Contents lists available at SciVerse ScienceDirect

International Journal of Nursing Studies

journal homepage: www.elsevier.com/ijns



The nursing work of hospital-based clinical practice guideline implementation: An explanatory systematic review using Normalisation Process Theory



Carl May*, Andrew Sibley, Katherine Hunt

Faculty of Health Sciences, University of Southampton, Building 67 (Nightingale), University Road, Highfield, Southampton SO17 1BJ, UK

ARTICLE INFO

Review

Article history: Received 9 April 2013 Received in revised form 20 June 2013 Accepted 30 June 2013

Keywords: Clinical guidelines Implementation Nursing work Systematic review Qualitative synthesis Practice theory Normalisation Process Theory Directed Content Analysis

ABSTRACT

Objective: To investigate the dynamics of nurses' work in implementing Clinical Practice Guidelines.

Design: Hybrid: systematic review techniques used to identify qualitative studies of clinical guideline implementation; theory-led and structured analysis of textual data.

Data sources: CINAHL, CSA Illumina, EMBASE, MEDLINE, PsycINFO, and Sociological Abstracts.

Methods: Systematic review of qualitative studies of the implementation of Clinical Practice Guidelines, analysed using Directed Content Analysis, and interpreted in the light of Normalisation Process Theory.

Results: Seven studies met the inclusion criteria of the review. These revealed that clinical practice guidelines are disposed to normalisation when: (a) They are associated with activities that practitioners can make workable in practice, and practitioners are able to integrate it into their collective workflow. (b) When they are differentiated from existing clinical practice by its proponents, and when claims of differentiation are regarded as legitimate by their potential users. (c) When they are associated with an emergent community of practice, and when members of that community of practice enrol each other into group processes that specify their engagement with it. (d) When they are associated with improvements in the collective knowledge of its users, and when users are able to integrate the application of that knowledge into their individual workflow. And, (e) when nurses can minimise disruption to behaviour norms and agreed professional roles, and mobilise structural and cognitive resources in ways that build shared commitments across professional boundaries.

Conclusions: This review demonstrates the feasibility and benefits of theory-led review of studies of nursing practice, and proposes a dynamic model of implementation. Normalisation Process Theory supports the analysis of nursing work. It characterises mechanisms by which work is made coherent and meaningful, is formed around sets of relational commitments, is enacted and contextualised, and is appraised and reconfigured. It facilitates such analysis from within the frame of nursing knowledge and practice itself. © 2013 The Authors. Published by Elsevier Ltd. Open access under CC BY-NC-ND license.

What is already known about the topic?

- Clinical Practice Guidelines are important tools for embedding clinical evidence in practice.
- Implementing and embedding Clinical Practice Guidelines in everyday work is difficult and implementation programmes have uneven results.

* Corresponding author. Tel.: +44 023 8059 7957. *E-mail address:* c.r.may@soton.ac.uk (C. May).

0020-7489 © 2013 The Authors. Published by Elsevier Ltd. Open access under CC BY-NC-ND license. http://dx.doi.org/10.1016/j.ijnurstu.2013.06.019 • We need better explanatory models to understand the dynamics of implementation processes in nursing and to facilitate improved programme design.

What this paper adds

- An explanatory review of qualitative studies of nursing Clinical Practice Guidelines in use.
- A dynamic conceptual model of Clinical Practice Guideline implementation.
- A generic translational framework for understanding and investigating the implementation, embedding, and integration of interventions.

1. Background

1.1. Introduction

Understanding how new techniques for clinical practice and organisation of care can be effectively translated into practice is a practical problem for clinicians of all kinds, as well as for healthcare managers, and health policy-makers. But it is not just a practical problem. It is a conceptual one as well. While there are now a multiplicity of models and theories that account for different aspects of professional behaviour change and of the diffusion of innovations (Tabak et al., 2012) there is little by way of practice theory that characterises and explains implementation processes themselves (Treweek, 2005).

In this paper we describe a robust theory of practice: Normalisation Process Theory (May and Finch, 2009); and apply it to the task of understanding the processes of implementing clinical interventions. We do this by presenting a systematic review of qualitative studies of the incorporation of clinical practice guidelines into nursing work. In this systematic review the papers selected focus attention on the implementation and embedding of guidelines by nurses. To ensure that our review focused on studies with contemporary relevance, we have selected papers published after 2000. The review has an international focus and presents a clearly formulated conceptual model that can be applied to implementation research in nursing. In addition to the review, our paper presents the constructs and sub-constructs of the theory, and relates these to a set of practical research questions that can be readily translated to other studies.

Important methodological work has focused on developing techniques for secondary analysis of qualitative data using meta-ethnography (Noblitt and Hare, 1998), and qualitative evidence synthesis (Campbell et al., 2011). These techniques are important because they enable the production of low-level substantive theories, but the approach used here is different because it is a hybrid. We have used rigorous procedures to identify papers that we have utilised as sources of qualitative data, and we have then applied robust and already existing theoretical tools to the research problem. Integrative analysis of this kind enables us to use a literature review for a novel purpose, to set out a robust conceptual model of the operation of mechanisms that support effective implementation. The product of this work is a dynamic model of clinical practice guideline implementation, and a set of testable analytic propositions.

1.2. Clinical Practice Guidelines

Clinical practice guidelines range from relatively loosely structured sets of principles intended to guide health professionals through a clinical situation or problem, to highly structured protocols intended to prescribe specific sets of actions (Davies, 2002; Miller and Kearney, 2004). They provide a consistent approach to quality improvement in healthcare settings (Marshall et al., 2001; Mead, 2000; Rycroft-Malone and Duff, 2000), and are believed to reduce morbidity, mortality and increase cost-effectiveness (Bahtsevani et al., 2004; Cluzeau and Littlejohns, 1999).

There is now a very large literature on the value, effectiveness, and design of clinical practice guidelines across the range of healthcare activities, and this literature is part of a much larger body of work that relates to knowledge transfer and mobilisation around evidencebased practice (Davies et al., 2010; Grimshaw et al., 2004; Thomas et al., 1999; Vale et al., 2007). However, proponents of guidelines across all sectors of the health economy have observed important disparities between professionals' acceptance of their value, and their implementation in practice (Godin et al., 2008; Perkins et al., 2007). An important underlying assumption of recent efforts in this sphere has been that obtaining professional concordance with a guideline is mainly a matter of engendering individual behaviour change (Grol et al., 2007). This approach is reflected in many studies relying on psychological models (Davies et al., 2010). Against this background research on problems of implementing guidelines in nursing focuses on the effects of specific interventions, and the barriers to these effects. These include the behaviours of opinion leaders; negative effects of documentation systems and electronic health records, the culture and belief systems of professionals, the state of partnerships between them, and wider commitment from the organisations in which they are set (Miller and Kearney, 2004; Ploeg et al., 2007; Richens et al., 2004; Thomas et al., 1999). As with other service innovations, there has been a gradual shift towards contextualising the implementation of new techniques for practice as complex and emergent processes rather than as 'barriers' and 'facilitators', and as technical problems of practice that can be 'fixed' (Checkland et al., 2007; Greenhalgh et al., 2004).

1.3. The research problem

This paper starts with a fundamental and practice relevant research question: what factors promote or inhibit the implementation of nursing clinical practice guidelines?

To answer the question we have systematically reviewed qualitative studies of guideline implementation processes, identifying common features of implementation processes and conceptualising these processes using a robust practice theory. An important problem in research on clinical guideline implementation has been that of the unit of analysis. Because many studies in this field are informed by psychological theories of individual behaviour change (Godin et al., 2008; Perkins et al., 2007), the unit of analysis is commonly assumed to be the individual health professional. Interventions have therefore been aimed at modifying individual behaviour, through education, exhortation, or incentives of different kinds. This is important for nursing because, while theories of individual professional change are attractive, most nursing practice is highly contextualised by organisational setting, involves complex intra- and inter-professional interactions, and is composed of multiple competing task regimes that are operationalised under pressure. Analytical understanding of the processes of the implementation, embedding, and integration of clinical and organisational interventions in nursing need therefore to account for the collective work of enacting new forms of knowledge and practice. Normalisation Process Theory provides a conceptual framework through which such analyses may be focused.

1.4. Normalisation Process Theory as an Explanatory Theory

Normalisation Process Theory (NPT) rests on the analysis of peoples' investments in *agentic contributions* – the things that they *do* – as they interact with the things that they work with, with each other, and with dynamic elements of their environments. NPT therefore focuses attention on action rather than attitudes. It defines the implementation, embedding, and integration of a clinical practice guideline – or any other kind of clinical or organisational intervention – as a *social process* that occurs when participants (nurses, other clinicians, managers, policy-makers) deliberately initiate and seek to sustain a sequence of events that bring it into operation.

Within such an implementation process, participants must secure the consent, co-operation and expertise of others, and the mobilisation of those material and informational resources necessary to sustain it, and then invest in enacting the object of implementation (Colyvas and Jonsson, 2011; Fligstein and McAdam, 2011; May and Finch, 2009). This process may - or may not - lead to the routine incorporation of the proposed intervention in everyday work (Greenhalgh, 2008; May, 2006). Simply put, an implementation process is defined as a change in state over time, in which objects, agents, and their contexts interact, through the operation of mechanisms, within a given social system. These interactions may be turbulent, and their outcomes unpredictable. The dynamics of implementation processes are complex, but Normalisation Process Theory facilitates understanding by focusing attention on the mechanisms through which participants invest and contribute to them. It reveals

the work that actors do as they engage with some ensemble of activities (that may include new or changed ways of thinking, acting, and organising) and by which means it becomes routinely embedded in the matrices of already existing, socially patterned, knowledge and practices (May et al., 2009).

Over the past decade, NPT has been developed in three phases or iterations. These have characterised the underlying mechanisms of implementation processes, and explained their operation. As it does so, NPT explicates the relationships between three elements – objects, agents, and contexts – of social life (May et al., 2007).

Objects: Objects are the focus of agency. They are the ensembles of practices and things that are enacted by agents, and the constraints on their workability and integration that are experienced by agents when they do so. The first iteration of the theory (May, 2006; May et al., 2007) focused attention on the relationship between the properties of a complex healthcare intervention and the Collective Action of its users. Here, agents' contributions are made in reciprocal relationship with the emergent *capability* that they find in the objects – the ensembles of behavioural and cognitive practices – that they enact. These capabilities are governed by the possibilities and constraints presented by objects, and the extent to which they can be made workable and integrated in practice as they are mobilised.

Agency: Agents are the people implicated in an implementation process, and *agency* is expressed when they make things happen. The second iteration of the theory (May and Finch, 2009; May et al., 2009), built on the analysis of Collective Action, and showed how this was linked to the mechanisms through which people make their activities meaningful and build commitments to them. Here, investments of social structural and social cognitive resources are expressed as emergent contributions to social action through a set of generative mechanisms: coherence (what people do to make sense of objects, agency, and contexts); cognitive participation (what people do to initiate and be enrolled into delivering an ensemble of practices); collective action (what people do to enact those practices); and reflexive monitoring (what people do to appraise the consequences of their contributions). These constructs are the core of the theory, and provide the foundation of its analytic purchase on practice.

Contexts: Social systems and networks are the locus of agency, and thus form relational contexts in which structural and cognitive resources are distributed through relational networks and their social systems. The third iteration of the theory (May, 2013) builds on the analysis of agents' contributions by offering an account of centrally important structural and cognitive resources on which agents draw as they take action. Here, dynamic elements of social contexts are experienced by agents as *capacity* (the social structural resources, that they possess, including informational and material resources, and social norms and roles) and as potential (the social cognitive resources that they possess, including knowledge and beliefs, and individual intentions and shared commitments). These resources are mobilised by agents when they invest in the ensembles of practices that are the objects of implementation.

2. The study

2.1. Search strategy

Covering the period from January 2000 to March 2012, multiple databases were searched using broad terms to identify a wide range of potential studies: MEDLINE, CINAHL, PsycINFO, EMBASE, Sociological Abstracts, and CSA Illumina. Broad truncated terms for searching study abstracts were piloted until a combination of terms began to identify studies relevant to this review (AB nurs* AND AB guideline* AND AB implement* AND AB hospital*). Studies in any language were sought. References of studies selected for full examination were scanned for further relevant studies.

2.2. Selection criteria

We sought studies published between 2000 and 2012. This ensured that studies selected had contemporary relevance. A study was eligible for inclusion in the review if: it presented primary research investigating one or more Clinical Practice Guidelines; Guidelines under investigation were for hospital-based practice in any context; if a majority (\geq 51%) of study participants were nursing staff; if qualitative methods or mixed methods with a substantial qualitative component were employed; if results identified barriers or facilitators to the implementation of Clinical Practice Guidelines; and if results explicitly described nursing work of implementing Clinical Practice Guidelines.

2.3. Study identification and data extraction

Study identification and data extraction were conducted in two phases. We sought studies amenable to review using a framework derived from the second iteration of NPT (May and Finch, 2009). One author (AS), undertook initial searching and screening. This process identified 16 potentially eligible studies. These were reviewed by AS and CM, a process that identified seven that fully met the inclusion criteria for the review. Relevant findings were coded by AS and CM. After the publication of the third iteration of NPT (May, 2013), a new coding framework was developed and papers already selected were re-analysed and data re-coded (MacFarlane and O'Reilly-de Brún, 2012), by AS and KH (who was blinded to the theory informing data extraction). Throughout the process, we sought disconfirming evidence, but it is important to emphasise that the aim of this study was not to prove the theory or to test individual constructs. Instead we sought to practically use the theory to identify, understand, and explain elements of implementation processes.

2.4. Data analysis

We treated the results sections of included papers as qualitative data and undertook a Directed Content Analysis in order to assess nurses' guideline activity and reflect on the value of Normalisation Process Theory as an explanatory framework. In qualitative studies analytic claims about results often overflow into the 'discussion' section of papers. Therefore, where direct claims were made about results in these sections they were also included in our analysis. Typically, NPT studies have employed Framework or Directed Content Analysis methods (Hsieh and Shannon, 2005), since these most effectively enable a structured analytic process. As in other reviews informed by NPT

(Mair et al., 2012; Watson et al., 2011), analysis took the following form.

Included studies were searched for evidence that provided an accurate description of the elements of the implementation process. NPT provided the structure for a taxonomy of common elements of an implementation \rightarrow embedding \rightarrow integration process. This enabled structured comparative analysis of data from different studies. Both reviewers (AS and KH), built the taxonomy by identifying and coding units of text in the included studies using Directed Content Analysis.

Data were interpreted to provide a theory-informed explanation of the form taken by the implementation process. A process was defined as a change in state over time. NPT provided a set of explanations of the structure and behaviour of common mechanisms that were evinced differently as the implementation process took place. These were evinced differently in different contexts. The coding frame described constructs and components of the theory, identified their specific point of relevance, and expressed them as practical research questions.

The results of analysis were framed as knowledge claims about the implementation processes and their outcomes. Theory-informed explanations of their operation were linked to context-dependent claims in the form of analytic propositions. Taken together these were constructed as a conceptual model of implementation processes (see Section 4.2).

3. Results

3.1. Included studies

Bibliographic searches revealed 1596 references (see Fig. 1). After the removal of 1081 duplicates, 515 abstracts



Fig. 1. PRISMA Flowchart.

were screened, and 102 of these studies were retrieved in full text. Sixteen of these of these studies were potentially eligible. Of these, seven met inclusion criteria 1–5 but did not describe the work of implementation undertaken by nurses. Of the remaining ten studies, three were mixed methods studies that itemised barriers and facilitators but did not provide sufficient qualitative data about implementation processes to code. They were excluded from the review. The remaining seven studies presented detailed qualitative analyses that provided information about social processes, and were therefore included in the review (Bahtsevani et al., 2010; Graham et al., 2004; Knops et al., 2010; Ploeg et al., 2007; Ritchie and Prentice, 2011; Stenberg and Wann-Hansson, 2011; Yagasaki and Komatsu, 2011). These are discussed below.

3.2. Study characteristics

The characteristics of included studies are shown in Table 1. Three studies originated from Canada (Graham et al., 2004; Ploeg et al., 2007; Ritchie and Prentice, 2011), two studies from Sweden (Bahtsevani et al., 2010; Stenberg and Wann-Hansson, 2011), one from The Netherlands (Knops et al., 2010) and one from Japan (Yagasaki and Komatsu, 2011). All studies were published in English.

Three studies reported on hospital-based clinical practice guidelines in general (Bahtsevani et al., 2010; Stenberg and Wann-Hansson, 2011; Yagasaki and Komatsu, 2011), and four examined specific guidelines. Of these, one investigated two guidelines in the field of obstetrics (Graham et al., 2004); another evaluated a nursing best practice guideline for the assessment and management of foot ulcers for people with diabetes (Ritchie and Prentice, 2011); another evaluated two guidelines on fluid balance and body temperature (Knops et al., 2010); and one examined seven specific guidelines that ranged across a number of clinical specialties (Ploeg et al., 2007).

The majority of studies used focus groups to elucidate nurses' perceptions about guidelines (Knops et al., 2010; Ritchie and Prentice, 2011; Stenberg and Wann-Hansson, 2011; Yagasaki and Komatsu, 2011). One study conducted focus groups and interviews with nurses (Graham et al., 2004) and two studies used interviews only (Bahtsevani et al., 2010; Ploeg et al., 2007). Only two studies recruited nurses from wards within a single hospital location (Knops et al., 2010; Stenberg and Wann-Hansson, 2011). Both were University teaching hospitals in The Netherlands and Sweden respectively. Taken together these seven studies included data collected from nurses (n = 240), hospital managers and administrators (n = 67), four physicians, and four therapists.

3.3. Directed Content Analysis using Normalisation Process Theory

Studies included in this review varied in the extent to which they adequately described the objects of implementation (the clinical practice guideline and its associated activities), the agentic contribution of participants (the things that people did to implement and embed the guideline in practice), and the contexts in which they did so (the structural and cognitive resources available to them). The conceptual structure for their analysis and a set of practical research questions are included in Tables 2 and 3. They also varied in the extent to which they formatively described a process, or summatively sought to characterise and explain an outcome.

3.3.1. Capability – properties of clinical practice guidelines

A surprising feature of these studies was the lack of detailed description of the guideline itself, and its mode of delivery. In most studies, the capability of the guideline – the degree to which it was presented in a workable form, and was amenable to integration in everyday workflow – was assumed. But despite this it was clear that not all guidelines were easily made 'workable' in practice (Yagasaki and Komatsu, 2011). Similarly, the integration of guidelines into workflow could have produced additional work and additional demands for change that engendered resistance from potential users (Ploeg et al., 2007).

3.3.2. Contribution – enacting clinical practice guidelines

Coherence: Studies reviewed here emphasised the coherence and sense-making work that guideline users do. This included work to determine the quality of clinical evidence included in guidelines and work that linked this evidence to everyday practice (Yagasaki and Komatsu, 2011). Here, Yagasaki and Komatsu pointed to the ways that nurses in their study asserted that they were not able to determine the real evidential value of their guideline and so needed to link to researchers, while also developing a working group that would promote the guideline in practice. Such work to collectively specify the content of guidelines tended to take place away from the settings where they are implemented. Even so, investments in linking evidence to practice, and linking evidence informed practice to the responsibilities of practitioners, were reflected in three studies (Ritchie and Prentice, 2011; Stenberg and Wann-Hansson, 2011; Yagasaki and Komatsu, 2011). Sense-making work here focuses on the value of the guideline and its content rather than what is needed to put it into practice.

Cognitive Participation and Collective Action: The relational work that needs to be done around a guideline is centrally important to their implementation. The work of initiating this tended to be described in terms of finding a 'champion' to encourage adoption behaviour. For example, in the study by Graham et al. (2004), nurses reported the work of a nurse manager and educator was perceived as an important facilitator. Graham et al. assert that,

championing of the labour support recommendation by the nurse manager and educator and the training workshop was perceived to influence the provision of labour support positively (Graham et al., 2004: 297).

Other studies pointed to the ways that enrolling nurses into Clinical Practice Guidelines was a complex process that involved deliberately overcoming resistance to change and working to demonstrate the legitimacy of

Table 1Characteristics of included studies.

Publication details	Principal objective of the study	Clinical Practice Guideline(s)	Context	Participants	Methods
Graham et al. (2004), Canada.	To improve understanding of the determinants of guideline use by nurses.	Foetal surveillance and active management of labour.	Implementation analysis of the Foetal Health Surveillance Implementation Study.	51 nurses and 8 nurse administrators and educators.	Qualitative case study involving 14 focus groups and interviews.
Ploeg et al. (2007), Canada.	To identify factors influencing implementation of guidelines from the perspective of users.	-Client centred care -Crisis intervention -Healthy adolescent development -Pain assessment -Pressure ulcers -Supporting and strengthening families -Therapeutic relationships	Seven guidelines were implemented in 22 organisations across the province of Ontario, Canada. Organisations included acute hospitals, long-term care agencies, and community care hospitals.	66 nurses and 59 administrators.	Qualitative semi-structured interviews.
Bahtsevani et al. (2010), Sweden.	To explore factors of importance for the implementation of clinical practice guidelines in hospital care.	A general exploration of the use of clinical practice guidelines by nurses. Examples included management of tracheotomy, peripheral and central venous catheters and optimisation of surgical recovery.	Participants were based in 8 different hospitals in the south of Sweden.	20 nurses, each from a different clinical speciality.	Qualitative semi-structured interviews.
Knops et al. (2010), The Netherlands.	To explore factors affecting long-term adherence to two clinical practice guidelines.	-Fluid balance guideline (FBG) -Body temperature guideline (BTG)	Conducted through 7 wards of a University teaching hospital.	15 nurses in FBG focus groups and 47 nurses in BTG focus groups.	Qualitative focus groups. 5 focus groups about FBG and 7 focus groups about BTG.
Ritchie and Prentice (2011), Canada.	To explore the implementation of a guideline on the assessment and management of foot ulcers for people with diabetes.	Assessment and management of diabetic foot ulcers.	Participants were drawn from two organisations in Ontario, Canada, a community agency and a multisite tertiary care hospital corporation.	9 hospital-based haemodialysis unit staff nurses 3 community agency case managers, and 2 community agency wound care nurses.	Three qualitative focus groups.
Stenberg and Wann-Hansson (2011), Sweden.	To describe influences on health care professionals' attitudes to clinical practice guidelines for preventing falls and fall injuries.	A general exploration of clinical practice guidelines aimed to prevent falls and fall injuries.	Participants were recruited through 5 wards at a University hospital in the south of Sweden.	15 nurses, 4 physicians, 3 physiotherapists, 1 occupational therapist.	Five qualitative focus groups.
Yagasaki and Komatsu (2011), Japan.	To explore oncology nurses' perceptions of guideline implementation.	A general exploration of clinical practice guidelines for cancer treatment and chemotherapy.	Participants were recruited through either general or cancer-specific hospitals.	11 oncology nurses.	Two qualitative focus groups.

Table 2							
Constructs and	practical	research	questions:	dynamic	elements	of conte	ext.

	Construct	Sub-construct descriptor	Topic of investigation	Practical research question
Dynamic elements of context	Capacity	Material resources: The symbolic and actual currencies, artefacts, physical systems, environments, and so forth, that reside within in a social system, and that are institutionally sanctioned, distributed, and allocated to agents.	Participants' access to those material resources needed to operationalise the complex intervention.	How does the guideline change what professionals need to have to do their job?
		Informational resources: The personal and interpersonal sensations and knowledge, information and evidence, real and virtual object, and so forth, that reside in a social system, and that are institutionally sanctioned, distributed and allocated to agents.	Participants' access to knowledge and information needed to operationalise the complex intervention.	How does the guideline change what professionals need to know to do their job?
		Social norms: Institutionally sanctioned rules that give structure to meanings and relations within a social system, and that govern agents' membership, behaviour, and rewards within it.	The rules of participation in a complex intervention.	How does the guideline change the rules that govern what professional practice is?
		Social roles: Socially patterned identities that are assumed by agents within a social system, and which frame interactions and modes of behaviour.	The expected participants in a complex intervention.	How does the guideline change who does the work?
	Potential	Individual intentions: The potential to translate agents' individual beliefs and attitudes into behaviours that are congruent, or not congruent, with system norms and roles.	Individual motivation to participate in a complex intervention here.	To what extent does the guideline depend on individual engagement?
		Shared commitments: The potential to translate agents' shared beliefs and attitudes into behaviours that are congruent, or not congruent, with system norms and roles.	Shared commitment to participation in a complex intervention.	To what extent does the guideline depend on shared commitment?

the guideline (Yagasaki and Komatsu, 2011), while working to ensure that participants collectively 'bought in' to it. For example, Ploeg et al., describe a circumstance in which

nurses brought a case scenario to the group and the nurse and her peers and the facilitator worked through the guidelines using the case scenario. The use of the small group learning sessions was probably the most successful. Nurses were able to talk about very practical issues and develop strategies in groups (Ploeg et al., 2007: 214).

Group processes that included facilitated discussions, scenario design, and strategy building, were all included in such work (Graham et al., 2004; Ploeg et al., 2007). In the first of these, protocols for use were sometimes developed that were derived from the guideline, these structured how work was actually performed with patients (Bahtsevani et al., 2010), and linked this work with systems for planning (Stenberg and Wann-Hansson, 2011) and recording (Ritchie and Prentice, 2011) the content of clinical interactions with patients. Workability was also related to the allocation and performance of tasks (Graham et al., 2004) – the aim here was to ensure that they were incorporated as routines (Bahtsevani et al., 2010; Knops et al., 2010; Stenberg and Wann-Hansson, 2011) – and their integration into practice settings. Protocols were

important to the implementation of guidelines not simply because they could be derived from them, but also because guidelines could be embedded in them. Bahtsevani et al., explain that,

It appears necessary to use CPGs [Clinical Practice Guidelines] in creating routines for 'how it should be done' which originate from and are initiated by external and/or internal demands. The internal demands come from the staff and concern unclear routines (Bahtsevani et al., 2010: 518).

This could facilitate adherence (Knops et al., 2010). But more generally, the linkage between protocols and Clinical Practice Guidelines was one that ensured consensus and consistency (Bahtsevani et al., 2010; Ploeg et al., 2007), and provided a vocabulary of practice that was transportable between agencies and settings (Ploeg et al., 2007).

Reflexive Monitoring: Implementation involves participants in appraising their investments in Clinical Practice Guidelines, and the effects of the Guidelines themselves on practice and workflow. In some settings this takes the form of structured evaluations that involve systematic collection and interpretation of information. But in everyday practice a core question is, does the guideline work lead to the improvements in quality of care that its proponents claim it would? This is not

Table 3			
ENPT constructs and pract	ical research questions:	emergent expressions	of agency

	NPT construct	Sub-construct descriptor	Topic of investigation	Practical research question
Emergent expressions of agency	Capability	Workability: Agents act to operationalise an ensemble of practices within the frame of a social system.	Interactions between users and the components of a complex intervention.	What do nurses need to do to make the guideline work?
		Integration: Agents make linkages between an ensemble of practices and elements of the social system in which it is located.	Interactions between the context of use and the components of a complex intervention.	How does the guideline fit with other things that nurses need to do in the same space?
	Contribution	Coherence: Agents attribute meaning to an ensemble of practices and make sense of its possibilities within their field of agency.	Participants make sense of, and specify, their involvement in a complex intervention.	What do nurses need to do to make sense of the guideline and put it into action?
		Cognitive Participation: Agents legitimise and enrol themselves and others into an ensemble of practices.	Participants become members of a specific community of practice.	What do nurses do to become guideline users?
		<i>Collective Action:</i> Agents mobilise skills and resources and enact an ensemble of practices.	Participants realise and perform the complex intervention in practice.	What do nurses do when they use the guideline in practice, and what do they do to become skilled and resourced practitioners?
		Reflexive Monitoring: Agents assemble and appraise information about the effects of an ensemble of practices and utilise that knowledge to reconfigure social relations and action.	Participants collect and utilise information about the effects of the complex intervention.	What do nurses do to evaluate the effects of the guideline, and how to they translate the results of this into practice?

simply a matter of formal evaluation. Studies reviewed here expressed this activity in two ways. First they pointed to improvements in the nurses' collective knowledge that were derived from exposure to, and integration of, evidence in practice (Bahtsevani et al., 2010; Ploeg et al., 2007; Stenberg and Wann-Hansson, 2011). Second, they pointed to the ways that individuals faced challenges in integrating that knowledge into their individual practice, perhaps because of questions about translating information into practice (Yagasaki and Komatsu, 2011), or because other aspects of work and workload interfered with their engagement with the guideline (Ploeg et al., 2007).

3.3.3. Dynamic Elements of Context: Potential and Capacity Dynamic elements of the contexts of implementation are derived from the social structure in which it is set. Every clinical setting reflects macro- and meso-level social orders - the intricate structure of social norms (rules about what ought to happen and who ought to do it) and social roles (the identities that agents assume when they operate within those orders). The most important of these are the normative effects of power relations between medicine and nursing, where nurses were dependent on physicians' support (Ritchie and Prentice, 2011; Yagasaki and Komatsu, 2011) to both interpret and operationalise the guideline. This is important because the whole business of guideline implementation is about linking a formal informational resource (the guideline itself) to other structural and cognitive resources, not the least of which are the possible range of shared intra- and inter-professional commitments (Baker et al., 2005; Ritchie and Prentice, 2011). Shared commitments are the underpinnings of the collaborative relationships through which resource mobilisation takes place. It is clear that the implementation of guidelines involved complex collaborations around such resources (Ploeg et al., 2007).

4. Discussion

4.1. Limitations of this study

The methodological quality of the literature in this field is generally poor. Contexts, methods and sample were often badly described, and studies often lacked any form of explicit and robust conceptual model. An important limitation of even those papers that were included in the review was a lack of detail about the actual intervention. This meant that it was impossible for us to make positive statements about workability and integration of guidelines themselves. Factors that lead to publication bias (especially the non-reporting of 'unsuccessful' implementation processes) may have meant that important studies could not be discovered in our literature searches. Studies that were included have been placed within a conceptual framework that is very different to those utilised by their authors. Important differences between national contexts and healthcare systems, -Japan, Sweden, and Canada - and consequent differences in professional cultures, are not discussed in this paper because they are not considered in the studies included in the review. Although these are common features of systematic reviews, we are aware that they place important limitations on this study. We are also aware that these limitations also bring certain benefits. By stripping the

reviewed studies down to the essentials of what they tell us about the implementation of guidelines this paper draws attention to the way in which existing research is framed to tell us about certain parts of the implementation journey and not others. This opens up further interesting questions for primary research. Some of these are suggested in Tables 2 and 3.

4.2. A dynamic model of the implementation of Clinical Practice Guidelines

Systematic reviews are typically employed to make clear what is known about the outcomes of some clinical intervention. Our approach is somewhat different, in that we have sought to identify descriptions of process, and then to associate common elements of these descriptions which, following Turner (1987), we characterise as empirical generalisations - with a pre-existing theoretical framework. We have already acknowledged that this is, methodologically, a risky business. Even so, Directed Content Analysis of the materials selected for review suggests a set of conditions that may dispose a clinical practice guideline to normalisation (i.e. its routine incorporation in everyday practices). Even acknowledging the gaps in the research that we have described above, we can therefore lay the foundation for important work by suggesting a dynamic conceptual model - informed by a robust theory and the analysis of empirical data - that can be expressed as a set of concise hypotheses. The relationship between the constructs of the theory are characterised in Fig. 2.

Capability: Studies included in this review did not tell us enough about the actual properties of the guidelines themselves to draw definite conclusions about them. However, we can reasonably hypothesise that the capability of nurses to implement and embed a clinical guideline in everyday practice depends on the degree to which the guideline itself possesses qualities that make it workable at the bedside; and which mean that it can be integrated within the workflow of a clinical unit. This means that we can make a positive knowledge claim that can be subsequently verified by observation.

Proposition 1. The capability of nurses to operationalise a clinical guideline depends on its intrinsic workability and integration within the constraints of clinical practice.

Contribution: Studies in this review did provide sufficient data to identify and characterise important elements of nurses' implementation work. In practice, the implementation of clinical practice guidelines depended on nurses' continuous contributions of agency to enact them and normalise them into practice. We can make a set of positive knowledge claims in relation to this.

Proposition 2. A guideline is disposed to normalisation when (a) it is associated with activities that practitioners can make workable in practice, and when (b) practitioners are able to integrate it into their collective workflow.

Proposition 3. A guideline is disposed to normalisation when (a) it is differentiated from existing clinical practice by its proponents, and when (b) claims of differentiation are regarded as legitimate by its potential users.

Proposition 4. A guideline is disposed to normalisation when (a) it is associated with an emergent community of practice, and when (b) members of that community of practice enrol each other into group processes that specify their engagement with it.

Proposition 5. A guideline is disposed to normalisation when (a) it is associated with improvements in the collective



Fig. 2. Theoretical model of guideline implementation process.

knowledge of its users, and when (b) users are able to integrate the application of that knowledge into their individual workflow.

Capacity and *Potential*: The implementation of a clinical guideline in its practice setting depends on nurses' capacity to operationalise changing clinical norms and professional roles, especially in relation to medical staff; and coordinate changing informational resources. Translating capacity into practice require that structural and cognitive resources are mobilised in such a way as to build inter an intra-professional collaborations and commitments to both the task set, and its underlying body of evidence. We can offer a further verifiable knowledge claim in relation to this.

Proposition 6. A guideline is disposed to normalisation when nurses can (a) minimise disruption to behaviour norms and agreed professional roles, and (b) mobilise intra- and interprofessional collaborations around new goals.

In Fig. 2, we show how elements of NPT are structured in relation to the most recent iteration of NPT (May, 2013). In this context, Propositions 1 and 2 are clearly linked. Proposition 1 refers to the intrinsic properties of a guideline (capability) and the Proposition 2 refers to the ways in which it is mobilised in practice by its users (collective action). This may involve a high level of improvisation. Propositions 3-5 are also bundled around what needs to be done to make sense of the guideline and thus to give it coherence in practice; build cognitive participation around the guideline as it is operationalised; and they also suggest how its operationalisation might also change its users as the relationship between their knowledge and practice is reconfigured as a result of reflexive monitoring. Finally, Proposition 6 offers some clues about the underlying normative conditions through which enacting a guideline is framed in practice, and the framing of capacity and potential.

As Fig. 2 shows, the constructs of the theory do not describe one-way traffic. As capacity, potential, contribution, and capability are expressed through nurses' visible work, feedback loops appear through which the *doing* of a clinical practice guideline gradually changes the ways that contexts and objects are experienced. Mobilisation and restructuring effects form the mediating pathways between the different elements of practice characterised through this theoretical analysis.

5. Conclusion

5.1. Normalisation Process Theory is a valuable practice theory for nursing research

Theory-led work may be sometimes abstract, but the focus of this review – *the visible work that is done to achieve important clinical goals* – is a practical one. Although nursing research and nursing theory have historically stressed nursing's unique contribution to patient care, it seems to have become increasingly difficult to specify precisely what this contribution is and how it is operationalised without recourse to quantitative outcome measures (Davies, 1995;

Thorne et al., 2012). Normalisation Process Theory *identifies, characterises, and explains the agentic contribution of nurses in relational, procedural and clinical contexts.* NPT supports the analysis of nursing work by focusing on the ways that clinical nursing practice is made coherent and meaningful, how it leads to sets of relational commitments, how these contributions are enacted and contextualised, and how they are appraised and reconfigured. This approach to analysis provides a frame for understanding core elements of nursing knowledge and practice *in process,* rather than focusing on measuring and evaluating intervention outcomes. In this case, we have shown that NPT offers both a dynamic model of the implementation of nursing intervention research in nursing.

5.2. A dynamic model of implementation

In this study we used systematic review methods to identify studies of the implementation of nursing Clinical Practice Guidelines. We analysed the literature using Directed Content Analysis and interpreted the results in the light of Normalisation Process Theory. As a result, we have proposed a dynamic model of guideline implementation. This model is expressed as a set of propositions that are derived directly from theory-led analysis, and which are related to mechanisms that are already known to be important in contributing to implementation processes and their outcomes. The propositions that we have presented here are amenable to empirical investigation and verification. This means that unlike many systematic reviews, this one has presented its results in a form that can immediately inform to both clinical practice and prospective studies.

5.3. A translational template for implementation research in nursing

Each of the propositions of Normalisation Process Theory (May, 2013) discussed in this paper can be recast as a hypothesis or research question and tested empirically. The propositions have also formed a useful set of waypoints for considering the practical problems around implementing nursing clinical practice guidelines, and we have presented the results of our review in just such a form. By extension, the propositions of the theory form a preliminary model for analysing the implementation of other clinical interventions in nursing practice. In Tables 2 and 3 we provide a translational framework to underpin this. We set out basic components of NPT's constructs, and link these to practical research questions that can form the basis of empirical investigations of implementation processes across a wide range of settings, in healthcare and beyond.

Conflict of interest

None.

Funding

None.

Ethical approval

No human subjects or confidential data, Ethics Committee/IRB approval not required.

Acknowledgements

We thank Nicky Britten, Jenny Donovan, Dave Richards and Ken Stein for helpful comments on the analysis presented in this paper at seminars in Exeter and Bristol. Chris May and Mandy Fader commented in detail on the manuscript for which we are particularly grateful.

References

- Bahtsevani, C., Uden, G., Willman, A., 2004. Outcomes of evidence-based clinical practice guidelines: a systematic review. International Journal of Technology Assessment in Health Care 20 (4) 427–433.
- Bahtsevani, C., Willman, A., Stoltz, P., Östman, M., 2010. Experiences of the implementation of clinical practice guidelines – interviews with nurse managers and nurses in hospital care. Scandinavian Journal of Caring Sciences 24 (3) 514–522.
- Baker, D.I., King, M.B., Fortinsky, R.H., Graff, L.G.T., Gottschalk, M., Acampora, D., Preston, J., Brown, C.J., Tinetti, M.E., 2005. Dissemination of an evidence-based multicomponent fall risk-assessment and -management strategy throughout a geographic area. Journal of the American Geriatrics Society 53 (4) 675–680.
- Campbell, R., Pound, P., Morgan, M., Daker-White, G., Britten, N., Pill, R., Yardley, L., Pope, C., Donovan, J., 2011. Evaluating meta-ethnography: systematic analysis and synthesis of qualitative research. Health Technology Assessment 15 (43) 1–164.
- Checkland, K., Harrison, S., Marshall, M., 2007. Is the metaphor of 'barriers to change' useful in understanding implementation? Evidence from general medical practice. Journal of Health Services Research and Policy 12 (2) 95–100.
- Cluzeau, F.A., Littlejohns, P., 1999. Appraising clinical practice guidelines in England and Wales: the development of a methodologic framework and its application to policy. Joint Commission Journal on Quality Improvement 25 (10) 514–521.
- Colyvas, J.A., Jonsson, S., 2011. Ubiquity and legitimacy: disentangling diffusion and institutionalization. Sociological Theory 29 (1) 27–53.
- Davies, B.L., 2002. Sources and models for moving research evidence into clinical practice. Journal of Obstetrics Gynecology and Neonatal Nursing 31 (5) 558–562.
- Davies, C., 1995. Competence versus care? Gender and caring work revisited. Acta Sociologica 38 (1) 17–32.
- Davies, P., Walker, A.E., Grimshaw, J.M., 2010. A systematic review of the use of theory in the design of guideline dissemination and implementation strategies and interpretation of the results of rigorous evaluations. Implementation Science 5 (14).
- Fligstein, N., McAdam, D., 2011. Toward a general theory of strategic action fields. Sociological Theory 29 (1) 1–26.
- Godin, G., Belanger-Gravel, A., Eccles, M., Grimshaw, J., 2008. Healthcare professionals' intentions and behaviours: a systematic review of studies based on social cognitive theories. Implementation Science 3 (1).
- Graham, I.D., Logan, J., Davies, B., Nimrod, C., 2004. Changing the use of electronic fetal monitoring and labor support: a case study of barriers and facilitators. Birth 31 (4) 293–301.
- Greenhalgh, T., 2008. Role of routines in collaborative work in healthcare organisations. British Medical Journal 337, a2448.
- Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., Kyriakidou, O., 2004. Diffusion of innovations in service organizations: systematic review and recommendations. Milbank Quarterly 82 (4) 581–629.
- Grimshaw, J.M., Thomas, R.E., MacLennan, G., Fraser, C., Ramsay, C.R., Vale, L., Whitty, P., Eccles, M.P., Matowe, L., Shirran, L., Wensing, M., Dijkstra, R., Donaldson, C., 2004. Effectiveness and efficiency of guideline dissemination and implementation strategies. Health Technology Assessment 8 (6) 1–72.
- Grol, R.P., Bosch, M., Hulscher, M., Eccles, M., Wensing, M., 2007. Planning and studying improvement in patient care: the use of theoretical perspectives. Milbank Quarterly 85 (1) 93–138.
- Hsieh, H.F., Shannon, S.E., 2005. Three approaches to qualitative content analysis. Qualitative Health Research 15 (9) 1277–1288.

- Knops, A.M., Storm-Versloot, M.N., Mank, A.P.M., Ubbink, D.T., Vermeulen, H., Bossuyt, P.M.M., Goossens, A., 2010. Factors influencing long-term adherence to two previously implemented hospital guidelines. International Journal For Quality In Health Care 22 (5) 421–429.
- MacFarlane, A., O'Reilly-de Brún, M., 2012. Using a theory-driven conceptual framework in qualitative health research. Qualitative Health Research 22 (5) 607–618.
- Mair, F., May, C., O'Donnell, C., Finch, T., Sullivan, F., Murray, E., 2012. Factors that promote or inhibit the implementation of e-health systems: an explanatory systematic review. Bulletin of the World Health Organization 90, 357–364.
- Marshall, J.L., Mead, P., Jones, K., Kaba, E., Roberts, A.P., 2001. The implementation of venous leg ulcer guidelines: process analysis of the intervention used in a multi-centre, pragmatic, randomized, controlled trial. Journal of Clinical Nursing 10 (6) 758–766.
- May, C., 2006. A rational model for assessing and evaluating complex interventions in health care. BMC Health Services Research 6 (86.).
- May, C., 2013. Towards a general theory of implementation. Implementation Science 8 (1).
- May, C., Finch, T., 2009. Implementation, embedding, and integration: an outline of Normalization Process Theory. Sociology 43 (3) 535–554.
- May, C., Finch, T., Mair, F., Ballini, L., Dowrick, C., Eccles, M., Gask, L., MacFarlane, A., Murray, E., Rapley, T., Rogers, A., Treweek, S., Wallace, P., Anderson, G., Burns, J., Heaven, B., 2007. Understanding the implementation of complex interventions in health care: the normalization process model. BMC Health Services Research 7 (148).
- May, C., Mair, F.S., Finch, T., MacFarlane, A., Dowrick, C., Treweek, S., Rapley, T., Ballini, L., Ong, B.N., Rogers, A., Murray, E., Elwyn, G., Legare, F., Gunn, J., Montori, V.M., 2009. Development of a theory of implementation and integration: Normalization Process Theory. Implementation Science 4 (29).
- Mead, P., 2000. Clinical guidelines: promoting clinical effectiveness or a professional minefield? Journal of Advanced Nursing 31 (1) 110–116.
- Miller, M., Kearney, N., 2004. Guidelines for clinical practice: development, dissemination and implementation. International Journal of Nursing Studies 41 (7) 813–821.
- Noblitt, G.W., Hare, R.D., 1998. Meta-Ethnography: Synthesizing Qualitative Studies. Sage, London.
- Perkins, M.B., Jensen, P.S., Jaccard, J., Gollwitzer, P., Oettingen, G., Pappadopulos, E., Hoagwood, K.E., 2007. Applying theory-driven approaches to understanding and modifying clinicians' behavior: what do we know? Psychiatric Services 58 (3) 342–348.
- Ploeg, J., Davies, B., Edwards, N., Gifford, W., Miller, P.E., 2007. Factors influencing best-practice guideline implementation: lessons learned from administrators, nursing staff, and project leaders. Worldviews on Evidence Based Nursing 4 (4) 210–219.
- Richens, Y., Rycroft-Malone, J., Morrell, C., 2004. Getting guidelines into practice: a literature review. Nursing Standard 18 (50) 33-40.
- Ritchie, L, Prentice, D., 2011. An exploration of nurses' perceptions regarding the implementation of a best practice guideline on the assessment and management of foot ulcers for people with diabetes. Applied Nursing Research 24 (2) 88–93.
- Rycroft-Malone, J., Duff, L., 2000. Developing clinical guidelines: issues and challenges. Journal of Tissue Viability 10 (4) 144–149, 152–153.
- Stenberg, M., Wann-Hansson, C., 2011. Health care professionals' attitudes and compliance to clinical practice guidelines to prevent falls and fall injuries. Worldviews on Evidence Based Nursing 8 (2) 87–95.
- Tabak, R.G., Khoong, E.C., Chambers, D.A., Brownson, R.C., 2012. Bridging research and practice: models for dissemination and implementation research. American Journal of Preventive Medicine 43 (3) 337–350.
- Thomas, L.H., McColl, E., Cullum, N., Rousseau, N., Soutter, J., 1999. Clinical guidelines in nursing, midwifery and the therapies: a systematic review. Journal of Advanced Nursing 30 (1) 40–50.
- Thorne, S., Lawler, J., Pryce, A., May, C., 2012. Reading outside the task fraternity. Nursing Inquiry 19 (3) 189.
- Treweek, S., 2005. Complex interventions and the chamber of secrets: understanding why they work and why they do not. Journal of the Royal Society of Medicine 98 (12) 553.
- Turner, J.H., 1987. Analytical theorizing. In: Giddens, A., Turner, J. (Eds.), Social Theory Today. Polity, Cambridge, pp. 156–194.
- Vale, L., Thomas, R., MacLennan, G., Grimshaw, J., 2007. Systematic review of economic evaluations and cost analyses of guideline implementation strategies. European Journal of Health Economics 8 (2) 111–121.
- Watson, R., Parr, J.R., Joyce, C., May, C., Le Couteur, A.S., 2011. Models of transitional care for young people with complex health needs: a scoping review. Child 37 (6) 780–791.
- Yagasaki, K., Komatsu, H., 2011. Preconditions for successful guideline implementation: perceptions of oncology nurses. BMC Nursing 10, 23.