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Barriers and enablers to implementation of a New Zealand-wide guideline for assessment and management of cardiovascular risk in primary health care: a template analysis

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Abstract

Aim: The aim of this study was to identify the enablers and barriers to guideline implementation in a primary healthcare setting by employing the Promoting Action on Research Implementation in Health Services (PARIHS) framework as a template for data analysis and interpretation. **Background:** The use of clinical practice guidelines is pivotal to improving health outcomes. However, the implementation of guidelines into practice is complex, unpredictable, and, in spite of much investigation, remains resistant to explanation of what works and why. Optimising the enablers and minimising the barriers to implementation of a guideline for reducing cardiovascular disease risk has the potential to significantly reduce the burden of disease. The PARIHS framework has been successfully applied in a number of clinical contexts and has been found useful in illuminating the barriers and enablers to evidence implementation. **Approach:** This qualitative study involved focus groups with 20 primary healthcare nurses, 4 general practitioners, 5 managers, and individual interviews with 3 funder/planners who discussed their contribution to the use of a guideline for the assessment and management of cardiovascular risk. Template analysis based on the PARIHS framework was applied to semi-structured narrative data to provide an in-depth analysis of the barriers and enablers to implementation of the guideline. **Conclusions:** The lack of facilitation of the guideline into practice was a major barrier to implementation. Implementation plans that address the concerns and complexities of everyday practice are an essential aspect of guideline development. The PARIHS framework was found to be comprehensive and accommodating of the complexity of everyday practice associated with guideline implementation in primary health care. The pertinence of the framework confirms its usefulness as a tool to guide implementation.

Keywords

health, barriers, analysis, template, care, primary, enablers, risk, implementation, cardiovascular, management, assessment, guideline, wide, zealand

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Barriers and Enablers to Implementation of a New Zealand-Wide Guideline for Assessment and Management of Cardiovascular Risk in Primary Health Care: A Template Analysis

Ann McKillop, RN, DN, Jackie Crisp, RN, PhD, Kenneth Walsh, RN, PhD

ABSTRACT

Aim: The aim of this study was to identify the enablers and barriers to guideline implementation in a primary healthcare setting by employing the Promoting Action on Research Implementation in Health Services (PARIHS) framework as a template for data analysis and interpretation.

Background: The use of clinical practice guidelines is pivotal to improving health outcomes. However, the implementation of guidelines into practice is complex, unpredictable, and, in spite of much investigation, remains resistant to explanation of what works and why. Optimising the enablers and minimising the barriers to implementation of a guideline for reducing cardiovascular disease risk has the potential to significantly reduce the burden of disease. The PARIHS framework has been successfully applied in a number of clinical contexts and has been found useful in illuminating the barriers and enablers to evidence implementation.

Approach: This qualitative study involved focus groups with 20 primary healthcare nurses, 4 general practitioners, 5 managers, and individual interviews with 3 funder/planners who discussed their contribution to the use of a guideline for the assessment and management of cardiovascular risk. Template analysis based on the PARIHS framework was applied to semi-structured narrative data to provide an in-depth analysis of the barriers and enablers to implementation of the guideline.

Conclusions: The lack of facilitation of the guideline into practice was a major barrier to implementation. Implementation plans that address the concerns and complexities of everyday practice are an essential aspect of guideline development. The PARIHS framework was found to be comprehensive and accommodating of the complexity of everyday practice associated with guideline implementation in primary health care. The pertinence of the framework confirms its usefulness as a tool to guide implementation.

KEYWORDS evidence-based, guidelines, implementation, PARIHS framework, cardiovascular health, primary health care

BACKGROUND

Evidence-based practice is known to improve health outcomes, advance the quality of care, and reduce healthcare costs (Melnik & Fineout-Overholt 2010), but the challenge of getting evidence into everyday practice has been difficult to meet (Sullivan et al. 2008; Factor-Litvak & Sher 2009). In spite of the availability of rigorously developed evidence-based guidelines related to many health problems, uncertainty persists about what occurs in the gap between evidence and practice (Kitson 2009; Helfrich et al. 2010; Melnik & Fineout-Overholt 2010). Rather than pursuing the elusive “magic bullet”

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intervention for the implementation of evidence, researchers have turned their attention to the interplay of the complexities of clinical practice and their effect on the implementation of evidence (Grol 1997; Estabrooks et al. 2003; Grimshaw et al. 2004; Grol & Wensing 2004; Rycroft-Malone 2008). This paper reports on a study which aimed to identify the enablers and barriers to guideline implementation in a primary healthcare setting by employing the Promoting Action on Research Implementation in Health Services (PARIHS) framework as a template for data analysis and interpretation of the use of an Assessment and Management of Cardiovascular Risk (AMCVR) guideline in New Zealand.

In 2003, an evidence-based guideline for reducing cardiovascular risk, the AMCVR guideline (New Zealand Guidelines Group 2003), was released throughout New Zealand to primary healthcare providers in the expectation that it would become embedded in practice. Cardiovascular disease is the biggest killer worldwide (World Health Organization 2008) and is associated globally with marked health inequities linked to ethnicity and socioeconomic status (Thurston et al. 2005; Melchoir et al. 2006; Kim et al. 2008; Beauchamp et al. 2010; Braveman et al. 2010). New Zealand's indigenous Māori people have overall worse health status than the non-Māori population, are disproportionately affected by cardiovascular disease, and have lower life expectancy due to the incidence of cardiovascular disease (Tobias et al. 2006). At the time of implementation of this guideline it was believed that its implementation had the potential to prevent 55% of future cardiovascular disease events, thereby compressing years of morbidity (Fries 2003) and reducing the societal impact of premature death (Sharpe & O'Sullivan 2006).

The AMCVR guideline provides recommendations for who are most at risk and what should be assessed and the level of intensity of pharmaceutical and/or lifestyle interventions calibrated to the level of risk identified (New Zealand Guidelines Group 2003). The document includes a section on implementation that advises the use of "multifaceted strategies. . .to disseminate the guideline and encourage its implementation through New Zealand" (New Zealand Guidelines Group 2003, p. 134). However, advice for local adaptation and implementation at the point of care is sparse; the use of local champions and audit is recommended but no specific guidance is given. Despite various strategies and resources being promulgated with the intention to aid implementation of the guideline, including trend data (New Zealand Health Strategy 2003), and patient management software (Wells & Jackson 2005; Sinclair & Kerr 2006), the embedding of the guideline in normal everyday practice was a challenge left mainly to healthcare providers. The study reported on in this paper

commenced 4 years after the release of the guideline at a point in time that it was reasonable to expect that it would be used in everyday practice.

The initial intention was to undertake a qualitative study that would illuminate the process of implementing the AMCVR guideline *ex post facto* by gaining a rich description of practice realities in primary healthcare environments. Thematic analysis of the data resulted in a qualitative description (Sandelowski 2000) reported elsewhere (McKillop, Crisp & Walsh 2011). The opportunity to undertake the work over a prolonged period due to part-time candidature enabled understanding of the topic to evolve beyond the original study design and method. Given the availability of rich narrative text from those charged with implementing the guideline in their day-to-day practice, the potential for secondary analysis of data was realised using a framework that has been showing promise in predicting successful implementation of research evidence into practice. The opportunity was taken to subject the qualitative data to template analysis based on the PARIHS framework in order to both shed light on the implementation of a specific guideline, within a specific context, and also to provide further information about the capacity of the framework to reflect the major factors associated with guideline implementation in general. This paper reports on this template analysis.

Significance

The PARIHS framework was developed to encompass the complex nature of evidence implementation by identifying positive and negative indicators of supports and inhibitors in everyday clinical practice (Kitson et al. 1998; Rycroft-Malone 2004; Kitson et al. 2008). The broad and inclusive nature of the framework allows a more comprehensive understanding of the complexities involved (Kitson et al. 1998; Rycroft-Malone et al. 2002). The main proposition of the PARIHS framework is that the successful implementation of evidence into practice is a function of three integrated and interdependent core elements; the nature of evidence to inform practice, the context of the environment into which the evidence is to be used, and the mode of facilitation of evidence into practice (Kitson et al. 1998; Rycroft-Malone et al. 2002; Rycroft-Malone 2004). The basic tenet of the PARIHS framework is that successful implementation (*SI*) is a function (*f*) of and occurs in the presence of indicators for high Evidence (*E*), Context (*C*), and Facilitation (*F*) so that $SI = f(E,C,F)$ (Kitson et al. 1998).

Each of the three PARIHS elements is based on sub-elements that in turn have indicators for "high" and "low" representing enablers and barriers to successful implementation of evidence into practice (see Table 1).

TABLE 1

The PARIHS Framework: the template used for data analysis

| ELEMENT | SUB-ELEMENTS | LOW | HIGH |
|----------------|-----------------------------|---|--|
| Evidence | Research | <ul style="list-style-type: none"> • Poorly conceived, designed, and/or executed research • Seen as the only type of evidence • Not valued as evidence • Seen as certain | <ul style="list-style-type: none"> • Well-conceived, designed, and executed research, appropriate to the research question • Seen as one part of a decision • Valued as evidence • Lack of certainty acknowledged • Social construction acknowledged • Judged as relevant • Importance weighted • Conclusions drawn |
| | Clinical experience | <ul style="list-style-type: none"> • Anecdotal, with no critical reflection and judgment • Lack of consensus within similar groups • Not valued as evidence • Seen as the only type of evidence | <ul style="list-style-type: none"> • Clinical experience and expertise reflected upon, tested by individuals and groups • Consensus within similar groups • Valued as evidence • Seen as one part of the decision • Judged as relevant • Importance weighted • Conclusions drawn |
| | Patient (client) experience | <ul style="list-style-type: none"> • Not valued as evidence • Patients not involved • Seen as the only type of evidence | <ul style="list-style-type: none"> • Valued as evidence • Multiple biographies used • Partnerships with healthcare professionals • Seen as one part of a decision • Judged as relevant • Importance weighted • Conclusions drawn |
| | Local data/information | <ul style="list-style-type: none"> • Not valued as evidence • Lack of systematic methods for collection and analysis • Not reflected upon • No conclusions drawn | <ul style="list-style-type: none"> • Valued as evidence • Collected and analysed systematically and rigorously • Evaluated and reflected upon • Conclusions drawn |
| Context | Culture | <ul style="list-style-type: none"> • Unclear values and beliefs • Low regard for individuals • Task-driven organisation • Lack of consistency • Resources not allocated | <ul style="list-style-type: none"> • Able to define culture(s) in terms of prevailing values/beliefs • Values individual staff and clients • Promotes learning organisation • Consistency of individual's role/experience to value relationship with others • Teamwork • Power and authority • Rewards/recognition • Resources—human, financial, equipment—allocated • Initiative fits with strategic goals and is a key practice/patient issue |
| | Leadership | <ul style="list-style-type: none"> • Traditional, command, and control leadership • Lack of role clarity • Lack of teamwork • Poor organisational structures • Autocratic decision-making processes • Didactic approaches to learning/teaching/managing | <ul style="list-style-type: none"> • Transformational leadership • Role clarity • Effective teamwork • Effective organisational structures • Democratic-inclusive decision-making processes • Enabling/empowering approach to teaching/learning/managing |

(Continued)

TABLE 1
(Continued)

| ELEMENT | SUB-ELEMENTS | LOW | HIGH |
|--------------|-----------------------|--|---|
| | Evaluation | <ul style="list-style-type: none"> • Absence of any form of feedback • Narrow use of performance information sources • Evaluations rely on single rather than multiple methods | <ul style="list-style-type: none"> • Feedback on Individual, Team, System performance • Use of multiple sources of information on performance • Use of multiple methods <ul style="list-style-type: none"> • Clinical • Performance • Economic • Experience evaluations |
| Facilitation | Purpose role | Task Doing for others <ul style="list-style-type: none"> • Episodic contact • Practical/technical help • Didactic, traditional approach to teaching • External agents • Low intensity—extensive coverage Task/doing for others | Holistic Enabling others <ul style="list-style-type: none"> • Sustained partnership • Developmental • Adult learning approach to teaching • Internal/external agents • High intensity—limited coverage |
| | Skills and attributes | <ul style="list-style-type: none"> • Project management skills • Technical skills • Marketing skills • Subject/technical/clinical credibility | Holistic/enabling others <ul style="list-style-type: none"> • Co-counselling • Critical reflection • Giving meaning • Flexibility of role • Realness/authenticity |

Note: (Rycroft-Malone 2004, p. 302). Reprinted with the permission of Wolter Kluwer Health, License No 2607330843683.

The facilitation of successful implementation of evidence into practice requires skilled personnel well prepared for the role who can use appropriate approaches ranging from “task” to “holistic” in order to support the enablers and minimise the barriers as identified in relation to evidence and context (Harvey et al. 2002). Because facilitation of a guideline into everyday practice is context-dependent, non-linear, and imprecise, facilitators need to finely tune implementation activities to each situation. The facilitation of evidence into the “complex cocktail of interactions and engagements” of clinical practice requires methods that can fully embrace that mix (McCormack 2008, p. 160). Such methods can be captured under the umbrella of practice development (Manley 2004; Walsh et al. 2006; McCormack et al. 2009a) and are concerned directly with ways to initiate and sustain change in the midst of the realities of everyday clinical work.

The PARIHS framework has been applied successfully in a number of implementation situations and in a variety of settings (Helfrich et al. 2010; Rycroft-Malone 2010). It has formed the basis of an instrument to evaluate the uptake of guidelines in hospitals in southern Sweden (Bahtsevani et al. 2008); to evaluate the use of networks for knowledge exchange (Conklin & Stolee 2008); to explore factors affecting prison-based research studies (Larkin 2008); to develop and test a theoretical model of organisational in-

fluences on implementation (Cummings et al. 2007); post-operative pain management (Brown & McCormack 2005); and outcomes focussed knowledge translation (Doran & Sidani 2007). The PARIHS framework has not, however, been used previously to explore guideline implementation in a primary healthcare setting, specifically (Helfrich et al. 2010). One of the strengths of the PARIHS framework is its ability to accommodate the uncertain nature of implementing evidence by providing the means exploring key enablers and barriers to successful implementation in the “complex, messy and demanding” world of everyday practice (Rycroft-Malone 2004, p.297).

The aim of this study was to identify the enablers and barriers to guideline implementation in a primary healthcare setting by employing the PARIHS framework as a template for data analysis and interpretation.

METHODS

Design

A descriptive qualitative study in two components was designed to provide a rich description of the experiences of primary healthcare professionals charged with implementing the New Zealand-wide AMCVR guideline. In the first component of the study (reported elsewhere) rich textual data were subjected to general inductive, thematic

analysis (Thomas 2006). The second component of the study, reported here, involved secondary analysis of the same qualitative data using template analysis (Crabtree & Miller 1999; Waring & Wainwright 2008), based on the PARIHS framework. Template analysis is a form of analysis that focuses on the informational content of qualitative data (King 2004). A recent use of template analysis has been its application to rich unstructured data from focus groups following the primary data collection phase (Waring & Wainwright 2008) and this approach is used here. Template analysis involves the analysis of qualitative data according to one of three epistemological positions (King 2004). The first position is to have pre-defined codes based on a theory or framework; second is to develop codes after initial exploration of data; and third is to start out with *a priori* codes that are refined and expanded during data analysis (King 2004; Waring & Wainwright 2008). The position used in this study was the first position in which data codes were applied deductively to the pre-defined elements and subelements of the PARIHS framework. The relevance of this approach is twofold; firstly for PARIHS to provide a theoretical lens to enhance understanding of the barriers and enablers to guideline implementation and, secondly, to test the capacity of the framework to illuminate the complexities of guideline implementation in primary healthcare nursing.

Setting

This study was located in primary healthcare settings, including Māori providers and general practices, in a region characterised by high deprivation and health need. Primary healthcare services in New Zealand are delivered by two types of providers who are funded on a capitation basis to meet the health priorities of the District Health Board (DHB) for their region. General practices are run as private businesses owned by doctors who employ staff (mainly nurses and other doctors) on salary. Māori Health Providers are governed by local boards, funded also by DHBs, with salaried staff (mainly nurses) providing health care delivered mostly, but not exclusively, to Māori patients. Patients make co-payments for treatment and prescribed medicine fees according to their income level. In areas of high deprivation with high health needs, health providers are allocated additional funds to increase access by reducing co-payment costs to patients to nil in some cases.

Providers in this study were based in rural settings, a small city, and small towns in a region of New Zealand with difficult geography, a widespread population, and a high level of health inequity for Māori, who comprise 31.7% of people in this region compared with 14.6% for all of New Zealand. In addition the median age of the popula-

tion in this region is higher than for the total population, 38.9 years versus 35.9 years (Statistics New Zealand 2006). These demographics suggest a higher level of risk of cardiovascular disease in the study area. The AMCVR guideline was chosen because of its elevated priority for implementation with the potential to prevent 55% of future cardiovascular disease events (New Zealand Guidelines Group 2003).

Ethics Approval

Ethics approval was gained from the relevant regional New Zealand Ministry of Health Ethics Committee and the University of Technology Sydney Human Research Ethics Committee. Ethical standards were maintained throughout the study.

Participants

Participants were recruited from primary healthcare settings in one region of New Zealand to gain their perspectives of using the guideline in everyday practice. There were 32 participants; including 20 primary healthcare nurses, 4 general practitioners (GPs), 5 primary healthcare managers, and 3 funder/planners. Participants were eligible for inclusion if their work was associated with the implementation of the guideline. Potential participants were nominated by their colleagues, received information about the study by e-mail and indicated their willingness to be included by return email. All who replied were accepted into the study because they represented maximum variation of perspectives of guideline implementation across professional occupations and geographic locations. Five focus groups of nurses, one of GPs, and one of managers were held comprising of three to five participants each, and individual interviews were held with three funder/planners from the local DHB. The groups and interviews were audio recorded and transcribed verbatim.

Data Collection

Focus groups and interviews were held between January and May 2007. The timing and venues for data collection were at the discretion of participants; all occurred in meeting rooms convenient to their work places and schedules. One researcher (AM) conducted all focus groups of an average of 65 minutes for nurses' groups, and 30 minutes for the GPs' and managers' groups, and three individual interviews with funder/planners of 30 minutes each. The focus groups and interviews were loosely structured using open-ended questions aimed at obtaining rich data that reflected the perspectives and experiences of participants. Data collection broadly covered the nature of and access to information used to guide the AMCVR, the usefulness of the AMCVR guideline for practice, processes that enable or

hinder guideline implementation. All data were recorded and transcribed verbatim.

Data Analysis

Template analysis involved, firstly, the coding of rich textual material from the transcribed recordings of focus groups and interviews into meaningful segments according to their informational content. Each segment related to a discrete idea and each was given a data-driven code name according to the topic that it represented. The second stage involved codes being mapped overall to the elements of the PARIHS framework as a high level coding scheme, as per King (2004), paying attention to the “goodness of fit” of data-driven codes to each element according to the definitions developed in concept analyses for evidence, context, and facilitation (Harvey et al. 2002; McCormack et al. 2002; Rycroft-Malone et al. 2004b). The PARIHS framework (Rycroft-Malone 2004) was used as the template for analysis (see Table 1). The third stage of template analysis involved a second level of analysis with further mapping of codes that had been allocated to each PARIHS element to the high and low indicators for the relevant subelements.

The validity of data interpretation was managed by corroboration (Crabtree & Miller 1999) through reflection and discussion (AM and JC) of code names as true representations of raw data and appropriately allocated to elements and subelements of PARIHS. There were many instances when data were pertinent to both high and low for the same indicators, even within the data that came from a single focus group or interview. Participants were not asked to check whether the results coincided with their personal view because the overall synthesis and abstraction involved in data interpretation and analysis produced findings in which individual participants may not recognise themselves specifically or their particular narrative, especially when their contribution has been in a focus group (Morse et al. 2002).

FINDINGS

Participants included 20 primary healthcare nurses (one male) in three focus groups from six general practices based in urban, rural, and small town settings, one group of nurse leaders from throughout the region and two nurse groups from five Māori Health Providers in rural areas. There was one focus group of GPs (one woman and three men), and another of six primary healthcare managers (two women and four men). Three funder/planners (two women and one man) were individually interviewed. All participants were experienced professionals who had worked in primary health care for at least 5 years, were involved in various ways with use of the AMCVR guideline, and pro-

vided variation of professional occupation and locality of work setting.

In total, there were 372 data-driven codes; 249 codes generated from the data contributed by nurses' groups in 320 minutes overall, 35 codes in 30 minutes from the managers' group, 30 in 40 minutes from GPs' group, and 58 in 100 minutes of individual interviews with funder/planners. These proportions are indicative of the lively conversation in the focus groups with each topic drawing comments from others and triggering new ideas, compared with the dialogue typical in individual interviews.

Context

By far the majority of data codes, overall, mapped to the indicators for Context (274) and of those most (175) were generated from the nurses' focus groups, compared with the GPs (20), managers (36), and funder/planners (43). All participants described a highly complex range of contextual influences that mapped to both high and low indicators for the subelements of culture (229 codes) and leadership (40 codes), and to low indicators for evaluation (5 codes).

Culture

Each of the focus groups and interviewees spoke about their work in ways that revealed their commitment to reducing cardiovascular disease and deaths as a key practice issue. This was a strong thread across all data sources. One nurse focus group captured this emphasis as follows:

It would be better to be starting at a different point than starting with people who have already got coronary heart disease, got the risk factors. There are lots of people out there who are getting educated and living their life in a way that is not leading them towards coronary heart disease but those aren't the people that we have to target. (Nurse)

A feature of values and beliefs in workplace settings was the importance that participants placed on addressing health inequity for Māori. One participant related that,

We know Māori tend to have worse health and that's not just because of their economic status ... even if you allow for that they still have poorer outcomes and life expectancy and we have appalling disparities in life expectancy in [this area]. So planning around how you address those inequalities and make change. What are the levers to pull? (Funder/planner)

However, they voiced a conflict between their support of screening in principle and the lack of resources primarily in terms of staff:

I don't think there's much doubt that you can use practice nurses to do 80% of the work probably but you've got to have the numbers to be able to do it and that's really what it boils down to. (GP)

and diagnostic services:

One of the challenges for CV screening is that you have to have services to refer people to. No point in identifying a risk if you can't do anything about it. I mean it's not just a matter of saying "You've got a risk here. Take a pill." (Nurse)

Leadership

Forty data codes for leadership focused mainly on the impact of organisational structures on their work, in general, and in relation to the guideline. All of the clinician groups spoke about the model of health care for general practices as well suited to acute or continuing care for people with health problems attending but poorly organised for out-reach cardiovascular screening and health promotion. They stated that they were so consumed with dealing with fast-paced, clinic-based, illness care that they lacked opportunities to practice differently. One practice nurse group related that:

The pattern of work has always been episodic, rapid and missed cardiovascular risk screening which needs a proactive approach and that's quite a different model. Moving from a reactive to a proactive model challenges the area. (Nurse)

Some nurses spoke about how easily they worked within the regulated scope of Registered Nurse practice (Nursing Council of New Zealand 2008) because the clarity of roles was well established in their work setting. However, others felt the high level of patient queries and needs put pressure on them to make diagnostic and treatment decisions beyond their scope of practice:

You know you have to be aware that you don't work outside your skill base . . . you've got to have accountability for your . . . you know you've gotta be free to go and say "You know, I'm not sure about this." Because you can come-a-cropper [have an accident or make a mistake] if you don't watch it. (Nurse)

The focus group of GPs was enthusiastic for a more active role for nurses in cardiovascular risk assessment, but adamant that was conditional on an increase in funding:

As part of the team, I think they [nurses] could be utilised hugely as part of the ongoing management and education. But we really need to be resourced at this end. I'm amazed . . . but there's no resourcing as to how we do it! No resourcing at this end. It's just a crazy situation! It's not going to work! (GP)

For a nurse in one practice, using nurse-led clinics to undertake cardiovascular risk assessment and follow-up had a positive effect on teamwork:

Yeah. It's good for teamwork, though. The GPs are noticing the difference. Like one GP I work with was a bit sceptical about how it would all go but now he's noticing the difference. (Nurse)

One nurse focus group was optimistic about making changes to the ways patient care was organised in general practices:

Nurse 1—"No, it doesn't take a lot of time. It takes buy-in from all your practice nurses."

Nurse 2—"Yeah. Every time you have a face to face contact with the patient you flick up the risk assessment to discuss. 'OK, we are missing your [fasting lipids]. . .'" (Nurses)

However, others were sceptical about making changes to accommodate assessing and managing cardiovascular risk:

Nurse 1—"There's no point screening if you can't follow up with what's required."

Nurse 2—" . . . what you gonna do when you've found them? Who's gonna pay for all this extra work that is going to be done?" (Nurses)

Evaluation

The five data codes for evaluation mapped only to indicators for low evaluation. Participants noted difficulties in accessing feedback about how they were going with implementation because they relied on a narrow range of clinical indicators, for example fasting blood lipids. Nurses needed to know the impact of their own work:

. . . there's no measured way to gauge the nurses on their competencies because it's quite individual. It's quite personal. (Nurse)

A funder/planner saw broad-reaching evaluation of performance as fundamental for team discussion about ongoing quality improvement:

We need to be looking at other ways of evaluating service and also recording that performance. . . The very rich stories health gain hasn't been done yet . . . (Funder/planner)

The context of the implementation of the AMCVR guideline was messy, with data codes that were pertinent to many of the barriers and enablers portrayed in the PARIHS framework.

EVIDENCE

Of the 109 data codes pertinent to evidence most were generated from the nurses' focus groups (78), 2 from the GP group, 12 from the managers' group, and 17 from the funder/planners. The scarcity of conversation from the GPs about evidence for practice was surprising given the open-ended questions posed to the group as described earlier. The pattern of allocation of the codes to the four sub-elements of evidence were 23 to research evidence, 14 to clinical experience, 41 to patient (client) experience, and 32 codes were mapped to local data.

Research Evidence

For research evidence the guideline was well disseminated throughout the region and all nurse focus groups spoke of depending on its credibility for managing cardiovascular

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risk. Nurses found the guideline was valuable and relevant for calculating and interpreting cardiovascular risk scores, for managing early risk, and for reviewing treatment regimens for patients with cardiovascular disease.

And what it [the guideline] does is that it takes the best of all practices and the best of research and it puts it all into one hit . . . and, you know, where else can you [find that], especially when you are living in rural communities like ours with limited resources? It's an invaluable tool. (Nurse)

Familiarity with the recommendations enhanced nurses' confidence and understanding of cardiovascular risk reduction and the guideline armed them with credible information that gave them confidence when discussing treatment decisions with doctors. A nurse focus group agreed that:

We have regular case reviews with our . . . medical officer and . . . we see a patient with cv [cardiovascular] disease and they might be on an ACE inhibitor but they need Cartia as well and we look in our records and say "Oh, his lipid levels are up. He needs a statin." And the GP can write up the prescription. . . . Our management is constantly being looked at with the guidelines. (Nurse)

Clinical Experience

Of the 14 data codes pertinent to clinical experience most were a fit for the indicators for low evidence. The nurse focus groups drew on their clinical experience to talk about their work but the resources and processes for robust critical reflection were not evident. However they did indicate that they valued experience as a knowledge source. One nurse related that:

Sometimes it's something that you can't learn. It's based on experience you know. It really is trial and error. (Nurse)

Nurses spoke enthusiastically about their work and valued discussing their practice, but peer review processes for moving practice knowledge on from anecdote to evidence were not mentioned at all.

I guess [our practice] is around the rural nature of the area—the places that we go to. And it's also around the way that we communicate or interact with the clients that we see. Totally different from how one would do it in the hospital setting. (Nurse)

Another nurse in the same focus group had learnt from experience about how to work alongside clients:

But I don't think it's ever a situation where the nurse is giving orders—"this is what you need to do to improve your health," it's more of a conversation in general and what they're finding difficult so that they take responsibility for their own health and you're not the big boss. (Nurse)

Client Experience

Most data for evidence were pertinent to the indicators for client experience (41 codes) and were generated from all professional groups other than GPs. In particular all

nurse focus groups acknowledged the importance of respectful, individualised interaction with clients but that their knowledge about achieving this was rarely shared or reviewed.

One nurse group explained that clients would come to their clinics because they knew that the nurses cared about them and understood their problems:

[Several talking at once] "It's about the financial situations of these families that we deal with. Quite frankly some of these families, I don't think a lot of them have much money."

Nurse 1—"No they don't."

Nurse 2—"And they come here because they know that we care about them."

Nurse 3—"We'll listen to them."

Nurse 4—"We'll take the time."

Nurse groups also referred to letting the client's agenda unfold:

When you're talking with patients about problems that they have and . . . not necessarily on your agenda at all but if you deal with what's important to them. (Nurse)

and:

So you encourage that patient to take control of their own health and destiny and they've got to be in a position they are comfortable to share with you what their barriers are. (Nurse)

Local Data

There were 32 codes pertinent to local data mostly about the importance of knowing a community in order to meet their needs. One nurse put it this way:

You know you can get a whole kind of community ground swell. Let's do this together and let's approach this together because this is what is killing our community. (Nurse)

Some local data are provided by healthcare providers to the DHB as part of their contract to provide health services. However, none of the clinician participants referred to those data being used by them as evidence to inform practice. Data from reports to the DHB were limited to counts of clinical outputs (e.g., number of fasting blood lipids tested) rather than health outcomes such as cardiovascular risk reduction. In spite of some difficulties with management of local data, nurses were aware of the value of local data for tracking trends and feedback. Patient information was collected and recorded in various ways across the region but a lack of coordinated information systems and a paucity of shared information restricted the extent to which local data could be accessed and retrieved. For example smoking cessation is an important cardio-protective change that one nurse suggested should be measured "against whether that's going to make a reduction" to cardiovascular risk but that evidence was not retrievable.

FACILITATION

Just 24 of the 372 data codes were in any way pertinent to facilitation, 17 from nurse groups, 0 from GPs, 4 from managers, and 3 from funder/planners. In the absence of an identified facilitator, participants spoke about clinicians' professional development needs being met in very traditional ways by seminars or education courses outside of their workplace. One nurse came close to recognising her practice development needs:

What do I, as a nurse, need to do to value the patient input? There's a lot of clinical type training and a lot of IT training but [also] this other big block that we need to be looking at bringing in. (Nurse)

In particular nurses recognised that their area of expertise was complex and it was an advantage to have a strong clinical background but not about how to grow their practice from such experience:

You've gotta have been in a few different areas before you can work in general practice. There's so many things I put in my knapsack that I use. (Nurse)

In summary, data codes were a good fit for the PARIHS framework elements of context and evidence, mapping to both high and low indicators for most the sub-elements. This was not the case for facilitation because there were no identified facilitators working in the way described in the PARIHS framework.

DISCUSSION

This detailed description and analysis of how the many layers, overlapping complexities, and "messy" processes of everyday practice influence guideline implementation has two important outcomes. Firstly, by giving voice to the realities of practice of a broad sample of primary healthcare professionals, the realities of delivering on the recommendations of a high-profile guideline are exposed for critique and interpretation. Most importantly in the context of this study is the imperative to understand how to provide guideline-based care that addresses preventable inequity for Māori people of the region. Secondly, the study has enabled exploration and comment on the integrity, validity, and applicability of the PARIHS framework in primary healthcare settings, not previously associated with the framework (Helfrich et al. 2010).

That the majority of data concerned the context of practice and, in turn, was mostly about workplace culture attests to the well-known potency of culture in influencing practice (Manley 2008; Manley et al. 2009; Shultz & Kitson 2010). The majority of concerns about implementing the guideline related to the lack of resources that are already

known to be essential for the implementation of evidence: time, finances, equipment, and skills (Rycroft-Malone et al. 2004a,b). Opportunities to revise and redesign work patterns enable clinicians to explore solutions to their workload issues (Manley et al. 2009). While the culture of an organisation can be transformed by enabling individual practitioners and teams to challenge many of the barriers to effective practice (McCormack et al. 2008), clinicians need appropriate leadership to engage in dialogues concerning additional resources and other issues relevant to the delivery of effective nursing care.

Teamwork was both a positive and a negative feature of context—valued highly, but with unclear and unnecessary role boundaries that restricted the role that nurses could play, and suboptimal multidisciplinary collaboration for the range of recommendations in the guideline. Multidisciplinary teamwork is crucial for successful local improvement (Rycroft-Malone et al. 2004a), and in primary health care such collaborations have enabled multiple entry points, improved quality, and better access for patients (Thornhill et al. 2008). Bringing together groups of peers with similar skills and positions to enable networking among professionals working in different organisations (Tagliaventi & Mattarelli 2006) could work well in the locations of this study. Online communities of practice offer one solution to geographical isolation of rural primary healthcare providers and problems with releasing staff for off-site learning (Valaitis et al. 2011).

The broad definition of evidence in the PARIHS framework brought to light not only the usability and relevance of the AMCVR guideline as research evidence but also the unmet potential in the study sites for developing clinical experience, patient experience, and local data as evidence for practice. Building evidence from these other sources requires deep learning through interaction, reflection, and critique within effective workplace cultures (Manley et al. 2009). Kitson's (2009, p. 124) take on guidelines as "...not 'literal' objects [but] complex communication vehicles that are used as catalysts to stimulate discussion, learning and debate across knowledge boundaries" suggests a way of shaping evidence in line with the PARIHS indicators for high evidence: "Social construction acknowledged, judged as relevant, importance weighted and conclusions drawn" (Rycroft-Malone 2004, p. 301).

The lack of named facilitators and any process, akin to the PARIHS notion, of facilitation in any of the study locations was evident when participants spoke about what they needed for creating change and building their practice in terms of formal off-site education. Effective workplace change is best guided by facilitators with the skills and role to: "(1) enable staff to learn about and take control of their own practice, (2) integrate work-based active learning, and

(3) develop new knowledge, skills and ways of working” (McCormack et al. 2009a, p. 93). Successful facilitation relies on sustained relationships and authentic understanding of the realities of health professionals’ working lives aimed at meaningful and relevant solutions (Walsh et al. 2006; McCormack et al. 2007; Nairn 2009).

LIMITATIONS

A limitation of this study has been the use of the PARIHS framework as a tool for template analysis several years after the release of the guideline. Use of the framework prior to implementation would have the potential to expose barriers and enablers to be worked on in readiness for implementation. A further limitation is that because the study took place in one region of New Zealand, its applicability to practice elsewhere may be restricted. However, given the diversity of settings included and variation of professional perspectives explored, there are likely to be messages for a wide audience.

IMPLICATIONS

Valid and reliable measurement of the factors affecting the implementation of evidence has been persistently problematic (Estabrooks et al. 2003; Helfrich et al. 2009), only somewhat alleviated by the development of diagnostic and evaluative instruments of measurement based on the PARIHS framework, such as the Context Assessment Index (McCormack et al. 2009a,b) and the Organizational Readiness to Change Assessment (Helfrich et al. 2009). The PARIHS developers (Kitson et al. 2008; Kitson 2009) request for researchers to consider a modification of the use of the framework as a two-phase process, (1) evaluation of evidence and context in a clinical setting, and (2) facilitation according to need, is supported here but only by default because data for facilitation were lacking. Use of the framework as an evaluative tool prior to guideline implementation requires further analysis especially in primary healthcare settings. Modes of facilitation that suit geographically distant and resource-limited primary healthcare clinicians are an area for further research suitable for translational research methods including practice development.

Implications for Practice

Even though several workplace venues were included in this study and some variation was seen across sites, the clear message for practice across the region is the need for facilitation that enables change that optimises the enablers and minimises the barriers to implementation of guidelines. Guideline developers, policy makers, funders, and managers should embed facilitation firmly in imple-

mentation plans and ensure adequate funding is allocated. Front line clinicians’ awareness of change processes is necessary for successful implementation and they should be involved in carefully planned guideline implementation. A systematic approach to address this gap has the potential for more successful implementation of the AMCVR and other guidelines as well as for other gains associated with such an approach.

Practice development is one such approach for teams to work collaboratively with a facilitator to generate relevant and insightful solutions to clinical problems and to find ways to influence managers and policy makers (Walsh et al. 2008). The methods of practice development are well suited to supporting the involvement of front line clinicians in change processes, not as a “fix all now” solution but as a carefully planned approach to guideline implementation (McCormack et al. 2007).

CONCLUSIONS

This study has exposed the inextricable links between the nature and patterns of healthcare practice and the social structures that shape and mould it from the perspectives of those who are expected to deliver on the recommendations of a high priority guideline. As primary healthcare services are stretched with the ever-increasing impact of an ageing population, higher costs of health care, and a workforce shortage, the availability of flexible, multi-skilled, solution-finding health professionals is pivotal to high-quality health care. Implementation plans that address the concerns and complexities of everyday practice are essential in guideline development. The lack of facilitation of a guideline into practice is a major barrier to implementation. Practice development is essential for this endeavour because of its capacity for assisting teams to critique their practice situations and patterns and to identify and apply appropriate solutions to problems. The PARIHS framework has stood up to the test of comprehensively accommodating and framing an analysis of the complex realities of primary healthcare teams struggling to deliver on a high-profile expectation.

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