts' outcomes under differing contexts within the studies included in the realist synthesis

The Internet in medical education

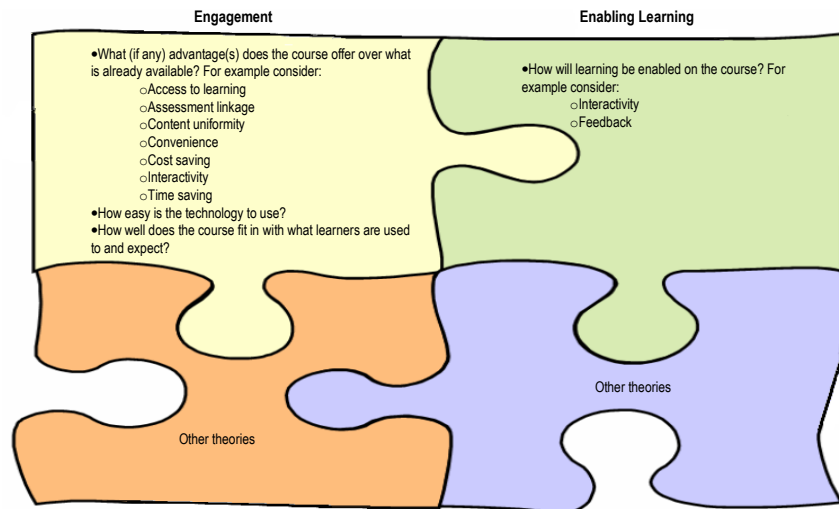
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- 15 Electronic databases searched with 249 relevant articles included in synthesis
- One of the key decision points for learners was about engagement with a course
- This could be explained and 'predicted' by Roger's Diffusion of Innovations theory
- Another important finding was that for learning to take place, learners had to have the opportunity to interact and get feedback (dialogue).
- This could be explained by the work of Laurillard in her Conversational Framework.

What does the research tell us? - 5

- A good example illustrating these theories in action is 'Virtual microscopy'.

What does the research tell us? - 6



Some emerging issues...

- Reporting details and theory testing
- Can all complex interventions be thought of in the same way?
- When can a theory be called 'successful'?

Summary

- In complex medical educational interventions the action of individuals under specific contexts results in outcomes.
- The way these outcomes result is neither deterministic nor regular, but can be explained and 'predicted' by middle range theory
- Systematically reviewing such interventions may only be feasible when the review method takes into account these properties
- Theory driven reviews, such as realist synthesis is one such method

Acknowledgements

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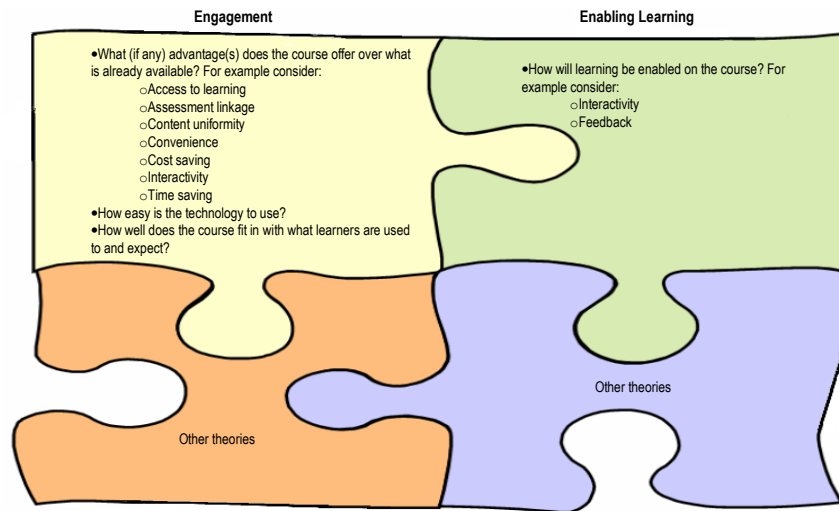
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