Guideline implementation: an exploratory investigation using psychological theory

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Abstract

Background: Evaluations of interventions to improve implementation of guidelines have failed to produce a clear pattern of results favouring a particular method. While implementation depends on clinicians and managers changing a variety of behaviours, psychological theories of behaviour and behaviour change are seldom used to try to understand implementation problems or develop interventions.

Objectives: Using a theoretical framework derived from an interdisciplinary consensus exercise which synthesised theoretical constructs relevant to implementation research into 12 domains, this study aimed to produce a profile of scores to identify the domains relevant to problems of implementation. The focus of the study was a recommendation within NICE's Schizophrenia guideline, that family intervention should be offered to the families of people with schizophrenia.

Methods: Participants were recruited from community mental health teams from three UK NHS Trusts: 20 members (social workers, nurses, team managers, psychologists and psychiatrists) participated. Semi-structured interviews, covering the theoretical domains, were audio-taped and transcribed. Two researchers independently coded each interview, with a score of 1 being evidence for the domain being associated with implementation, 0.5 being partial evidence of association with implementation and 0 being evidence that the domain was associated with poor implementation of the family therapy guidelines.

Results: The three domains showing the highest total scores were 'beliefs about consequences' 'social/professional role and identity' and 'motivation'. Thus these are already supportive of the guideline and would be unlikely reasons for non-implementation. 'Environmental context and resources' was the lowest scoring domain, with 'Emotion' scoring the second highest suggesting that these were likely to be areas for considering intervention.

The two main resources identified as problems were time and training. The emotions that appeared to potentially influence the offer of family therapy were self-doubt and fear.

Conclusions: This exploratory study demonstrates an approach to developing a theoretical understanding of implementation problems

Background

Evidence based guidelines are produced in large numbers across the world to improve standards of health care and reduce inequalities in access to effective treatments. Despite widespread circulation and publicity of such guidelines, they are often not implemented effectively[1], with the result that there is a substantial gap between evidence and practice, and best health outcomes are not achieved[2]. In the Netherlands, an estimated 30-40% patients are not receiving evidence based care[3] and in the United States, of a random sample of adults only 55% were receiving the recommended processes involved in acute, chronic and preventive healthcare[4]; as many as 20-25% have been found to receive unnecessary or potentially harmful care[5]. In the UK, an evaluation of 12 pieces of "tracer" guidance published by The National Institute for Health and Clinical Excellence (NICE) found variable implementation[6], with pharmacological interventions such as the taxanes and orlistat showing higher levels of implementation than procedures such as hearing aids, implantable cardioverter defibrillators or laparoscopic surgical procedures suggesting that where guidance had the support and resources of the pharmaceutical industry behind it there may be greater uptake. A review of quality of care studies from UK, Australia and New Zealand primary care concluded that "in almost all

studies the process of care did not reach the standards set out in national guidelines or set by the researchers themselves." [7].

Implementation depends on clinicians and managers changing a variety of behaviours and there have been over 300 evaluations of interventions to improve implementation. Overall, these have found modest effects but failed to produce a clear pattern of results favouring a particular method or principles to draw on in developing effective intervention[8,9]. If such interventions are to be successful, they need to be grounded in an understanding of why health professionals do, or do not, change their behaviour. Understanding the causal mechanisms through which interventions lead to behaviour change can help to generalise findings from individual studies to other behaviours, populations and settings. In this way, theoretical understanding assists the development of appropriate and effective interventions. Despite there being a large number of psychological theories of behaviour and behaviour change, they are seldom used to try to understand implementation problems or develop interventions[10]. The few exceptions to this [11-14] have not stimulated the incorporation of theory into implementation research.

To make theory more accessible and useful, an interdisciplinary consensus exercise simplified and synthesised theoretical constructs relevant to implementation research into 12 domains[15]. These were: knowledge, skills, professional role and identity, beliefs about capabilities, beliefs about consequences, motivation and goals, memory, attention and decision processes, environmental context and resources, social influences, emotion, action plans and nature of the behaviour (the first 11 are influences on the behaviour that is described by the 12th). A theory-based implementation interview (TBII) was developed to assess the nature of implementation problems as a basis for developing intervention strategies see[15]. This approach has been

successfully used in a UK qualitative study of general practitioner non-implementation of guidelines for the management of coronary heart disease.[16]

Problems of implementation are evident in relation to mental health. For example, a Dutch vignette study of 264 health professionals found poor implementation of depression guidelines: 31% of all intention-to-treat decisions were not consistent with the guidelines [17]. In the care of patients with schizophrenia, family interventions (FI) are an effective intervention[18,19] and UK national clinical guidelines [20] recommend that "Family interventions should be available to the families of people with schizophrenia who are living with or who are in close contact with the service user. In particular family interventions should be offered to the families of people with schizophrenia who have recently relapsed or who are considered at risk of relapse or have persisting symptoms". Family interventions in schizophrenia normally involve a meeting with a healthcare professional, the family and the identified patient. The intervention, which is usually targeted at those patients at risk of relapse or with persistent symptoms, should normally consist of 10 one to two hour meetings over a six month period and focus on psycho-education about the disorder, problem solving/crisis management work and specific interventions with the identified patient. Family interventions are the best validated psychosocial intervention for schizophrenia, with 18 good quality randomised controlled trials consistently demonstrating a benefit across a wide range of health care systems [19]. Despite this evidence-based recommendation, family therapy is an underused intervention[21]. Variation between service settings has been observed: for example, within one NHS Trust, the percentage of patients who had received family interventions across seven community teams ranged from 3% to 17% [22].

This paper describes the use of the theory based implementation interview (TBII) to identify the domains relevant to problems of implementing the family intervention recommendation within NICE's Schizophrenia guideline in three UK National Health Service (NHS) Mental Health Trusts (primary healthcare organisations).

Methods

Ethics approval was granted from the Local Research Ethics Committees covering each of the three participating NHS Trusts.

Setting and participants

Participants were selected from three UK NHS Trusts, two inner-city (South and North London) and the third covering a mixed population in the North of England. "Trusts" are primary care healthcare organisations that include several Community Mental Health Teams (CMHTs). To gain a range of responses relevant to the national implementation of these guidelines, two general CMHTs from each Trust were selected using two criteria: they had begun the process of implementing, or were planning to implement, the guideline, and they were not known to be either particularly high or low implementers of the guideline. One of the South London teams that was approached declined to participate due to work pressure, giving a sample of five. Participants were recruited from the key professional groups responsible for implementing the guidelines: social workers, nurses, psychiatrists, psychologists and team managers.

Procedure

The research was conducted in 2005. Invitation letters, study information sheets and consent forms were sent to team managers to distribute to their team members. Twenty members of the participating mental health teams agreed to be interviewed (Table 1), representing about 20% of the possible sample.

Interviews were conducted in participants' offices and lasted 30 to 60 minutes. At the beginning of the interview, participants were asked if they had heard about family interventions as described in the guideline; if yes, they were asked to explain their understanding of it; if no, they were shown the relevant guideline text. This was to ensure a shared understanding of the set of behaviours referred to in the guideline. Although some participants referred to family interventions as family therapy, it was clear that they meant that they were working with families rather than conducting formal therapy. The interview was then structured by the TBII, adapted from Michie et al, 2004, with questions covering 11 theoretical domains. Piloting produced few changes; see Appendix for final version. Interviews were audio-taped and transcribed.

Transcript analysis

All responses relevant to each domain were selected for analysis. For each participant, the total transcribed text relevant to each domain was scored 1, 0.5 or 0 depending on whether there was good evidence, partial or no evidence of the domain being relevant to the implementation of the recommendation. For example, if raters judged that there was evidence that people felt they had control over implementing the recommendation, they received a score of 1 for the domain of "beliefs about capabilities"; if there was no evidence for this or evidence of a lack of control, they received a score of 0; partial or equivocal evidence received a score of 0.5. Thus, the

lower the score for any given domain, the greater the indication that it is a domain that may explain poor implementation of the guideline recommendation. Total implementation scores for Trusts and professional groups were calculated as the ratio of the total score to the maximum score possible (number of individuals x number of domains).

Coding reliability

Two researchers independently coded each interview, with an inter-rater agreement of 81% and overall kappa of 0.72 (Table 2). Two kappa scores were low. For consequences, it was 0.44 despite 90% agreement. This is explained by the use of only two coding categories for this domain (there were no instances of evidence of association with implementation). Since the kappa statistics is a chance-corrected measure of agreement, only two categories produces higher chance agreement, and thus a lower kappa, despite 90% raw agreement. For emotion, it was 0.37; responses showed that this domain was ambiguous, with many interviewees interpreting the question as referring to emotion experienced in the intervention, rather than emotion influencing implementation of the intervention. The results in relation to this domain should therefore be treated with caution. For the discrepant 41 (out of 220) scores, consensus was reached by discussion.

Results

The number and profession of participants across the Trusts are shown in Table 1.

(1) Variability across profession and NHS Trust

As shown in Table 2, there was variation in scores across professional group, with highest scores in nurses (56%), then social workers (47%), psychiatrists (41%), psychologists (30%), and lowest in team managers (18%). There was also variation across the three NHS Trusts: 46%, 57% and 63%.

(2) Implementation domains for total sample

Table 3 shows the numbers of participants (by professional group and NHS Trust) identifying 'good' or 'partial' support for each theory-based domain. The three showing the highest total scores were 'beliefs about consequences' 'social/professional role and identity' and 'motivation' (19, 16.5 and 16.5 out of 20). This suggests that, in general, mental health team members thought that family interventions were likely to result in positive consequences, that providing them was compatible with their perceptions of their role and identity, and that they were motivated to provide it.

Examples of positive consequences were:

> "anything that is good for carers is going to be good for the whole system and the patient" (Social Worker, North England), and "you're going to increase a more knowledgeable, supportive environment for service users and their carers"(Nurse, North London)

and of "social/professional role an identity" were:

> "I think we have a professional responsibility to, you know, utilise those methods." (Team Manager, South London)

At the other end of the scale, 'Environmental context and resources' was the lowest scoring domain (3.5 out of 20), with 'Emotion' scoring the second lowest (7.5) suggesting these to be likely reasons for non-implementation of the guideline, and areas for considering intervention.

The two main "resources" identified as problems were "time" and "supervision and training", a perception that was shared across profession and Trust.

Time

> "If that's [lack of time] not taken into account on your case load then you dig your heels in and say I just can't do this. Either that, or you run yourself into the ground and everybody leaves, cos they get burnt out and fed up" (Nurse, North England).

> "Time and pressure involved. I mean it's much easier for me cos I can control my case load but lots of other members of the team can't." (Psychologist, North London) …

> "If you've 45 on your case load and you're running around and, people get, the more people are pressed the more people are overworked, you know. The standards go down to the minimum…" (Social Worker, North England)

Supervision and training

> "Having trained staff. The fact that, I don't think there's anyone here trained" (Nurse, South London)

"I think they're [supervision and training] the biggest two" (Nurse, North England)

"We've got a basic problem of, you know, people that aren't trained in the way that the NICE guidelines would suggest." (Team manager, South London)

"Experience with supervision is hard to come by. Not every team has a psychologist, not every team has people that are trained and feeling competent in family work, and I think that's the big issue. Knowing what you're talking about." (Nurse, North England).

"If there was more money put into increased training, and people would have more regular training then people would be better workers." (Nurse, North London)

"There's an expectation around everyone in the service team should work to the psychological models and I don't think that many people feel that they're trained to do that." (Psychologist, North London)

The emotions that appeared to potentially influence the offer of family interventions were self-doubt and fear:

"… if you're working with people with a history of violence or a propensity to be violent, then you're always going to feel, maybe not scared, but aware. Well maybe scared is the right word." (Nurse, North London)

Discussion

This study applies a theoretical framework of behaviour change to understanding the factors influencing the implementation of clinical guidelines within a health service setting. The results show clear differences between different theoretical domains for the group as a whole. The domains identified as associated with potential difficulties of implementation are consistent with problems identified in other, non theory-based studies. In a six centre European study of implementing family interventions[21], reported that work overload, lack of time and organisational difficulties in the service, were impediments to implementation. Our findings also suggest differences in implementation between different professional groups, with lower implementation in team managers than in staff more directly involved in taking therapeutic decisions and delivering the service. In this study, the sample sizes from a small number of teams in the different Trusts are too small to draw any conclusions about differences between Trusts, and, in general, similar problems are reported across Trusts.

As well as identifying potential difficulties that stand in the way of successful implementation, this approach points to possible strategies to address the difficulties. For example, the differences between professional groups raise the possibility that an effective implementation strategy might be one which focused on the provision of more effective support and supervision for direct care staff rather than one that concentrated solely on improving clinical skills (a high scoring domain). An alternative approach which also addresses the identified problems (in emotion, social influence and resources) might be one which suggested re-structuring of the team where only a small number of designated staff members might routinely be expected to provide family interventions. This study points to a possible refinement of the advice currently provided to healthcare providers by organisations such as NICE (for

example[23,24] which stresses the structural changes necessary to support implementation at the organisational level or strategies to change individual behaviour, but perhaps does not give sufficient consideration to changes at the level of the organisation of the multi-disciplinary team.

This is a small study and therefore has value more in demonstrating an approach to understanding and addressing implementation problems theoretically, than in providing definitive answers. Further research is required to validate and refine the theoretical framework of the domains. Larger scale studies are also required for replication. This requires developing an assessment tool appropriate for surveying large numbers i.e. a questionnaire, rather than an interview, measure of the domains. Questionnaires have been successfully used in relation to identifying barriers and facilitators of implementation[25] Data collected in this way would provide a theoretical understanding of implementation problems, which would provide the basis for developing appropriate and effective interventions to improve implementation. Such a questionnaire may also serve as an outcome measure for intervention evaluation.

In moving from assessing problems theoretically to intervention, we need to identify relevant theories and intervention techniques. For example, if problems with "beliefs in capabilities" are identified, techniques for building self-efficacy, as outlined by Bandura and Social Cognitive Theory[26] would be appropriate. On the other hand, if "action planning" is identified as a problem domain, Self-regulation Theory[27] may provide ideas for helpful techniques e.g. goal setting, monitoring, implementation intentions[28]. A pilot study used a consensus method to identify relevant techniques based on the theoretical domains described above[29]. The linking of theories explaining behaviour change, or lack of behaviour change,

and techniques of intervention is a further area of research needed to develop both theoretical understanding and effective interventions.

Conclusions

This exploratory study demonstrates a method of diagnosing implementation problems using an interview based on psychological theory. Its use includes comparing implementation across setting and staff group, and identifying areas for intervention. The theoretical base provides a systematic method for moving from diagnosis to intervention technique.

Competing interests

SP is in receipt of funding from NICE for the development of clinical practice guidelines. PW is currently seconded part-time to the Healthcare Commission, leading on Clinical Effectiveness which includes monitoring the implementation of NICE guidance. The other authors declare they have no competing interests.

Authors' contribution

SM was responsible for the research idea and project management, and contributed to interview design and data analysis. She wrote the first draft of the paper and subsequent re-drafts. All authors contributed to the development of the research objectives and methods and to the writing of the paper. SP, PG and PW were involved in supporting data collection. JS

conducted the interviews, coded transcripts and helped analyse data. All authors read and approved the final research protocol and manuscript.

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References

1. NHS Centre for Reviews and Dissemination: **Getting evidence into practice.** *Effective Health Care* 1999, **5:** 1-16.

2. Haines A, Donald A: **Marking better use of research findings.** *BMJ* 1998, **317:** 72-75.

3. Grol R: **Success and failures in the implementation of evidence-based guidelines for clinical practice.** *Medical Care* 2001, **39:** 1146-1154.

4. McGlynn E A, Asch S M, Adams J, Keesey J, Hicks J, DeCristofaro A *et al.*: **The Quality of Health Care Delivered to Adults in the United States.** *NEJM* 2003, **348:** 2635-2645.

5. Schuster M, McGlynn E, Brook R: **How good is the quality of health care in the United States?** *Milbank Q* 1998, **76:** 517-563.

6. Sheldon T A, Cullum N, Dawson D, Lankshear A, Lowson K, Watt I *et al*.: **What's the evidence that NICE guidance has been implemented? Results from a national evaluation using time series analysis, audit of patients' notes and interviews.** *BMJ* 2004, **329:** 999-1004.

7. Seddon M E, Marshall M N, Campbell S M, Roland M O: **Systematic review of studies of quality of clinical health care in general practices in the United Kingdom, Australia and New Zealand.** *Qual Health Care* 2001, **10:** 152-158.

8. Grimshaw J M, Shirran L, Thomas R E, Mowatt G, Fraser C, Bero L *et al*.: **Changing provider behaviour: an overview of systematic reviews of interventions.** *Medical Care* 2001, **39, Supplement 2:** 2-45.

9. Grimshaw J M, Thomas R E, Maclennan G, Fraser C, Ramsay C, Vale L *et al*.: **Effectiveness and efficiency of guideline dissemination strategies.** *Health Technology Assessment* 2004, **8:** 1-84.

10. Dowswell G, Harrison S, Wright J: **Clinical guidelines: attitudes, information processes and culture in English primary care.** *International Journal of Health and Planning Management* 2001, **16:** 107-124.

11. Cabana M D, Rand C S, Powe N R, Wu A W, Wilson M H, Abboud P-A C *et al*.: **Why don't physicians follow guidelines? A framework for improvement.** *Journal of the American Medical Association* 1999, **282:** 1458-1465.

12. Grol R: **Beliefs and evidence in changing clinical practice.** *BMJ* 1997, **315:** 418-421.

13. Moulding N T, Silagy C A, Weller D P: **A framework for effective management of change in clinical practice: dissemination and implementation of clinical practice guidelines.** *Quality in Healthcare* 1999, **8:** 177-183.

14. Robertson N, Baker R, Hearnshaw H: **Changing the clinical behaviour of doctors: a psychological framework.** *Quality in Health Care* 1996, **5:** 51-54.

15. Michie S, Johnston M, Abraham C, Lawton R, Parker D, Walker A: **Making psychological theory useful for implementing evidence based practice: a consensus approach.** *Quality and Safety in Healthcare* 2005, **14:** 26-33.

16. Michie S, Hendy J, Smith J, Adshead F: **Evidence into practice: a theory based study of achieving national health targets in primary care.** *Journal of Evaluation in Clinical Practice* 2004, **10:** 447-456.

17. Tiemeier H, de Vries W J, van het Loo M, Kahan JP, Klazinga N, Grol R *et al.*: **Guideline adherence rates and interprofessional variation in a vignette study of depression.** *Quality and Safety in Healthcare* 2002, **11:** 214-218.

18. Pilling S, Bebbington P, Kuipers E, Garety P, Geddes J, Orbach G *et al.*: **Psychological treatments in schizophrenia: I Meta-analysis of family interventions and cognitive behavioural therapy.** *Psychological Medicine* 2002, **32:** 763-782.

19. Pharaoh F, Rathbone J, Mari J J, et al. Family Intervention for Schizophrenia. 2003. Cochrane Database of Systematic Reviews.

20. NICE. Treating and managing schizophrenia (core interventions). 2002. National Institute for Clinical Excellence, London.

21. Magliano L, Fiorillo A, Fadden G, et al: **Effectiveness of a psychoeducational interventions for families of patients with schizophrenia: preliminary results of a study funded by the European Commission.** *World Psychiatry* 2005, **4:** 45-49.

22. Garety P A: **The Implementation of the NICE Schizophrenia Guideline: Partial Progress in SL&M; paper presented at the NICE Annual Conference, Birmingham.** 2005.

23. NICE. Schizophrenia: Core interventions in the treatment and management of schizophrenia in primary care and secondary care. 2002. National Institute for Clinical Excellence, London.

24. NICE: *How to put NICE guidance into practice. A guide to implementation for organisations.* London: National Institute for Clinical Excellence; 2005.

25. Wensing M, Grol R: **Methods to identify implementation problems.** In *Improving Patient Care: Implementing change in clinical practice*. Edited by Grol R, Wensing M, Eccles M. Oxford: Elsevier; 2004.

26. Bandura A: **Health Promotion from the Prospective of Social Cognitive Theory.** In *Understanding and Changing Health Behaviour*. Edited by Norman P, Abraham C, Conner M. The Netherlands: Harwood Academic Publishers; 2000.

27. Scheier M F, Carver C S: **Goals and confidence as self-regulatory elements underlying health and illness behaviour.** In *The Self-regulation of Health and Illness Behaviour*. Edited by Cameron L D, Leventhal H. London: Taylor and Francis; 2003.

28. Gollwitzer P M, Sheeran P: **Implementation intentions and goal achievement: A meta-analysis of effects and processes.** *Advances of Experimental Social Psychology* 2006, **38:** 69-119.

29. Francis J, Michie S, Johnston M, Hardeman W, Eccles M: **How do behaviour change techniques map on to psychological constructs? Results of a consensus process.** 2005; Galway, Ireland.

Table 1. Number of participants according to professional group and NHS Trust

	North London	North England	South London
Social worker	2	3	1
Nurse	2	1	2
Team Manager	3	0	1
Psychologist	3	0	0
Psychiatrist	1	0	1

Table 2 Implementation scores (%) by profession and Trust

PROFESSION	Total/ maximum possible	Percentage
Social Worker (n = 6)	31 / 66	47%
Nurse (n = 5)	31 / 55	56%
Team Manager (n = 4)	8 / 44	18%
Psychologist (n= 3)	10 / 33	30%
Psychiatrist (n= 2)	9 / 22	41%
TRUST		
North England (n = 5)	31.5 / 55	57%
North London (n = 11)	76.5 / 121	63%
South London (n = 4)	20.5 / 44	46%

Table 3: Number of participants (out of 20) identifying 'good or 'partial' evidence for each domain and total scores for each domain

Domain	knowledge			skills			professional role			capabilities			consequences			motivation			memory and attention			environment-al resources			social influences			emotion			action plans		
Profession	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓
Social Worker N = 6	1	1	4	3	1	2	5	1	0	1	2	3	6	0	0	3	3	0	3	2	1	0	1	5	2	1	3	3	0	3	2	0	4
Nurse N = 5	1	2	2	2	2	1	1	3	1	2	1	2	4	1	0	3	2	0	1	3	1	0	0	5	1	0	4	0	0	5	2	1	2
Psychologist N = 3	2	0	1	3	0	0	2	1	0	1	1	1	2	1	0	3	0	0	2	1	0	1	0	2	0	1	2	1	1	1	2	1	0
Psychiatrist N = 2	2	0	0	1	0	1	2	0	0	1	1	0	2	0	0	0	2	0	0	1	1	1	0	1	0	1	1	0	1	1	1	0	1
Team Manager N = 4	3	0	1	3	0	1	4	0	0	3	0	1	4	0	0	4	0	0	4	0	0	1	0	3	3	1	0	2	1	1	4	0	0
Total=20	**10.5**			**13.5**			**16.5**			**10.5**			**19**			**16.5**			**13.5**			**3.5**			**8**			**7.5**			**12**		
Kappa	**0.77**			**0.67**			**0.88**			**0.70**			**0.44**			**0.56**			**0.53**			**0.69**			**0.68**			**0.37**			**0.82**		

Domain	knowledge			skills			professional role			capabilities			consequences			motivation			Memory and attention			environmental resources			social influences			emotion			action plans		
Trust	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓	X	?	✓
North England N = 5	2	1	2	3	1	1	4	1	0	2	2	1	5	0	0	3	2	0	2	2	1	0	1	4	1	1	3	2	0	3	2	1	2
North London N = 11	6	0	5	9	0	2	9	1	1	5	1	5	9	2	0	7	4	0	6	4	1	3	0	8	5	2	4	3	3	5	7	0	4
South London N = 4	1	2	1	0	2	2	1	3	0	1	2	1	4	0	0	3	1	0	2	1	1	0	0	4	0	1	3	1	0	3	2	1	1

Key: X (score of 0) = evidence of association with poor implementation or no evidence of association with implementation; ? (score of 0.5) = partial or a lack of evidence of association with implementation: ✓ (score of 1) evidence of association with implementation

Appendix

The Interview questions

1. Have you heard about the new schizophrenia guidelines produced by NICE?

   If yes – are you aware of the recommendations regarding family intervention/therapy?

   If yes – what is your understanding of the recommendation for family therapy?

   If no – the recommendations are…….. [KNOWLEDGE]

2. Pre-amble: To what extent do you think the recommendations are being implemented? Can you give me a recent example of it happening? Do you know how to offer family therapy? Do you think that other members of your team know how to offer family therapy? [SKILLS]

3. What are your views about guidelines in general? Does that opinion apply to this guideline? Do you think it is an appropriate part of your job to be following this recommendation? Would following this recommendation create a problem for your professional autonomy? [SOCIAL/PROFESSIONAL ROLE AND IDENTITY]

4. Is it easy or difficult to do? What problems have you encountered? What would help you to overcome these problems? [BELIEFS ABOUT CAPABILITIES]

5. What are the consequences of offering family therapy (prompt for advantages and disadvantages e.g. time, people etc)? Would you say that the benefits outweigh the costs? What would happen if you didn't offer it? [BELIEFS ABOUT CONSEQUENCES]

6. Do you feel motivated to offer family therapy? Do you feel that you should be offering family therapy? Does offering family therapy conflict with any of your other goals as a health professional? [MOTIVATION AND GOALS]

7. How often do you offer family therapy? What are your reasons for not offering family therapy (prompt for attention, forgetting, time constraints etc) [MEMORY, ATTENTION AND DECISION PROCESSES]

8. To what extent do resources influence whether you offer family therapy (prompt for existence of trained staff, time constraints etc)? [ENVIRONMENTAL CONTEXT AND RESOURCES]

9. What do you think the views of the other team members are? Do these views influence whether you offer family therapy? [SOCIAL INFLUENCES]

10. Do you think that any emotional factors influence whether family therapy is offered? And what about for you? [EMOTION]

11. Are there procedures or ways of working that encourage offering family therapy? If you see a patient and decide they should be offered family therapy, what are your next steps? [ACTION PLANNING]

Additional files provided with this submission:

Additional file 2 : NICE Schizophrenia Paper2.rmx : 96Kb
http://www.implementationscience.com/imedia/2132990681111355/sup2.RMX
Additional file 1 : Schizophrenia paper - refman database.rmd : 64Kb
http://www.implementationscience.com/imedia/7543629711135572/sup1.RMD