

# The maintenance of competence of rural district hospital medical practitioners

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## Abstract

### Background

The maintenance of competence by rural district hospital medical practitioners is a challenge faced by all countries and, most acutely, by resource-poor nations. It is a vital element in addressing the disparity between rural and urban health care in South Africa.

The wide scope of rural-district hospital practice demands updating in a variety of content areas. District hospital doctors are likely to have educational needs covering surgery, emergency and trauma, in-patient as well as out-patient care at primary service level, an understanding of the rural context and role of other health workers, public-health skills, and teamwork. Given such a broad curriculum, some prioritisation needs to be made for the content of their CPD.

Rural practitioners generally use CPD activities that are most readily available to them, namely reading journals, meeting with pharmaceutical representatives and attending lectures sponsored by the pharmaceutical industry. These are not, however, the most appropriate or effective methods of acquiring the knowledge and skills that doctors define as being useful to them. Educational strategies that have been most effective in changing clinical behaviour are: an assessment of learning needs, interactive tuition sessions with the opportunity to practice the skills learned and sequenced multifaceted activities. It is equally important to have rural practitioners engage in educational activities that can be performed within their work environment.

The aim of this study was to define expert consensus on the content and methods most suitable for the maintenance of competence by rural district hospital practitioners in the Western Cape province of South Africa. The study was carried out as a follow-up to an analysis of knowledge and skills of doctors in Western Cape district hospitals.

### Method

A study was therefore designed to investigate the content and methods used for the maintenance of competence of rural district hospital practitioners in the Western Cape province of South Africa. Expert opinion was sought to evaluate the topics requiring updating and the validity of the learning methods to maintain competence in practice. This was achieved by employing the Delphi technique to reach consensus on content and methodology. Categorical data analysis and a principal factor analysis were also performed. The qualitative data were then developed into themes and presented as a conceptual framework.

### Results

Consensus was reached on the principal content areas requiring updating. Methods that were found most useful were in-service learning under supervision, structured courses, small group discussions and practical workshops. Rotations in tertiary hospitals, specialist lectures, journal reading and internet learning were less supported.

### Conclusions

The study provides a practical model for continuing instruction plus self-directed learning in context. Three content domains were established, namely commonly encountered areas of practice, identified gaps, and needs specific to the practitioner and setting. It was concluded that the implementation of external updating programmes should be tailored to suit practitioners, while self-directed aspects should include reflective practice. Priority areas were identified and classified, as were educational methods that could contribute towards the maintenance of competence of rural practitioners.

*(SA Fam Pract 2006;48(3): 18)*

## Introduction

The maintenance of competence of rural district hospital medical practitioners is a challenge faced by all countries and, most acutely, by resource-poor nations. It is a vital element in addressing the disparity between rural and urban health care in South Africa.<sup>1</sup>

The wide scope of rural district hospital practice demands updating in a variety of content areas. District hospital doctors are likely to have educational needs covering surgery, emergency and trauma, in-patient as well as out-patient care at primary service level, an understanding of the rural context and role of other health workers, public health skills, and teamwork.<sup>2</sup> Given such a broad curriculum, some prioritisation needs to be made for the content of their CPD.

Rural practitioners generally use CPD activities that are most readily available to them, namely reading journals, meeting with pharmaceutical representatives and attending lectures sponsored by the pharmaceutical industry.<sup>3,4</sup> These are not, however, the most appropriate or effective methods of acquiring the knowledge and skills that doctors define as being useful to them.<sup>5,6,7</sup> Educational strategies that have been most effective in changing clinical behaviour are: an assessment of learning needs, interactive tuition sessions with the opportunity to practice the skills learned and sequenced multifaceted activities.<sup>8,9</sup> It is equally important to have rural practitioners engage in educational activities that can be performed within their work environment.

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Africa. The study was carried out as a follow-up to an analysis of knowledge and skills of doctors in Western Cape district hospitals.<sup>10</sup>

## Methodology

A panel of experts was compiled consisting of medical practitioners who were acknowledged experts in academic family medicine, of rural clinicians and of health-service managers. The purpose was to achieve consensus opinion on the content and methodology best suited to CPD for this group of doctors. The Delphi technique, described previously, was used.<sup>11</sup>

The questionnaire on which the Delphi data were based was developed from a prior analysis and prioritisation of educational methods for knowledge and skill areas. The Delphi respondents were asked to rate their agreement with the *necessity of updating* the knowledge or skills area, the optimal *frequency of updating* and the usefulness of *updating methods* using Likert scales. Open-ended qualitative feedback was also requested.

The data were analysed by the Centre for Statistical Consultation at Stellenbosch University using STATISTICA 6 with categorical analysis on variables where differences were expected. With the Pearson Chi-square test, statistically significant differences were investigated using a p-value equal to

or less than 0.05. A common principal-component factor analysis on variables was also performed to detect the nature of underlying, unobserved common factors. These were used to explain correlations between observed variables. The qualitative responses were transcribed, labelled, grouped into categories and examined for emerging themes.

The study protocol was approved by the Research Committee of the Faculty of Health Sciences, Stellenbosch University. Informed consent was obtained from all Delphi participants.

## Results

Twenty-four of the original 33 panel members responded and completed round one of the questionnaire. Twenty of the 24 completed round two and all 20 completed round three. Nineteen (79%) of the respondents in round one were male and the mean age of the respondents was 49.5 years (the range was 32 to 75 and the standard deviation [SD] was 11.2). The mean number of years since attaining their basic qualification was 28 years (from 1952 to 1993). Of the respondents, 87% had a postgraduate qualification, the most common being a master's in family medicine (13, which was 54.2%). Almost half of the respondents (11, which was 45.8%) were working in the public sector, 37.5% held a part-

**Table I:** Respondents' expertise in rural health care and education

Expertise	Number	%
Clinical practice	23	95.8
Undergraduate training	20	83.3
Service management	17	70.8
In-service training	15	62.5
Postgraduate training	12	50.0
Vocational training	10	41.7
Educational expert	6	25.0
Other	3	12.5

time academic position, 33.3% were involved in part-time clinical practice and 29.2% were in full-time clinical practice. Table I demonstrates the respondents' expertise in rural health care and education.

Round one achieved immediate and strong consensus on content areas that were most in need of updating. Almost all respondents agreed that all knowledge, skills and problem areas listed as *commonly encountered* in district hospitals should be updated. Statistically significant differences were found between academics and clinicians versus service managers. For example, service managers were significantly more in favour of serial skills updating for doctors who regularly performed certain skills compared with academics and clinicians ( $p=0.004$ ).

Most respondents agreed that it is essential that all knowledge, skills and problem areas listed *in which gaps were identified* be updated. There was general agreement that it is essential that most of the knowledge, skills and problem areas listed as *special needs for district hospitals* be updated, with the exclusion of transport issues and endoscopic skills. Respondents felt that transport issues were a management problem and that endoscopic skills did not fall within the domain of district hospitals. A factor analysis confirmed these findings.

The respondents' opinion on the frequency of updating knowledge and skills remained undecided over the three rounds. The most common statistical difference in round one concerned yearly updates. Respondents not holding academic appointments were more in favour of yearly updates than were academics ( $p<0.05$ ). The panel overall felt that individual needs would determine

different revision time frames. Yearly updating was supported for only a few domains, notably those in which rapid information growth takes place, such as medication advances and interactions. Skills updating between two and five years was most strongly supported. A factor analysis confirmed these findings.

Achieving consensus on the teaching modalities that should be used for updating produced complex results over the three rounds of the study. In round one, consensus varied between 69% and 86% on methods suggested for updating strategies. One-hundred per cent agreement was reached on special courses, such as acute trauma life support (ATLS) and acute paediatric life support (APLS) for updating trauma management and neonatal resuscitation skills, small group discussions for dealing with common medical conditions, practical workshops for learning local anaesthetic techniques and outreach visits by experts for tonsillectomy skills. All proposals for updating through small group discussions and practical workshops were agreed on, no proposals for tertiary hospital rotation were agreed on and only 50% of proposals for lectures by experts was agreed on. The last mentioned was often viewed as inappropriate to

the learning needs and service context of district-hospital doctors.

In round three, an additional question on the usefulness of educational methods for knowledge areas and procedural skills was added. In-service learning under supervision received the highest average score in both categories (4.7 and 4.3 out of 5). Using the Internet was regarded as least useful to both knowledge (2.9) and skills (2.1), while reading journals was not regarded as useful for procedural practice (2.3). See Figure 1.

A conceptual framework was developed to outline how the maintenance of competence of district hospital medical practitioners could best be approached. The model describes in-service learning as steps in a continuous process, starting with the identification of learning needs, followed by the acquisition of new knowledge and skills, the integration of theory into practice and, finally, feedback, reflection and assessment. See Figure 2.

Each of the steps in the cycle is supported by activities and resource provision. For instance, knowledge could be acquired by reading journals or attending CPD talks, but the crucial step of integrating theory into practice would be facilitated by activities like discussions or work under

Figure 1: Usefulness of updating methods for knowledge areas and procedural skills

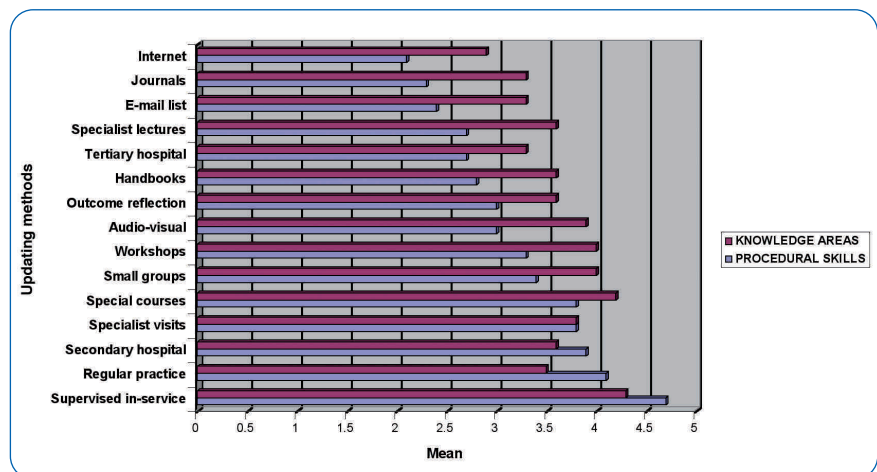


Table II: Qualitative themes

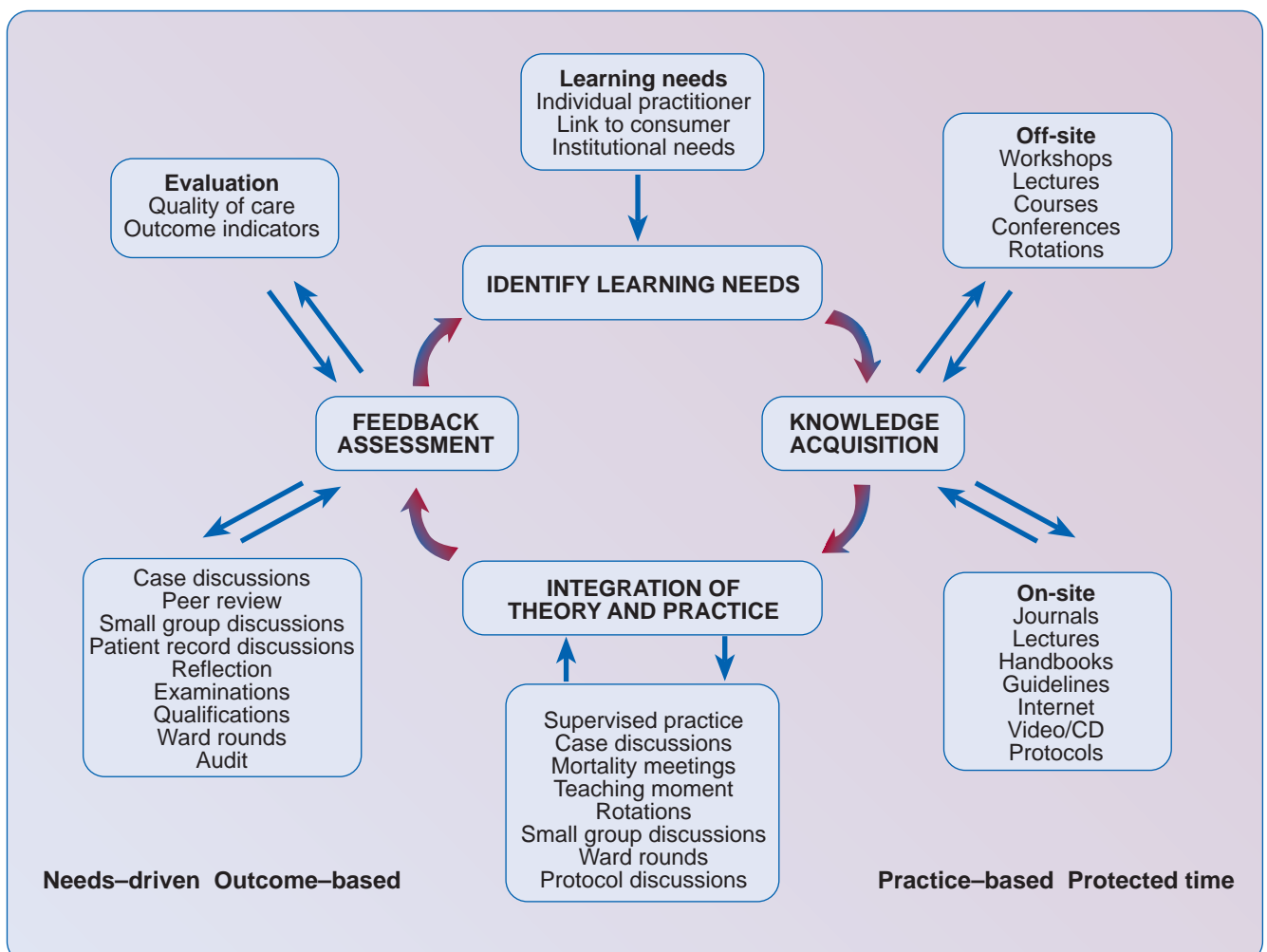
Themes with supporting quotes
<p><b>Learning within the context of one's own setting is best</b></p> <p><i>"It is better to update skills in one's own, or in a similar setting, best to learn from an experienced colleague on site."</i></p> <p><i>"The idea of rotating rural practitioners through major centres on a regular basis is disempowering and feeds to the idea that the people who know how these things should be done, naturally live in those centres and are able to dispense wisdom to rural practitioners."</i></p>
<p><b>Ineffective methods for updating</b></p> <p><i>"Reading medical journals is also a good way of learning, but is currently available and yet, there is this huge lack of experience. Therefore, I do not agree with the reading of journals for this age group."</i></p> <p><i>"It's useless to go to a tertiary hospital, the anaesthetists there are on a totally different planet to district hospitals."</i></p>
<p><b>The complexity of learning</b></p> <p><i>"There is a lot more to learning a skill than just attending a course or lecture. Issues such as supervision, constructive feedback and proper assessment of competence have not been specific."</i></p>
<p><b>Workload as a substantial barrier to learning</b></p> <p><i>"There is to date no satisfactory solution to relieve the clinician from his usual workload to enable him or her to participate in CPD activities in a meaningful way."</i></p>
<p><b>The importance of initial learning</b></p> <p><i>"So, it is not only about updating the skills, but also about how to acquire them in the first place."</i></p>

supervision. Feedback and reflection could be achieved by small group discussions or peer review. A number of principles central to the cycle presupposes that learning would be needs-driven, outcome- and practice-based, and relevant and that protected time for learning would be made available.

### Discussion

No single, effective method to improve the performance of medical practitioners could be suggested during the discussions around quality improvement and the effect of continuing education.<sup>8</sup> The learning model for the maintenance of competence of rural district hospitals developed in this study provides a practical tool for doctors to engage in self-directed educational strategies

Figure 2: In-service learning model for rural district hospital practitioners



that are truly continuing as opposed to sporadic and opportunistic. It provides the opportunity for learners to prioritise content according to their context and then to apply the knowledge to their clinical settings.

Using the Delphi technique, consensus was achieved on the need to update all listed knowledge and skill domains and dividing them into three categories, namely those that are commonly performed, those in which gaps were identified and those that were identified as special needs.<sup>10</sup> District hospital managers can use these categories to prioritise domains for CPD.

An interesting finding of this study was that in-service learning under supervision in the workplace was the most widely supported method to update both knowledge and skills. Good supervision was positively associated with a deep learning approach. This, however, implies the employment of experienced practitioners in district hospitals who can provide supervision for this type of learning.<sup>12</sup> At the time of the study, in-service learning was not an accreditable CPD activity with the Health Professions Council of South Africa (HPCSA). The HPCSA is currently reviewing the national CPD system to move away from a system of points awarded for attending one-off educational activities that are teacher-oriented and for passive education such as lectures and conferences. The new system, which was piloted in the second half of 2005, aims to reward continuous learning based on reflection and change in the behaviour of the practitioner.<sup>13</sup>

The role of specialists in updating doctors in rural areas appears to be limited to outreach visits and then only if provided by those who understand the district hospital context and use appropriate methods. Research is needed to assess the

effects of such visits on actual practice and to identify characteristics crucial to their implementation.<sup>14</sup>

Journal reading, which is commonly utilised by rural practitioners, was not regarded by the expert panel as a useful means of updating procedural skills and was regarded as only moderately useful for updating knowledge. Also, although resources from the Internet are accessible to rural doctors, e-learning received the least support of all the learning modalities from the panel, despite being a source of unlimited, continuously updated information.

The implementation of updating programmes for district hospitals is complex. A number of variables, such as passive learning attitudes, working conditions and a failure to value the contribution of CPD to the quality of care, affects the process.<sup>12,15</sup> It is also a considerable challenge to create a learning environment in health services where ongoing education is traditionally seen as a luxury and not a necessity.<sup>9,16</sup> The institution of any programme needs to be carefully piloted to evaluate and document the factors that make it a success or otherwise. To this effect, Stellenbosch and Cape Town Universities and the Health Department of the Provincial Government of the Western Cape have set up a collaborative project for the maintenance of competence by district hospital practitioners in the Western Cape province to implement and assess the learning model developed during this study.

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### References

1. Couper I, De Villiers M, Sondzaba N. Chapter 9 Human resources: district hospitals. Chapter 9 South African Health Review 2005. Durban: Health Systems Trust; 2005.
2. Couper I. The rural doctor. In: Mash B (Ed.): Handbook of family medicine; 277-292. Cape Town: Oxford University Press; 2000.
3. Van den Berg L, De Villiers MR. CPD: the learning preferences of general practitioners. SA Fam Pract 2003;45(3):10-12.
4. De Villiers MR. The availability, utilization and needs for continuing professional development of rural general practitioners in the Western and Northern Cape. S A Fam Pract 2000;22(2):11-16.
5. Robertson MK, Umble KE, Cervero RM. Impact studies in continuing education for health professions: update. J Contin Educ Health Prof 2003;23(3):146-150.
6. Cantillon P, Jones R. Does continuing medical education in general practice make a difference? BMJ 1999;318:1276-1279.
7. Davis DA, Thomson MA, Freemantle N, Wolf FM, Mazmanian P, Taylor-Vaisy MLS. Impact of formal continuing medical education. Do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? JAMA 1999;282(9):867-874.
8. Mazmanian PE, Davis DA. Continuing medical education and the physician as learner. Guide to the evidence. JAMA 2002;288(9):1057-1060.
9. Grant J, Stanton F. The effectiveness of continuing professional development. Edinburgh: ASME Occasional Publication; 2000.
10. De Villiers MR, De Villiers PJT. The knowledge and skills gap of medical practitioners delivering district hospital services in the Western Cape, South Africa. S A Fam Pract. – in press 2006.
11. De Villiers MR, De Villiers PJT, Kent AP. The Delphi technique in health sciences education research. Medical Teacher 2005;27(7):639-643.
12. Delva MD, Kirby JR, Knapper CK, Birtwhistle RV. Postal survey of approaches to learning among Ontario physicians: implications for continuing medical education. BMJ 2002;325:1218-1220.
13. CPD Pilot project starts with medical technologists, optometrists and dispensing opticians. Newsletter of the Health Professions Council of South Africa, p4. Pretoria, October 2005.
14. O'Brien T, Oxman AD, Davis DA, Haynes RB, Freemantle N, Harvey EL. Educational outreach visits: effects on professional practice and health care outcomes. Cochrane Library, Issue 1. Oxford: Update Software; 2003.
15. Couper ID. Rural health focus: organizing CPD for rural hospitals. S A Fam Pract 2002;25(2):18.
16. Shannon S. Practice-based CME. The Lancet 2003;361:618.