The Practical Approach to Lung Health in South Africa (PALSA) intervention: respiratory guideline implementation for nurse trainers

A. Bheekie¹ D.Pharm, I. Buskens² PhD (Leiden), S. Allen³ BSoc Sc, R. English⁴ MB ChB, P. Mayers⁵ MSC, Med (Psych), L. Fairall⁴ MB ChB, B. Majara⁶ PhD, E. D. Bateman⁷ MB ChB, DCH (UK), FRCP (UK), MD, M. Zwarenstein⁸ MB ChB, MSc & M. Bachmann⁹ MB ChB, PhD

¹ Senior Lecturer, School of Pharmacy, Discipline of Pharmacology, University of the Western Cape, Cape Town, ² Research Consultant, Research for the Future, Cape Town, ³ Research consultant, Health Systems Research Unit, Medical Research Council, Cape Town, ⁴ Research Fellow, Knowledge Translation Unit, University of Cape Town Lung Institute, Cape Town, ⁵ Senior Lecturer, Division of Nursing and Midwifery, School of Health and Rehabilitation Sciences, University of Cape Town, Cape Town, ⁶ Researcher, Departments of Community Health and Biostatistics, University of the Free State, Bloemfontein, ⁷ Professor and Head of Respiratory Medicine and Department of Critical Care, Groot Schuur Hospital, Director of University of Cape Town Lung Institute, Cape Town, South Africa, ⁸ Specialist Scientist, Knowledge Translation Programme and Department of Health Policy, Management and Evaluation, Faculty of Medicine, University of Toronto, Toronto, Canada, ⁹ Professor, School of Medicine, Department of Health Policy and Practice, University of East Anglia, Norwich, UK.


Aim: This paper describes the design, facilitation and preliminary assessment of a 1-week cascade training programme for nurse trainers in preparation for implementation of the Practical Approach to Lung Health in South Africa (PALSA) intervention, tested within the context of a pragmatic cluster randomized controlled trial in the Free State province. PALSA combines evidence-based syndromic guidelines on the management of respiratory disease in adults with group educational outreach to nurse practitioners.

Background: Evidence-based strategies to facilitate the implementation of primary care guidelines in low- to middle-income countries are limited. In South Africa, where the burden of respiratory diseases is high and growing, documentation and evaluation of training programmes in chronic conditions for health professionals is limited.

Method: The PALSA training design aimed for coherence between the content of the guidelines and the facilitation process that underpins adult learning. Content facilitation involved the use of key management principles (key messages) highlighted in nurse-centred guidelines manual and supplemented by illustrated material and reminders. Process facilitation entailed reflective and experiential learning, role-playing and non-judgemental feedback.

Discussion and results: Preliminary feedback showed an increase in trainers’ self-awareness and self-confidence. Process and content facilitators agreed that the integrated training approach was balanced. All participants found that the training was motivational, minimally prescriptive, highly nurse-centred and offered personal growth.

Conclusion: In addition to tailored guideline recommendations, training programmes should consider individual learning styles and adult learning processes.

Keywords: Cascade Training, Educational Outreach, Evidence-based Guidelines, Nurses, Practical Approach to Lung Health in South Africa (PALSA), Primary Care
Introduction
The prevalence of respiratory disease in South Africa shows no sign of abating. Along with increasing asthma prevalence rates between 1995 and 2002 (Ehrlich 2002), hospital admission rates for tuberculosis have also risen alarmingly – by 360% between 1992 and 1998 (Wilkinson 1999). A further challenge to the healthcare system is that hospitalization rates for severe respiratory infection were found to be 6.5 times higher for HIV-positive patients (Madhi et al. 2000). One strategy for addressing the burden of respiratory disease is to improve the capacity and level of training of primary health practitioners. One component is the provision of evidence-based treatment guidelines and instruction on their use.

Background
Practitioner adherence to guidelines depends on the degree to which they are able to integrate the new learning and change their current practice behaviour. Numerous guideline implementation strategies have been used to change behaviour among physicians and these can be broadly categorized as either passive/didactic/directive or participatory/active (Table 1). These can be used either singly or in combination as multifaceted interventions. Bero et al.’s (1998) systematic review of randomized controlled trials concluded that educational outreach (‘academic detailing’) is generally effective in changing prescribing behaviour. Educational outreach, which is usually part of a multifaceted intervention, has shown sustained improvements in healthcare provision (Avorn & Soumerai 1983; Stalsby Lundborg et al. 1997).

Internally produced guidelines and tailored interventions were found to be more effective than those delivered from the top down (Grimshaw & Russell 1994). Finnish researchers found that when implementing guidelines in primary healthcare centres, directive and passive methods were used more often than active participatory ones (Miilunpalo et al. 2001). Even though there seems to be ‘no magic bullet’ to improve professional practice (Oxman et al. 1995), concerted efforts are being made to understand the process of guideline implementation.

Definitions of ‘process’ vary, depending on the context in which it is used. In training workshops process is referred to as the action and interaction between trainer, trainees and material: identifying problems, discussion, argument and doing assignments (De Beer & Swanepoel 1996). A summarized definition of a learning process is when learners arrive at meaning by actively selecting and constructively selecting their own knowledge through individual and social activities (Gravett 2001).

Many factors influence guideline implementation among healthcare practitioners in clinical settings. Guidelines that are easily applicable to routine practice which take into consideration local needs and barriers (Grol 1992) and tailored to suit the varied needs of the practitioner may sustain change in practice behaviour (Hulscher et al. 1998). Therefore, the nature of the evidence, the context/environment and the method by which the learning process is facilitated require careful planning (Kitson et al. 1998).

Understanding adult learner characteristics is helpful when planning guideline implementation approaches. Adult learners have substantial experience, maturity, confidence, self-awareness and problem-solving skills that influence learning (Newman & Peile 2002). In addition, they maintain the concept of responsibility for their own decisions and are likely to have a self-directed learning style (Grow 1991). Good teaching, which seeks to match the learner’s stage of self-direction, helps the learner to achieve learning. The basis of self-directed learning is experience and reflection (Majumdar 1996), and Fox & Bennett (1998) highlight its three stages:

• understanding and estimating personal levels of need in order to adopt a change in practice;
• applying energies to learn new competencies needed to practise differently and organizing the learning around the problems of using new skills; and
• altering the practice environment or adapting the new way of practice to increase the goodness of fit.

Preferred individual learning styles seem to facilitate adoption and implementation (Hodges 1988).

Several learning processes for nurse practitioners have been identified. Provision of feedback on clinical performance in a ‘safe environment’ was identified as an important component for cancer training (Faulkner & Maguire 1984). Other researchers underpinned the promotion of ‘ownership’, which involved more than

Table 1 Examples of guideline implementation strategies

<table>
<thead>
<tr>
<th>Passive/didactic/directive</th>
<th>Participatory/active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postal dissemination (e.g. personal/mass mailing) of educational material</td>
<td>Opinion (educationally influential) leaders</td>
</tr>
<tr>
<td>Continuing education (e.g. conferences, traditional lectures)</td>
<td>Educational outreach (‘academic detailing’)</td>
</tr>
<tr>
<td>Audit and feedback (e.g. review of clinical performance)</td>
<td></td>
</tr>
<tr>
<td>Reminders</td>
<td></td>
</tr>
</tbody>
</table>

Correspondence address: Angeni Bheekie, Senior Lecturer, School of Pharmacy, University of the Western Cape, Private Bag X17, Bellville 7535, Cape Town, South Africa; Tel: +27-21-9592977; Fax: +27-21-9593407; E-mail: abheekie@uwc.ac.za.

© 2006 The Authors. Journal compilation © 2006 International Council of Nurses
simply providing information, by ‘giving a sense of control over the direction of the programme’ to ease implementation for quality improvement (Harvey & Kitson 1996). Professional nurse facilitators perceive effective, open and meaningful communication with learners to be useful and have identified important vehicles for learning. Facilitators, who are open-minded and self-aware, analyse feelings and are motivated, serve as effective role models to students (Chabeli 1998).

In South Africa in-service primary care training programmes lack detailed descriptions of implementation procedures, namely, the approach chosen, the manner in which it was conducted and the acceptance or lack thereof by participating learners (Rothman et al. 2002). Even though a structured, problem-based learning approach departs from traditional didactic teaching (Meyer et al. 2001), nurse trainers’ experiences and perspectives concerning this type of training approach have yet to be documented. Perceived barriers to successful acceptance of new knowledge in primary care have ranged from lack of confidence in the subject, information overload and professional isolation (Greenhalgh & Doughlas 1999). Training approaches designed for use by healthcare professionals often lack clarity, are usually didactic and remain ill-defined.

We hoped that an experiential training approach that could provide healthcare practitioners with the opportunity to reflect on their existing knowledge and skills, help boost confidence, promote self-directed and interactive learning would be likely to improve on-site teaching (Gravett 2001). Further, training that enables practitioners to take full responsibility to integrate the new knowledge (Grow 1991) and test its application in practice could help improve the quality of service provision. Such approaches underpin the design of the training described in our study.

The study

Aim
The study aimed to explore the design, facilitation and preliminary assessment of a 1-week cascade training of tuberculosis nurse co-ordinators (nurse trainers) in preparation for initial implementation of the Practical Approach to Lung Health in South Africa (PALSA) intervention within the context of a pragmatic randomized controlled trial. Cascade training is described as training where one individual is sent on a training course and then expected cascade the information and training to others (Moys et al. 2002). In this study, the trained nurse trainers in turn trained primary care nurse practitioners in clinics randomized to receive the training intervention for adult respiratory care. Findings of the randomized controlled trial have been published separately (Fairall et al. 2005).

Design

Development of the intervention

Overview of PALSA
The PALSA initiative is a training programme for nurse trainers in evidence-based respiratory guideline implementation. PALSA aims to improve the management of four common respiratory diseases: tuberculosis (with and without associated HIV infection), obstructive lung diseases (asthma/chronic obstructive pulmonary disease), lower respiratory tract infections and upper respiratory tract infections.

The nurse trainers selected for the training programme occupied supervisory positions as care co-ordinators within the Tuberculosis Programme in the Free State. These trained nurses in turn would train primary care nurses whose clinics were randomized to receive the intervention. All were senior nurses with backgrounds in clinical primary care who had been promoted to administrative positions. Their responsibilities as tuberculosis co-ordinators include monitoring and evaluation, drug supply management, updating of registers and training staff on the latest therapeutic guidelines. To date, however, most of this training is didactic, with little interactive involvement of the nurse practitioners who attend these courses. Most courses are usually conducted at a central venue in the district, thus taking nurse practitioners out of the clinical setting for a period. The nurse trainers for this study were selected after consultation with the Free State Department of Health, and were chosen if they represented clinics included in the trial. While most entered the PALSA training programme with experience of working as a trainer, selection was not based on an evaluation of training competency.

Ethical considerations
Permission was obtained from participants to have the training sessions videotaped and they were assured of their anonymity. Approval to conduct this study was obtained from the Research Ethics Committee of the Faculty of Health Sciences, University of the Free State.

Training materials
The training materials focused on ‘best evidence’ for the treatment and management of common adult respiratory diseases, and took into account limited skills and resources. A guideline designed in algorithm format, using a syndromic approach (signs and symptoms used as diagnostic predictors), which was familiar to clinic nurses, is undergoing validation (English et al. 2006). Care was taken to ensure that all recommendations were consistent and integrated within the framework of the national.
therapeutic guidelines (Tuberculosis Control Programme, WHO 2002, and case management of other respiratory diseases, WHO 1997). The researchers formulated tailored, concise, up-to-date and repetitive messages, which emphasized key management principles (key messages) with the intention of fostering change in clinical practice (Boissel et al. 1997). These were incorporated into illustrated support materials: a five-page table flip chart which served as a teaching tool for nurse trainers and which aimed to introduce clinic nurses to the PALSA approach to lung health, and how to differentiate potential respiratory patients (severe, acute and chronic cases); a practitioner’s desk blotter; and reminders (pen, penholder) containing reinforced key messages on appropriate care. Demonstration devices (placebo metered dose inhaler and spacers) for use by clinic nurses were also included. All materials were packaged together in a convenient portfolio bag.

**Pilot training**

Two researchers independently conducted PALSA pilot training sessions to assess receptivity, one with primary care nurses in Cape Town and the other with primary care nurses in the Free State. The pilot training took an academic detailing approach similar to the training provided to pharmaceutical representatives who market drugs to medical practitioners. The technique of persuasive communication was used to highlight the key management principles of respiratory diseases at primary care level. This approach was designed to address problems that were previously identified during focus group discussions of barriers to effective primary respiratory care (English 2004). The sessions were videotaped and an anthropologist with extensive training experience independently reviewed the tapes and assessed acceptability through observations of learner participation and use of educational material.

In both sessions nurse trainers’ participation was minimal. A one-directional learning approach focusing on guideline content was evident. Nurses lacked ownership of the guidelines and the training seemed hurried, thus limiting the opportunity for self-directed, interactive learning. Experiential and reflective learning was not evident. Overall, receptivity to the content-focused implementation seemed shallow.

Based on findings from the initial qualitative work involving focus groups with key stakeholders and the pilot, the PALSA training intervention was redesigned to integrate guideline content and the facilitation processes.

**Contextualizing primary care nurse trainer training**

In South Africa nurse trainers work under very stressful conditions. Relationships with communities are often difficult, and there is insufficient support from within the nursing infrastruc-

---

**Fig. 1 Practical Approach to Lung Health in South Africa training with nurse trainers: integration of content (adult lung health guidelines with key messages) and learning process (learner interaction, reflection, self-awareness).**

---

**Designing integration of guideline content and process**

Our intention was to develop a nurse-centred training programme that could become integral to routine teaching in clinics, and one that would not be perceived as an additional burden for them (Fig. 1).

The PALSA training was planned, conducted and assessed by five researchers; two medical doctors focused on the guidelines (content), an anthropologist and a research pharmacist (with experience from an asthma guideline implementation study) focused on adult learning principles (process), while an independent evaluator assessed trainers’ receptivity of content and process (Table 2). Their collective efforts aimed to clarify and co-ordinate concepts, thereby underpinning a novel integrated training approach.

**Nurse trainers’ training programme**

We aimed to minimize didactic transference of information and to promote individual training style. Along with experiential work, trainers were encouraged to take full responsibility for learning the content through interactive discussions about current practice patterns and applicability of the key messages. Further, ownership of the materials to internalize its contents was encouraged. Observation, daily feedback and reflection focusing on personal strengths and self-awareness comprised the learning process. The programme structure alternated content input with experiential work (Table 3).

The 4.5-day training was planned as a once-off experience, in a setting away from the clinic, out-of-service (in Cape Town) bringing trainers out of their usual work settings to enable them to focus on the intensive programme. Participants were all female, consisting of nine trainers and two training supervisors. A key component of the training was the opportunity to practise their newly acquired skills in a local primary care clinic.
Data collection and analysis
Two researchers, who evaluated the training qualitatively, were each present throughout the training week. The independent evaluator, an academic nurse whose one research focus is primary care nurse practitioners’ use of clinical guidelines, conducted pre- and post-training focus group discussions with the nurse trainers. She obtained verbal consent and formally and actively interviewed them about their expectations, concerns and their understanding of the PALSA training. The anthropologist used the daily recurring reflective feedback sessions to gauge trainers’ and facilitators’ feelings and views. Both researchers took notes manually and independently. Common themes were identified and these were categorized. A final assessment was compiled and circulated to the training team for clarity and verification.

Results
The training approach was unique in terms of content delivery as it was highly nurse-centred. It was directed towards the care delivery from the nurse practitioners’ perspective, in terms of how they are most likely to experience presentation and treatment of respiratory illness. Typically this included nurse practitioners’ experiences with patients from the point of entry (triage in the waiting room, symptom assessment) to care provision (use of the diagnostic and treatment algorithm and follow-up care). This highly nurse-centred as opposed to a disease-focused approach was in
itself crucial to identifying training that could match its implementation in the clinic. This means that a training approach that could complement the nurses’ learning was required – otherwise there would have been a contradiction in communication and a lack of coherence.

Was the training process appropriate for guideline implementation?

Findings from the pre-training data showed that the nurse trainers expressed not only their excitement, but also concern at being able to fit this training into the already pressured schedule.

Post-training data indicated that although the trainers were initially apprehensive, but with time they became less threatened, were more open to opportunities after reflecting on their skills. They were pleasantly surprised at the ‘freedom’ that was imparted to them. For the first time they were given the opportunity to experience training in which their opinions, personal qualities and values were integral. They found that they had revealed more of themselves and felt safe to do so. This was in contrast to the ‘typical’ training programmes, which they had attended previously – in which the emphasis was on content with little appreciation of the ‘hidden’ curriculum – which in turn determines much of the learning. The hidden curriculum, namely, role-modelling, respect for the individual and valuing of personal qualities, is often neglected – to the detriment of training and real change.

The main theme arising from this session was that of a personal transformation for many. They felt valued as individuals something, which appeared not to be the norm in their routine work. The general response from all participants was that the training was highly motivational, minimally prescriptive, highly nurse-centred and offered personal growth through self-awareness. They were able to reflect on their own ‘journey’, expressed confidence in their ability to meet the demands of the training, although some doubts remained regarding the logistics of their training schedule alongside the randomized trial. The cascade training model was adopted, providing a learning experience for the nurse trainers who in turn would train nurse practitioners at the clinics.

Facilitator feedback showed that this training was permeated by participants’ ‘high spirits’. Content facilitators observed that trainers interacted freely, and without fear of embarrassment to clarify contents and they had greatly approved the concise format of the materials. By understanding and accepting variations in training styles, process facilitators established a two-way learning experience. Process and content facilitators collectively reiterated that there was a great deal of ‘synergy in the team’ because of their defined roles. There was complete clarity of responsibilities and this resulted in a good ‘team spirit’ and ‘coherence’, which emanated from integrating the process and content aspects of learning. Weaving of the two approaches encouraged active participation, introspection, open-mindedness and self-directed learning, which made learning more meaningful for the learners.

It was felt that both the content and process aspects were sufficiently ‘contained’ which balanced the training and provided an understanding of the multifaceted nature of adult learning.

Discussion

The PALSA training approach emanated from experiences gained in a previous trial (Chestiness and Asthma in Mitchell’s Plain, CHAMP), which tested an evidence-based guideline implementation for general practitioners using the principles of educational outreach (Zwarenstein et al. 1999). Educational outreach (‘academic detailing’) refers to a trained health professional visiting practitioners at their healthcare setting to highlight key management principles. General practitioners are usually updated by drug company representatives (drug detailing) and/or receive mailed guidelines about the latest therapeutic approaches. Differences between the CHAMP outreach and PALSA training approach were clear: the CHAMP outreach to general practitioners was a simple, individualized one-on-one learning of one condition (asthma), using few educational materials (folder and poster); PALSA was more complex – it entailed cascade teaching/learning of nurse trainers to group learning of public sector clinic nurses of four conditions using multiple educational materials. While the CHAMP study provided preliminary insight into approaches to evidenced-based guideline implementation and adult learning processes (Bheekie 2001), the PALSA cascade training required an integration of both guideline content and learning processes, a question of ‘Here is the solution, what is the problem?’ vs. ‘Here is the person, what is the approach?’

In a predominantly solution-orientated approach to teaching like educational outreach, the learner is encouraged to accept the ‘solution’ that the educator offers. The outreach educator uses persuasive communication to highlight key management principles to ‘address’ identified problems and encourage adoption of new learning. While individualized learning may be achieved during face-to-face/outreach visits, such an approach may not be sufficient for group teaching/learning.

For the PALSA training, we took into consideration that learners integrate the new knowledge into existing experiences, emotions and reflections. By establishing a safe environment, personal strengths and weaknesses were shared. Learners were encouraged to take full responsibility for their own learning by first taking ownership of the learning situation to improve existing skills.

While trainers experienced the training as positive and indicated that they wanted to have the training away from their workplace, this may perhaps mean that people sometimes find it easier to change or try new behaviour when they are outside their daily
work environment. However, there might be other opinions on this issue. While there is truth in both perspectives, integration of the new behaviour in the old environment still needs to happen. After the Cape Town training, practice sessions were repeated in Free State clinics (excluding those participating in the trial), which served as a useful bridge to the usual context in which the trainers were required to train, as minimal provision was made for telephonic and email follow-up.

This was our first attempt to integrate the principles of adult learning with guideline implementation; therefore, further studies are needed to validate this training approach. A rigorous qualitative evaluation of trainers’ performance and the clinic nurses’ experiences with the integrated training would add clarity regarding transferability and receptivity of learning/teaching skills in guideline implementation (Mayers 2005). Further, multiple one-on-one and formal (written) feedback is needed to monitor and evaluate skills development. This training was fundamentally dependent on the skills of the process facilitator who had extensive experience; therefore, replicability has to be carefully examined. The training process requires clear structure and defined goals, with guidelines to assess experiential and content receptivity among learners. Training in guideline implementation for management of other chronic diseases should be compared to arrive at one that could be generalizable for the South African health setting.

Process and content facilitation was carried out independently, which may be viewed contrary to the integrated learning outcomes, where the trainee is expected to apply both skills during on-site training. Trained facilitators having both content and process skills may be considered for under-resourced settings. Inclusion of clinical scenarios would aid content training where the application of guideline recommendations would be more realistic and meaningful to practitioners. Support programmes should be considered to ensure sustainability of this training under very challenging practice conditions.

Conclusion
Training on evidence-based guidelines that integrate content and process is relatively novel to nurse trainers who received their initial training prior to the last decade, where formal/didactic lectures were used.

While this approach may very well be one type of group teaching/learning, further studies are needed to understand training of healthcare professionals in evidence-based guideline implementation.

Acknowledgements
The authors acknowledge the Free State tuberculosis co-ordinators/nurse trainers and supervisors for their co-operation during the training and the trial. We thank the nurses who provided constructive comments on earlier drafts of the training materials and the pilot training programme. Their dedication towards health service upliftment is greatly appreciated.

This project was completed with the aid of a research grant from the International Development Research Centre, Canada.

The University of Cape Town Lung Institute and the Department of Community Health, Free State University are thanked for their collaborative efforts and administrative and technical support.

We also thank Dr Stephan Rollnick, Department of General Practice, Cardiff University, for his constructive criticism, which greatly improved an earlier draft of this manuscript.

Drs Robert Scherbier and Salah-Eddine Ottmani from the World Health Organization conceptualized the global model for a Practical Approach to Lung Health (PAL) from which PALSA drew its screening and syndromic approaches. The multicountry evaluation of PAL includes studies of effectiveness, cost and public health impact in Chile, Kyrgyzstan, Morocco, South Africa and Nepal.

References


Fairall, L.R. et al. (2005) Educational outreach to nurses improves tuberculosis case detection and primary care of respiratory illness: a


