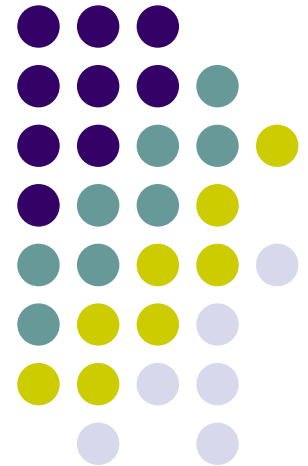
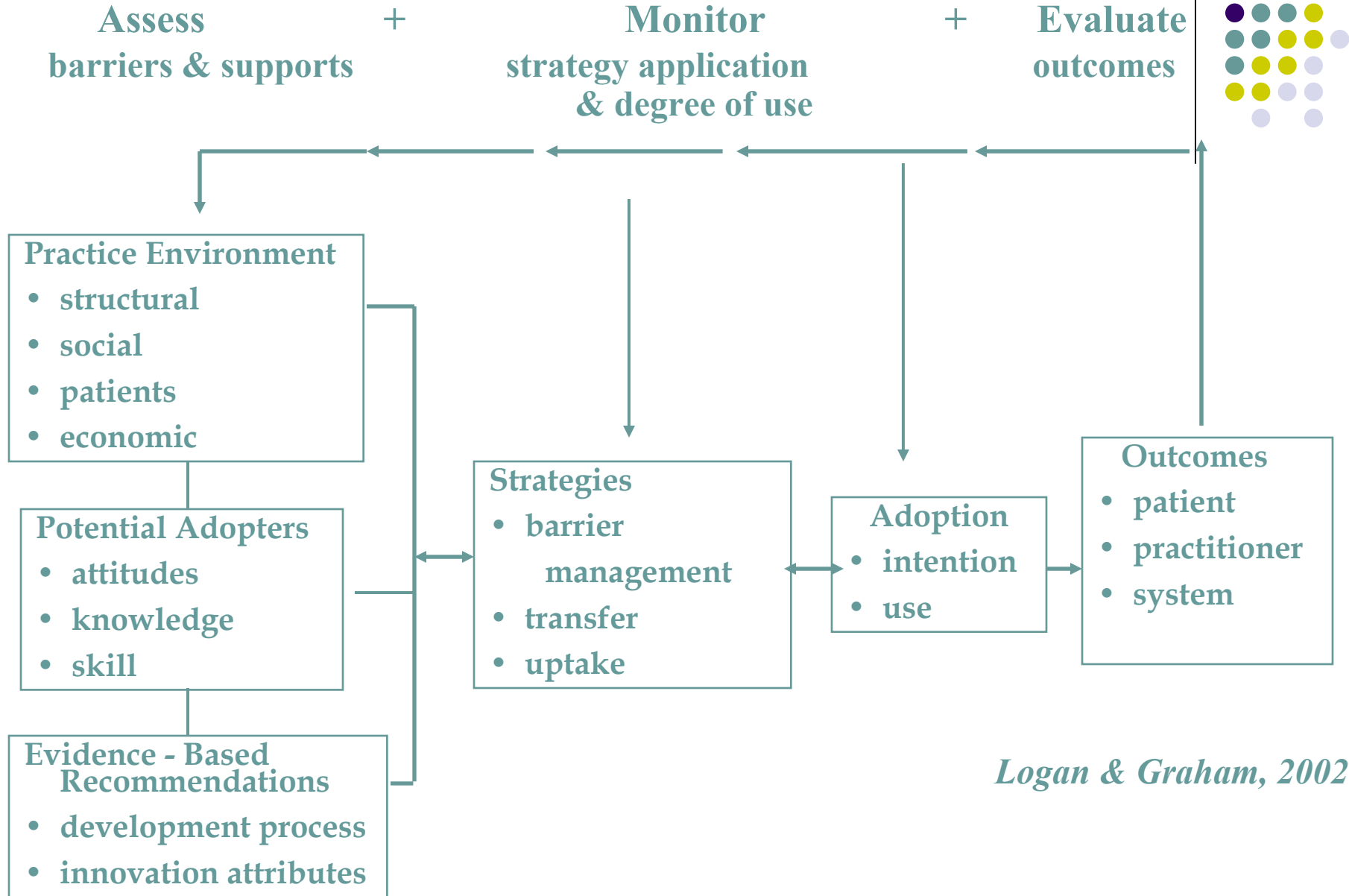
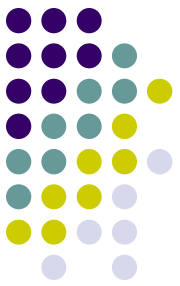


Enhancing informativeness of evaluations of professional behaviour change



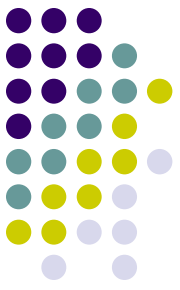
Ottawa Model of Research Use





Background

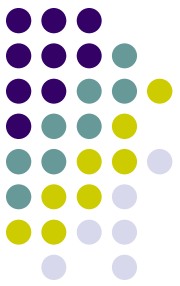
- Multiple theories and frameworks of individual and organizational behavior change.
- Most professional behavior change frameworks are descriptive and normative rather than predictive reflecting complexity of behavioral change.
- Need for predictive theories that incrementally improve likelihood of successful implementation.



Background

- Different types of theory will be relevant to interventions at different levels:
 - the individual health professional;
 - health care groups or teams;
 - organisations providing health care (e.g., NHS trusts);
 - the larger health care system or environment in which individual organizations are embedded.

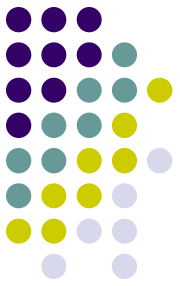
Ferlie, Shortell (2001). *Milbank Quarterly*



Background

- Rigorous quantitative designs allow strong causal inferences to be made about the effects of a program (causal description)
- They provide relatively little information about the mechanisms through which a program operates (causal explanation)
- Better understanding of causal explanation likely to improve understanding about generalisability of study findings

Methods for enhancing informativeness



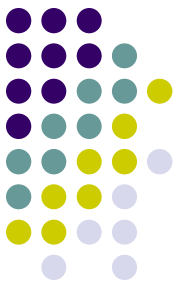
- Design elements
- Process evaluations
 - Qualitative
 - Quantitative
 - Theory based
- Temporal evaluations

Methods for enhancing informativeness

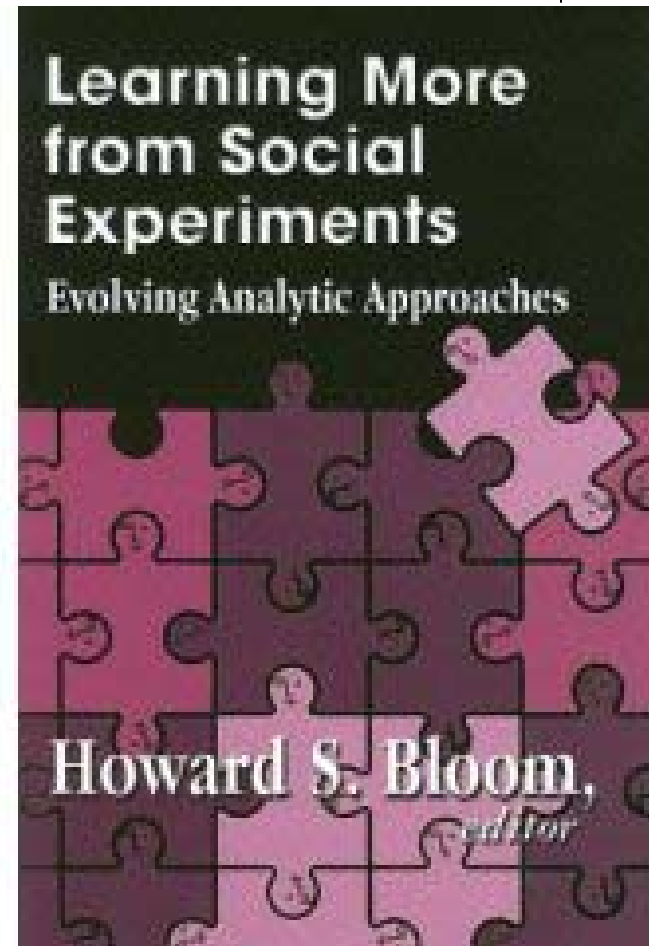


- Methods of analysis tend to focus on subgroup analysis or regression for limited number of factors at one level of OMRU.

Methods for enhancing informativeness



- Bloom HS (ed) (2005)
Learning more from social experiments. Evolving analytical Approaches. Sage Publications



Learning more from social experiments



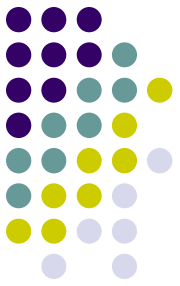
- Pragmatic multisite trials usually involve some variation in context of intervention sites, of intervention implementation and of intervention effectiveness across sites
- Bloom suggests that using hierarchical approaches to analysing data that make use of these natural variations will provide greater insight into mediators and moderators of interventions

Learning more from social experiments



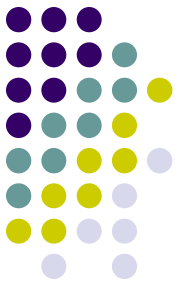
- Factors influencing the effectiveness of complex interventions include:
 - The way the program is implemented
 - Specific content (activities and services) of the program
 - The socioeconomic environment
 - Types of people it serves
- Factors could operate at more than one level of OMRU

Learning more from social experiments



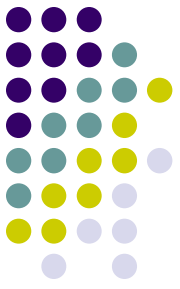
- Four stages:
 - Articulating research question
 - Developing the model (theoretically driven)
 - Constructing and assessing the measures
 - Analysis and interpretation

Learning more from social experiments



- Worked example – targetting low income parents who qualify for cash welfare to increase enrollees’ employment and earnings
 - Larger effects of programs that:
 - Emphasised quick job entry
 - Emphasised personalized attention
 - Had smaller staff caseload
 - Had agreement on program goals between staff and supervisors
 - Did not include basic education
 - Were not in lowest unemployment areas

Learning more from social experiments



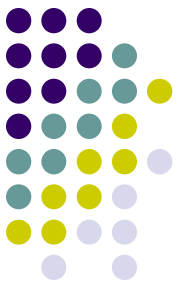
- Worked example – targetting low income parents who qualify for cash welfare to increase enrollees’ employment and earnings
 - Larger effects of programs that targetted clients with:
 - High school graduate or had a GED
 - Three or more children
 - More welfare dependent (upon welfare continuously for 12 months)

Learning more from social experiments



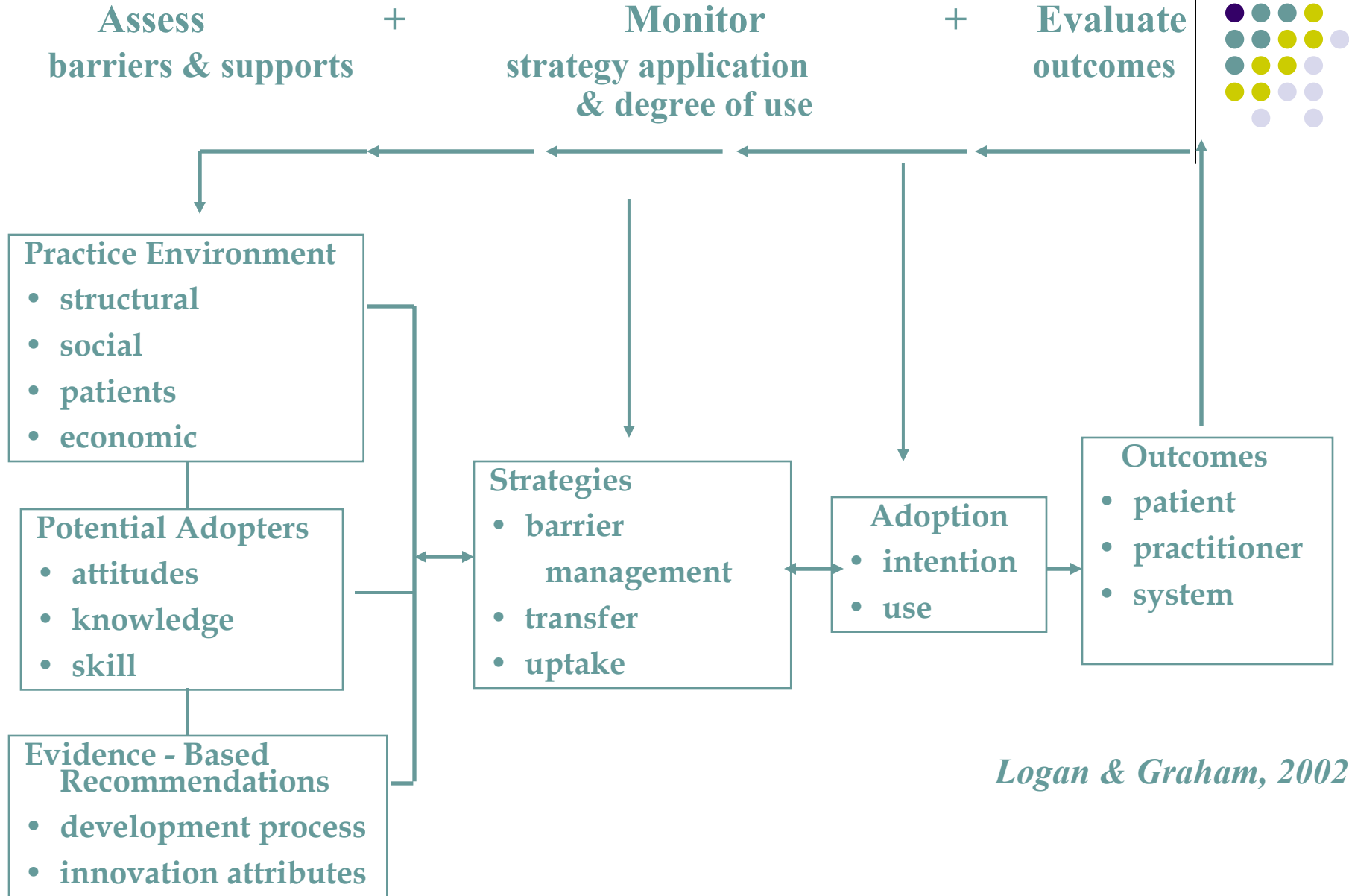
- Conditions for successful application of approach:
 - Adequacy of model as conceptual and theoretical framework
 - Quality and consistency of data
 - Appropriateness of analyses
 - Statistical properties of model

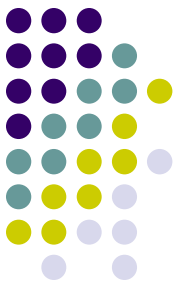
Learning more from social experiments



- Conditions for successful application of approach
‘Within each category one must include as many as possible of the specific factors judged ... to have a substantial influence on program impacts Striking this balance requires a deep understanding of the relevant theoretical and empirical literatures as well as broad exposure to the relevant policy and administrative debates a closely knit research team with diverse backgrounds and skills is most likely to be successful’

Ottawa Model of Research Use

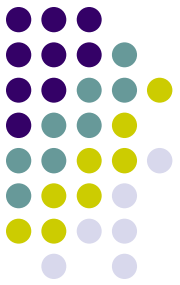




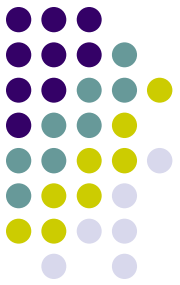
Opportunities

- Retrospectively use Bloom's methods to analyse existing datasets:
 - Family practice prevention facilitation trial (JMG/IG)
 - Reproductive Health Library trial (JMG)
 - DREAM trial (MPE/JMG)
 - ???others
- Largely test of methods, limited to data collected in studies or routinely available retrospectively

Opportunities



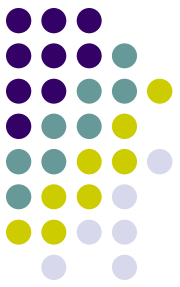
- Prospectively embed data collection into ongoing or planned trials that would allow more sophisticated analysis
 - READ (SB/JMG)
 - OPEM (MZ/JMG)
 - Croup in paediatric emergency departments (JMG/IG)
 - Implementation of Ottawa CT and neck injury rules (JMG/IG)
 - Paediatric emergency research collaboration team grant
 - ???others



Challenges

- Building models (mix of mid level theories and micro theories especially at practice environment level – need diverse skill set)
- Technical challenges of analysis

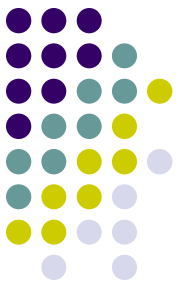




Design elements

- Multi arm trials to explore different levels of intervention
- (Factorial designs to explore synergistic effects of interventions)
- Pragmatic trials with broad inclusion criteria (allowing exploration of whether variations in subjects modifies effects), and variation in how intervention is delivered (allowing exploration of whether variations in method of deliver modifies effects)
- Trials with replicated interventions across different behaviours

Design elements – TIGER trial



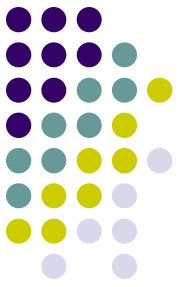
- TIGER trial 3 arm RCT testing three levels of intervention to improve epilepsy care in primary care:
 - A – mailed dissemination of guidelines (low level)
 - B – A plus mailed dissemination of guidelines, interactive educational workshop and practice support tools (intermediate)
 - C – B plus epilepsy care liaison nurse (intensive)

Design elements - NEXUS



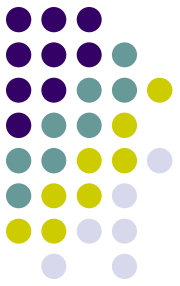
- NEXUS trial evaluated effects of brief educational messages appended to x-ray reports on family practitioners' x-ray referral patterns
- Intervention delivered by 6 radiology departments across wide range of settings
- Intervention embedded into routine reporting systems in 4 departments, stickers manually placed in 2 departments
- 20-30% relative reduction in x-ray requests. No difference in effects across radiology departments in different settings or by method of delivery

Qualitative process evaluations - COGENT



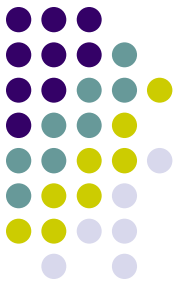
- COGENT trial evaluated computerised decision support for chronic disease management in UK family practice
- No effects observed on process or outcome of care
- Nested case study – 6 family practices receiving intervention
- 19 semi structured interviews with 13 key informants

Qualitative process evaluations - COGENT



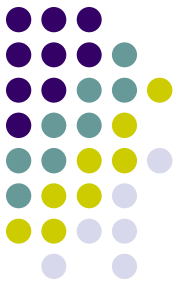
- Interviewees were largely enthusiastic and optimistic about the benefits of computing.
- BUT...
 - System was felt by most general practitioners to be difficult to use and unhelpful clinically.
 - System did not activate at an appropriate time within the general practice consultation.

Theory based process evaluations



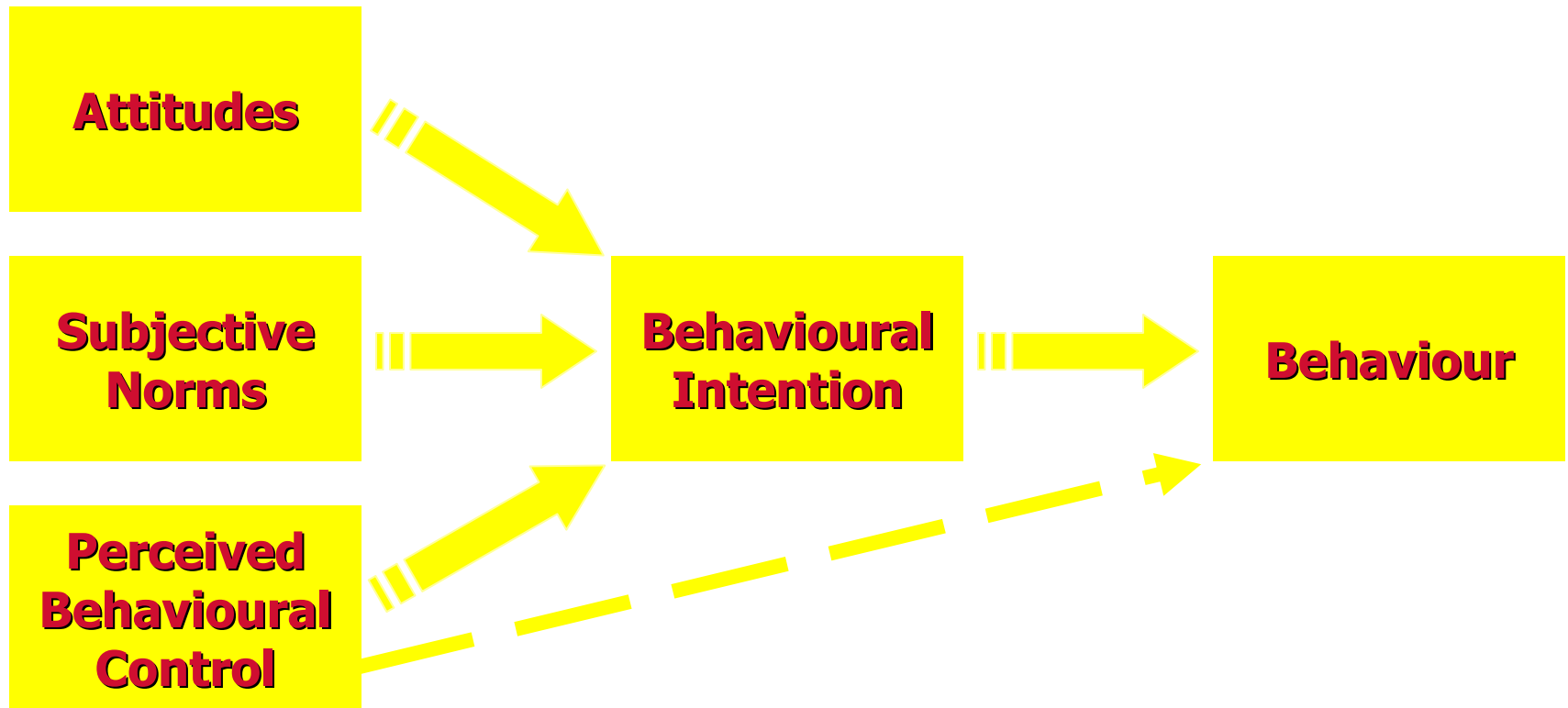
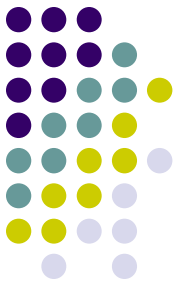
- Collect data on theoretical construct(s) alongside randomised trials to explore possible causal mechanisms

Theory based process evaluations - DRAM

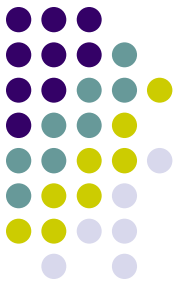


- DRAM trial evaluated effects of brief educational messages and audit and feedback on family practitioners' laboratory test ordering on 9 tests
- Improvements observed across majority of tests for both interventions (eg FSH), no benefit in post eradication H Pylori testing
- Post intervention survey based on theory of planned behaviour

Theory of Planned Behaviour

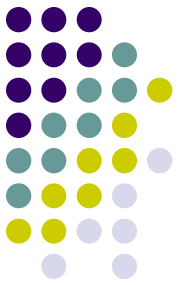


Ajzen & Madden, (1986), *Journal of Experimental Social Psychology*, 22, 453



Results - FSH

	Intention (1-7)	Attitudes (1-7)	Social norms (1-7)	PBC (1-7)
Control	4.3	4.2	4.2	2.0
Feedback only	5.6	5.2	4.9	1.5
Educational messages	6.0	5.5	5.2	1.5
Feedback and messages	6.0	5.7	5.2	1.5



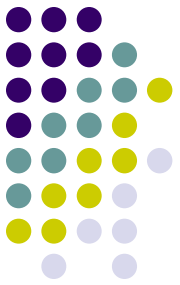
Results - Helicobacter

	Intention (1-7)	Attitudes (1-7)	Social norms (1-7)	PBC (1-7)
Control	6.3	7.0	6.0	2.2
Feedback only	7.0	7.0	6.0	2.2
Educational messages	7.0	7.0	6.2	1.2
Feedback and messages	7.0	7.0	6.3	2.0

Theory based process evaluations - DRAM



- Possible causal mechanism FSH – interventions enhanced attitudes and social norms resulting in improved intention and behaviour change
- Possible causal mechanism Helicobacter – high baseline attitudes, social norms and intentions ?psychological ceiling effect



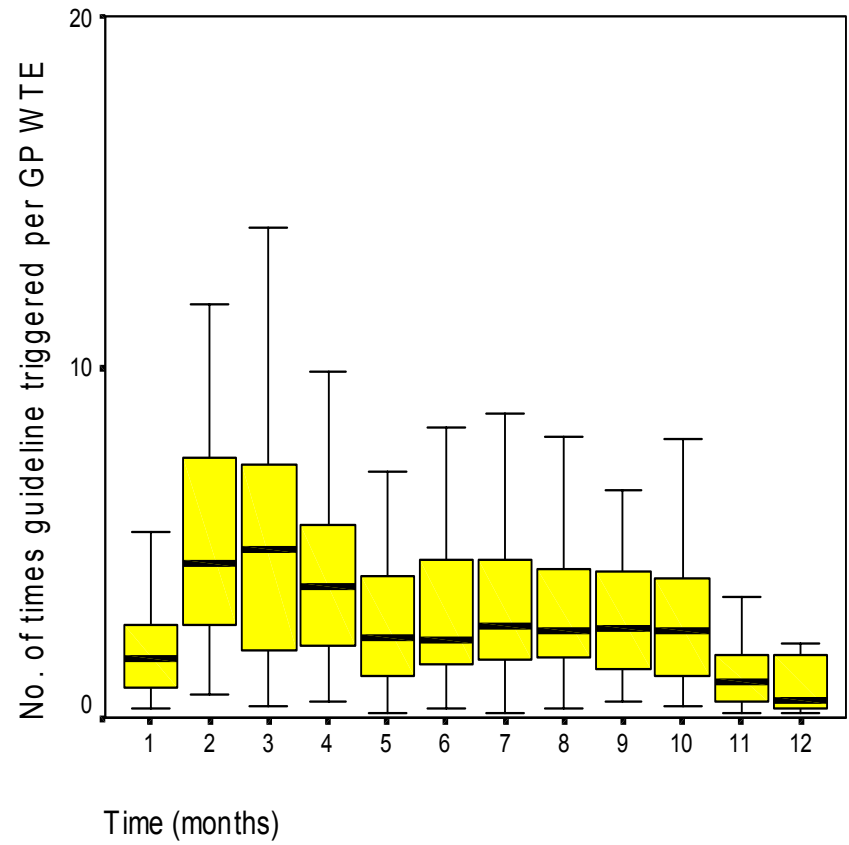
Temporal analyses

- Sequential data collection over defined period times allows exploration of learning and decay effects

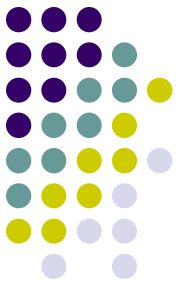
Temporal analysis - COGENT



- Number of times guideline triggered per whole time equivalent GP by month

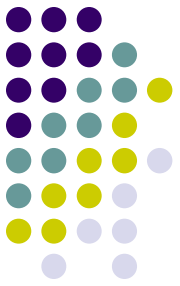


Temporal analyses - NEXUS



- NEXUS trial evaluated effects of brief educational messages and audit and feedback on family practitioners' x-ray referral patterns
- Educational messages - 20-30% relative reduction in x-ray requests
- Audit and feedback - no effect

Temporal analyses (2)



- The effect of educational reminder messages was produced as soon as the intervention was delivered and maintained throughout the intervention period.
- There was no evidence of the effect of the intervention wearing off.

Mean number of knee x-rays by month

