THE DEVELOPMENT OF CONTENT AND METHODS FOR THE MAINTENANCE OF COMPETENCE OF GENERALIST MEDICAL PRACTITIONERS WHO RENDER DISTRICT HOSPITAL SERVICES

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DECLARATION

I, the undersigned, Marietjie René de Villiers, hereby declare that the work contained in this dissertation is my own and that I have not previously in its entirety or in part submitted it at any university for a degree.

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SUMMARY

District hospitals play a pivotal role in the district health system of the Western Cape and other provinces of South Africa. It is a dual role, supporting both primary health care services and serving as a gateway to higher levels of care.

Most district hospitals are in rural areas, staffed by generalist medical practitioners who provide health services often supplied by specialists in urban areas. There is a paucity of research and published material on the scope of practice of district hospital practitioners in South Africa, as well as the factors influencing the performance of their duties.

There were two main objectives for this study. Firstly, to identify the professional knowledge and skills of medical practitioners delivering district hospital services in the Western Cape and to compare these with service platform needs. Secondly, to use the information gathered to make recommendations regarding human resource development and appropriate education and training and continuing professional development of these doctors.

The study was conducted in three phases to ensure coherent evolution of investigation, co-ordination and response.

Phase One was a comprehensive survey, utilising district hospital data, medical officer questionnaires and in-depth interviews to determine the professional knowledge and skills of medical practitioners working in district hospitals in the Western Cape. This information gathering endeavour resulted in a skills and knowledge compendium being formulated. It established that the spectrum of functions required of these doctors was extremely wide - ranging from the management of undifferentiated problems to performing complex surgical procedures, as well as providing a vital public health function. Two main factors influenced their performance, namely their working conditions and the education and training which they received.

In common with rural practice in other countries, it was apparent that the working environment had a major impact on attitudes and functioning. These findings were developed into a conceptual framework depicting the negative influences that can build up and result in these doctors opting out of rural practice.

In addition, other influences were established having a profound effect on doctors' satisfaction, mainly in the realm of education and training. This gave rise to a second more comprehensive framework being evolved, encapsulating the positive and negative factors enhancing or retarding efficiency and satisfaction in the workplace.

Phase Two of the study consisted of the validation of the findings of the basic research data.

In keeping with the second aim of the study, the education and training perspectives of rural and district hospital practice were explored. The deficiencies exposed have implications for undergraduate and postgraduate education and training, as well as for continuing professional development programmes.

Phase Three concentrated on the exploration of ways and means of defining and maintaining ongoing professional competence for district hospital practice. This was approached by using the data captured in Phase One and refined in Phase Two to pose a series of educational problems to a group of experts. Using the Delphi Technique, a series of electronic exchanges achieved consensus on a range of topics varying from educational content to learning modalities and modern adult teaching techniques applicable to district hospital practice.

This research presents information defining the circumstances, experiences and needs of medical practitioners working in district hospitals in the Western Cape province of South Africa.

It reveals clear challenges to the capacity, attitudes, costs, isolation, political will, monitoring and organisation which will be crucial in the development of future human resource strategies.

It, furthermore, defines the educational objectives, content and methods required to establish and maintain the ongoing professional competence of medical practitioners delivering district hospital services in the Western Cape.

OPSOMMING

Distrikshospitale speel 'n sentrale rol in die distriksgesondheidstelsel van die Wes-Kaap en ander provinsies in Suid-Afrika. Dit is 'n dubbele rol wat beide primêre gesondheidsorgdienste ondersteun en optree as 'n deurgang vir verwysing na hoër vlakke van sorg.

Die meeste distrikshospitale is te vinde in plattelandse gebiede. Dit is hier waar die algemene geneeskundige praktisyn dienste lewer wat gewoonlik deur spesialiste in stedelike gebiede verrig word. Daar is 'n gebrek aan bestaande navorsing en publikasies oor die omvang van praktyk van geneeshere in distrikshospitale in Suid-Afrika, sowel as onvoldoende inligting in verband met faktore wat die funksionering van hierdie praktisyns beïnvloed.

Hierdie studie het twee hoofdoelwitte vervat. Die eerste doelwit was die bepaling van die professionele kennis en vaardighede van geneeshere werksaam in distrikshospitale in die Wes-Kaap, en die vergelyking daarvan met die behoetes van die diensplatform. Die tweede doelwit was om hierdie inligting te gebruik om aanbevelings te doen aangaande menslike hulpbronontwikkeling en toepaslike onderrig, opleiding en voortgesette professionele ontwikkeling vir hierdie geneeshere.

Die studie is in drie fases uitgevoer om samehangende ontwikkeling van ondersoek, koördinasie en respons te verseker.

Fase Een het bestaan uit 'n omvattende opname van die professionele kennis en vaardighede van geneeshere werksaam in distrikshospitale in die Wes-Kaap deur die gebruik van distrikshospitaaldata, vraelyste vir geneeshere, en in-diepte onderhoude. Die resultate is gebruik om 'n omvattende stel kennis en vaardigheidsareas te identifiseer. Fase Een het bewyse gelewer dat die rol en funksie van dokters in distrikshospitale uitsonderlik wyd is en wissel tussen die hantering van ongedifferensieërde probleme en die uitvoer van komplekse chirurgiese prosedures, sowel as 'n belangrike rol in openbare gesondheid. Werksomstandighede en onderrig

en opleiding is geïdentifiseer as die twee belangrikste invloede wat die uitvoer van hierdie praktisyns se pligte beïnvloed.

Soortgelyk aan plattelandse praktyke in ander lande, het dit duidelik geword dat werksomstandighede 'n groot invloed op houdings en funksionering het. Hierdie bevindings is saamgevoeg in 'n konseptuele raamwerk om die negatiewe invloede toe te lig wat veroorsaak dat hierdie geneeshere die plattelandse diens verlaat.

Ander faktore wat 'n beduidende uitwerking op praktisyns se werksbevrediging gehad het, veral wat onderrig en opleiding betref, is saamgevat in 'n tweede en omvattende raamwerk wat die positiewe en negatiewe invloede op effektiwiteit van dienslewering en werksverrigting uitspel.

Fase Twee van die studie het bestaan uit die bevestiging van die bevindings van die basiese navorsingsinligting.

Perspektiewe in die onderrig en opleiding vir plattelandse praktyk is ondersoek in oorleg met die tweede doelwit van die studie. Verskeie implikasies vir voorgraadse en nagraadse onderrig en opleiding en voortgesette professionele ontwikkelingsprogramme is uit ontblote tekortkomings geïdentifiseer.

Die omskrywing en die behoud van professionele bevoegdheid is in Fase Drie ondersoek. Data verkry in Fase Een, en verfyn in Fase Twee, is gebruik in die ontwikkeling van 'n reeks opvoedkundige vraagstukke. 'n Groep deskundiges is daarna die taak gestel om konsensus te bereik oor 'n spektrum van onderwerpe, insluitend toepaslike inhoud, metodes van leer en moderne volwasse onderrigtegnieke vir distrikshospitaal praktykvoering. Die Delphi tegniek met herhalende elektroniese rondtes is hiervoor gebruik.

Hierdie navorsing lewer inligting wat die omstandighede, ondervindings en behoeftes van geneeshere werksaam in distrikshospitale in die Wes-Kaap provinsie van Suid-Afrika beskryf.

Die navorsing onthul duidelike uitdagings vir die kapasiteit, houdings, koste, isolasie, politieke wilskrag, monitering en organisasie van strategieë vir die ontwikkeling van menslike hulpbronne.

Dié navorsing definieër hierbenewens die opvoedkundige doelwitte, inhoude en metodes wat nodig is vir die vestiging en instandhouding van die professionele bevoegdheid van distrikshospitaalpraktisyns in die Wes-Kaap.

DEDICATION

This thesis is dedicated to the two most important people in my life:

My partner Athol, and my son Paul,

For your enduring support and encouragement.

ETHICAL APPROVAL AND FUNDING

ACKNOWLEDGEMENTS

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LIST OF ABBREVIATIONS

AAFP	American Academy of Family Physicians
ACLS	Acute cardiac life support
APLS	Acute paediatric life support
ARV	Anti-retroviral
ATLS	Acute trauma life support
CD	Compact disc
CFPC	College of Family Practitioners of Canada
CHC	Community health centre
CMSA	Colleges of Medicine of South Africa
COPC	Community-oriented primary care
CPD	Continuing professional development
CPR	Cardio-pulmonary resuscitation
CS	Caeserean section
CVP	Central venous pressure
DA	Diploma in Anaesthesiology
D & C	Dilatation & curettage
DHS	District health system
DOH	Department of Health
ECG	Electrocardiograph
EDL	Essential Drug List
ENT	Ear, Nose and Throat
Famec	Family Medicine Education Consortium
FHS	Faculty of Health Sciences
GP	General practitioner
HPCSA	Health Professions Council of South Africa
HST	Health Systems Trust
IC	Intercostal
ICPC	International Classification of Primary Care
ICU	Intensive care unit
I&D	Incision & drainage
IV	Intravenous
LP	Lumbar puncture
MCFP	Member of the College of Family Practitioners
MDB	Medical and Dental Professions Board
MEC	Member Executive Committee
MFamMed	Masters in Family Medicine
MVA	Motor vehicle accident
NGO	Non-governmental organisation
O & G	Obstetrics & Gynaecology
OPD	Out-patient department
PGWC	Provincial Government Western Cape
PHASA	Public Health Association of South Africa
PHC	Primary health care
RPL	Recognition of prior learning
RuDASA	Rural Doctors Association of Southern Africa
SAS	Statistical Analysis Systems
SD	Standard deviation
SRPC	Society of Rural Physicians of Canada
TOP	Termination of pregnancy
U&E	Urea & electrolytes
UTI	Urinary tract infection
WHO	World Health Organization
WONCA	World Organization of National Colleges, Academies of Family Doctors

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND TO WESTERN CAPE HEALTH SERVICES

The population of the Western Cape is growing considerably, both through natural population increase and through migration. This major growth has resulted in large informal settlements in the Metropole areas and in towns along the route between Port Elizabeth and Cape Town. In the year 2000, the number of persons living in the Western Cape was 4 187 035, comprising 10% of the total South African population.

FIGURE A: MAP OF WESTERN CAPE PROVINCE HEALTH REGIONS AND TOWNS WITH DISTRICT AND REGIONAL HOSPITALS
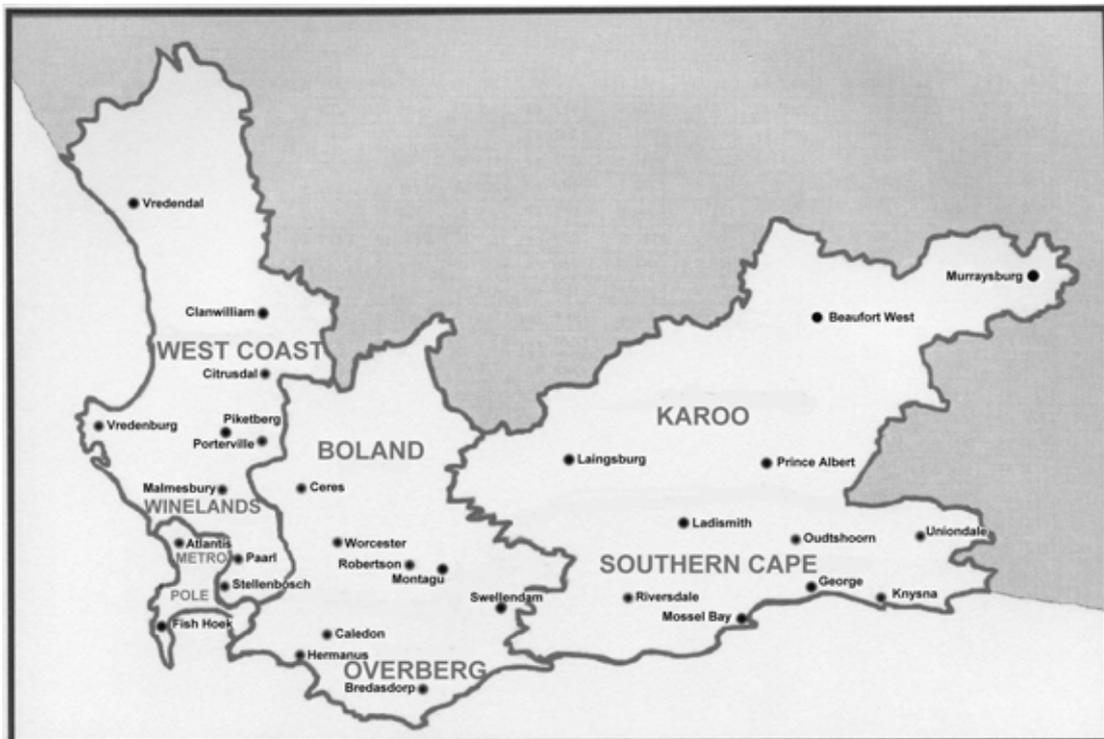
Two-thirds live in the greater Cape Town area. The provincial profile is notably different from that of the country as a whole. People identified as "African" form 21% of the population, as opposed to 77% nationally. Those identified as "Coloured" form 54% of the population, as opposed to 7% nationally.

The province is divided into four health regions, forming a decentralised public health system. The regions are the Cape Metropole region; West Coast/Winelands region; Southern Cape/Karoo region; and Boland/Overberg region. The regions are further subdivided into a total of 25 health districts. Figure A depicts the health regions and the towns with district or regional hospitals.

The Western Cape is considered to be one of the wealthier provinces in South Africa. It also has other advantages, for example its literacy rate is higher (78.9%) than the national rate (65.8%). The average number of individuals per household is 3.9 compared to 4.4 nationally. Within the province, however, there are considerable disparities amongst population groups, between men and women, as well as between urban and rural communities.

In 1995, a total of 32 224 deaths was reported in the Western Cape. This translates to a crude mortality rate of 8.3 per 1 000 of the population, compared to the national rate of 6.1 per 1 000. Compared to the national profile, a significantly higher proportion of deaths in the Western Cape are attributed to chronic diseases, mainly ischaemic heart disease (11.8%), cerebro-vascular accidents (10.5%) and respiratory disease, other than tuberculosis (10%). Tuberculosis remains one of the key health problems in the province. Overall, injuries were the main causes of death in the Western Cape (23%) (PGWC 2001; PGWC 2002). Evaluation of the causes of death in the Western Cape reveals a mixed profile of diseases, namely diseases related to poverty such as diarrhoea and injury, and chronic diseases associated with lifestyle such as diabetes and various types of cancer. This mixed disease profile places a further strain on the overburdened public health sector.

The Western Cape Health Department has faced budgetary reductions since 1995 in the interest of interprovincial equity. This has caused the province to loose 9 000 health service personnel and led to the closure of 3 000 hospital beds which impacted largely, but not solely on tertiary level hospitals. While access to health services has increased, particularly at the primary level, there have been compromises in the quality of care delivered. Distortions of the skills mix of health personnel with a shortage of nurses and pharmacists in particular have placed a considerable strain on personnel at all levels of service.

Twenty-one of the 60 hospitals in the province are district hospitals, with a further six classified as provincially aided district hospitals. In March 2000, there were 1 316 useable beds in the 21 district hospitals. This increased to 1 591 in 2001.The total in-patient admissions (public patients) to district hospitals over a period of 12 months in 1999/2000 was 91 748. The three academic hospitals in the province, namely Tygerberg, Groote Schuur and Red Cross Children's Hospital combined had 109 080 admissions over the same period.

According to the province's 2000/2001 annual report, in-patient days at the 21 district hospitals totaled 326 926, with the average duration of stay at 2.9 days which was down from 3.3 days the previous year. District hospitals carried out 17 343 deliveries, performed 18 484 operations, and managed 201 869 emergency and trauma cases. There were 303 087 out-patient visits during these 12 months at district hospitals. Some district hospitals do not provide out-patient services, as these are dealt with by community health centres in the same town.

During the financial year 2000/2001, district hospitals spent R231 104 396-00 of which R168 577 644-00 (72.9%) was made up by salaries. Medical practitioners had an average of 21.8 beds under their care per doctor in 2000/2001, which was significantly up from 11 beds per medical practitioner in 1999/2000. In regional hospitals, the bed-per-medical practitioner ratio was 7.9, compared to 2.8 in tertiary hospitals.

There has been a decrease in admissions to academic hospitals in the Western Cape with a concurrent increase and shift to regional and district hospitals. There was also a clear shift in out-patients from academic hospitals to regional and district hospitals, with a small decline in out-patients at regional and district levels due to more accessible primary level facilities which managed an increase from 9.8 to 10.3 million patients. The decreasing trend of trauma and emergency patients at academic hospitals since 1994/1995 continued, with a gradual increase at regional and district hospitals.

The reshaping of health services to better meet the needs of the Western Cape has resulted in a strategic plan which envisages that 90% of health contacts will occur at the primary level, 8% at secondary level and 2% at tertiary level. The 2010 plan is a strategy to enable the province to stay within the limits of its budget while, at the same time, providing equitable and quality health care services (PGWC 2001; PGWC 2002).

1.2   MOTIVATION FOR THE STUDY

District hospitals play a pivotal role in the District Health System (DHS) by supporting primary health care services (PHC) and serving as a gateway to higher levels of care. District hospitals generally have between 30 and 200 beds, a 24-hour emergency service, an operating theatre, with generalist personnel providing comprehensive level-one in-patient and out-patient services. The district hospital is more than a curative facility and is closely linked to all aspects of health care. There needs to be clarification on the role of the district hospital in the DHS in relation to maintaining clinical standards, providing in-service training and governance (DOH 2002:3; WHO 1992:11,12; Clarke 1998:1).

A comprehensive set of national norms and standards for district hospitals, lists a broad range of services to be provided. This range of services presupposes that a district hospital medical officer will be equipped with a broad body of knowledge and a wide range of technical skills. This medical practitioner needs clinical skills,

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surgical skills, community health skills, management skills, as well as skills to train other health workers and to ensure quality improvement. District hospital doctors also need to support and mentor other team members and be able to effectively work in the health team (DOH 2002:3).

The transformation and restructuring of health services in the Western Cape Province is guided by clearly defined policy guidelines. Recommendations for the reshaping and re-engineering of the DHS are provided by a number of documents, including the *Policy for the development of a District Health System for South Africa*, the *1999-2004 Health Sector Strategic Framework,* and the *Primary Health Care and District Hospital Service Packages for South Africa* (Owen 1995; DOH 1999; DOH 2001; DOH 2002).

The Western Cape has adapted national guidelines to meet its needs and circumstances. The provincial health department's document *Draft Strategic and Service Delivery Improvement Plan* prioritises the adoption and implementation of a core package of services for the primary level and for district hospitals. In 1999, two inter-regional workshops were held to define the core package of services for district hospitals. Service managers and providers from all four provincial regions, as well as academics in family medicine and primary care participated. These workshops defined the following key areas for action, namely the definition of a service platform; core package of services; human resource needs; and management.

The district hospital service platform and core package of services were subsequently formulated. The service platform incorporates the following categories: Outreach and support to primary health care services; general out-patient department (OPD) services; emergency and trauma services; and in-patient services. Figure B demonstrates the service platform and its linkages.

FIGURE B: DISTRICT HOSPITAL SERVICE PLATFORM

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┌─────────────────────────────────────────────────────────────┐
│            DISTRICT HOSPITAL SERVICE PLATFORM                 │
└─────────────────────────────────────────────────────────────┘
          │                                    │
          ▼                                    ▼
┌──────────────────────┐    ┌──────────────────────────────────┐
│   District Hospital  │    │  District Hospital Platform within│
│                      │    │  Regional/Tertiary Hospitals      │
└──────────────────────┘    └──────────────────────────────────┘
     │
     │    ┌──────────────────────────────────┐
     ├──► │  Outreach /Support to            │
     │    │  Primary Health Care             │
     │    └──────────────────────────────────┘
     │    ┌──────────────────────────────────┐
     ├──► │  General out-patient services    │
     │    └──────────────────────────────────┘
     │    ┌──────────────────────────────────┐
     ├──► │  Emergency and trauma            │
     │    │  services                        │
     │    └──────────────────────────────────┘
     │    ┌──────────────────────────────────┐
     └──► │  In-patient services             │
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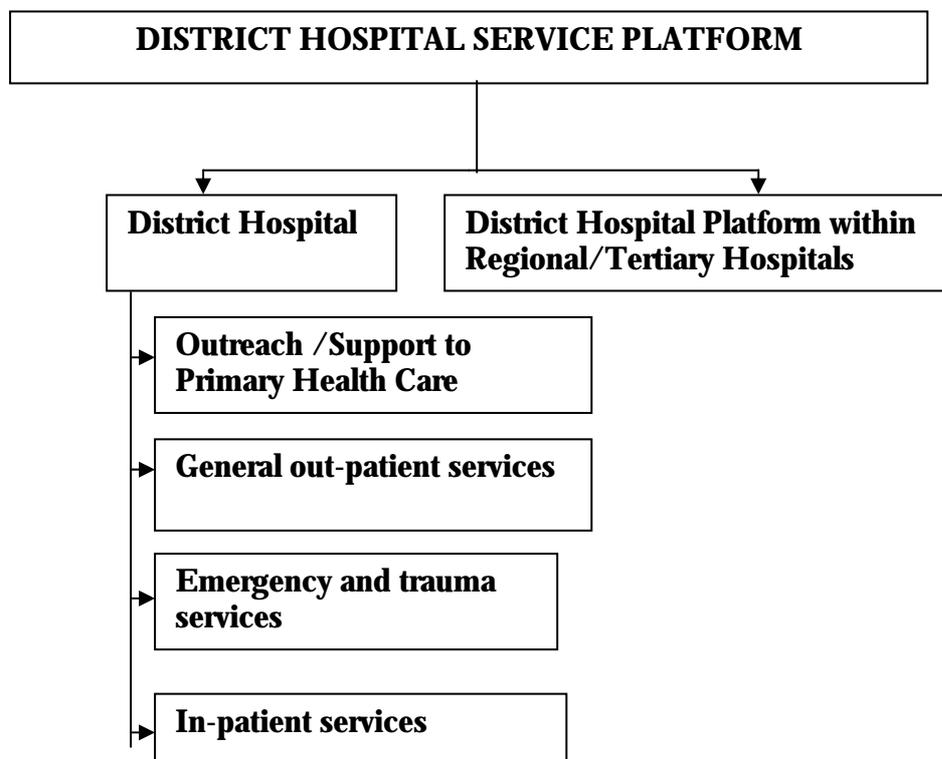
Table 1 describes the core package of services that forms part of the services rendered by Western Cape district hospitals.

Most district hospitals are in rural areas, where generalists provide a wide range of clinical services, usually 80 kilometres or more than one hour's transport from the nearest regional referral hospital (Solanke 1997:139-40; Norris *et al* 1996:90; CFPC 1999:2416).

The role and practice of the generalist doctor in district hospitals in South Africa is extremely wide. The rural generalist is called upon to perform clinical duties ranging from primary care to emergency surgical operations, as well as administrative, teaching and leadership functions within the health team (Jacques & Reid *et al* 1998:16; Hill 1995:674; Damp 1997:145-6).

While developing a description of the human resource attributes of a medical officer at a "model" district hospital, it became clear that there was a lack of information

about the competencies and appropriateness of the skills of medical officers currently working in district hospitals of the Western Cape Province.

TABLE 1:   CORE PACKAGE OF SERVICES

OUT-REACH AND SUPPORT TO PHC	GENERAL OUT-PATIENT DEPARTMENT (OPD)	EMERGENCY AND TRAUMA SERVICES	IN-PATIENT SERVICES

Training
• In-service training / Vocational training
• Continuing professional development
• Formal education and training
 	
Clinical Services rendered by -
Medical Officers
Pharmacists
Health therapists
	Level of Skills
	Generalist Medical Officer up to the level of Family Physician
	
	Curative:
	Acute and Non-Acute
	• Direct or referrals from general practice and PHC platform
	• Evaluation and treatment support to patients with chronic illness referred by PHC platform
	• Stabilising patients before discharge to clinics
	• Management of patients referred from regional and tertiary hospitals
	
	Promotive / Preventive
	• In areas where PHC services are not available
	• Opportunistic (e.g. immunisation)
	
	Rehabilitative
	• At level of health therapists
	• Including -
	  – Occupational Health and Safety
	  – Pathology: Forensic Clinical
		Level of Skills
		Same as for OPD, plus need for additional emergency care training at appropriate level for needs of district hospitals
		
		Services
		• Point of entry services or referrals
		• 24-hour services in dedicated area
		• Preferably separate dedicated areas for trauma and other emergencies
		• Stabilisation or referral of common and/or life threatening conditions up to level of a Diploma in Primary Emergency Care
		• Minimum services to be rendered:
		  – Trauma
		  – Medical & surgical emergencies
		  – Psychiatric emergencies (NOTE: seclusion & sedation)
		  – Clinical forensic emergencies
		  – Injuries on duty (Workman's Compensation Act)
			Level of skills
			Generalist Medical Officer who can provide comprehensive management of all conditions as defined under "Services"
			
			Services
			• Internal medicine
			  – Acute
			  – Chronic (range defined by protocol)
			
			• Surgery (emergency and cold). As a minimum, the following procedures will be available:
			  – Appendicectomy
			  – Tonsillectomy
			  – Caesarean Sections / Ectopic
			  – Non-compound fractures
			• Anaesthetics
			• Woman's Health
			  – Termination of pregnancy (TOP)
			  – Sterilisation
			• Paediatrics
			• Psychiatry Management of suicidal patient / 72-hour assessment period
			• Rehabilitation

Health service managers should establish factors which influence the retention of doctors in rural areas. Working conditions in rural hospitals in South Africa have

recently been under scrutiny in the press and in medical publications. Understaffing, excessive workloads, inadequate supervision or support and long working hours are described as factors which compromise care in rural hospitals (Bateman 2001:792-3; Verkuijl 2002:664-6). Satisfaction with clinical workloads is an important factor in the likelihood of retaining doctors at rural hospitals (Mainous *et al* 1994:787). Lack of a career structure, inappropriate education and training at undergraduate and postgraduate levels, academic isolation and too little time or opportunities for continuing education were all found to be contributing factors to discontent and frustration (Cameron *et al* 2002:276-8; Edginton & Holst 1991:511).

The Directors of the Western Cape's rural regions expressed the need for a skills audit of medical officers in district hospitals to provide a comprehensive picture of the professional competencies required to provide satisfactory services at this level. This would enable service managers to perform a gap analysis by comparing current skills with service needs as defined in the core package of services. In the process, equity issues and conditions of service could also be addressed. The results of such an analysis would be useful in designing a human resource development plan for district hospitals.

The unique nature of rural practice and the health needs of rural populations make it imperative that practitioners receive relevant education and training (Rourke 1993:1282; Mazwai 1997:147; Mulimba 1997:142). Given that rural doctors perform a broad spectrum of procedures, educators and trainers should ensure that graduates who plan a career in rural practice are skilled accordingly (Chaytors *et al* 2001:770).

The Department of Family Medicine and Primary Care at the University of Stellenbosch developed a new postgraduate programme by distance education which has been in operation since 2001. The purpose of that programme is to address the need for suitably qualified generalist doctors in South Africa to ensure effective health care delivery in the DHS. The outcome of an in-depth analysis for district hospital practice and guidelines on the content of appropriate postgraduate education and training would make an important contribution to education and training appropriate to the needs of district hospital services. Departments of Family Medicine should

carry out education and training for rural practice, as the majority of rural medical practitioners are family doctors and a large part of rural practice involves primary care. Education and training in rural Family Medicine streams provide the best education and training for family doctors who plan a career in rural practice (Carter 1987:1715; Rourke 1988:1058; Rourke 1996:1133).

A key recommendation by the World Organisation of Family Doctors' (WONCA) Working Party on Training for Rural Practice is the development of tailored continuing professional development programmes which meet the identified needs of rural practitioners. There is little detailed knowledge of specific training needs of rural practitioners. The maintenance of knowledge and skills throughout a career in rural practice is a particularly neglected area (Strasser *et al* 1995:9; Wise *et al* 1994:314). Developing relevant course content and methods for the professional development of practitioners in district hospitals, would address some of the human resource development needs required to provide equitable and quality services to communities.

1.3   HYPOTHESIS FOR THE STUDY

The hypothesis for this study was as follows: The defined core package for district hospital services is not uniformly delivered in all Western Cape district hospitals, resulting in inequitable services delivered to communities in the province. The reasons for this may include knowledge or skills gaps, unfavourable working conditions, limited resources, inappropriate training and a lack of knowledge and skills maintenance. It was postulated that it would thus be possible to carry out a gap analysis to identify the knowledge and skills that were lacking in district hospital medical practitioners. Appropriate education and training interventions could thereafter be developed to ensure the updating and maintenance of the knowledge and skills of those medical practitioners by using the input of experts in the field.

1.4   AIMS OF THE STUDY

The aims of this study were, <u>firstly</u>, to identify the professional knowledge and skills of medical practitioners who deliver district hospital services in the Western Cape Province and comparing those with the service platform needs. <u>Secondly</u>, to use this information to make recommendations regarding human resource development plans and appropriate education and training for medical practitioners who deliver district hospital services.

1.5   OBJECTIVES OF THE STUDY

The objectives of the study were the following:

➢ To determine the professional knowledge and skills of medical officers who deliver district hospital services in the Western Cape Province, and compare those with the defined core package of services.

➢ To describe the defined knowledge and skills gap between the required and actually performed tasks of medical officers in district hospitals.

➢ To record the training and professional experience of those medical officers and to assess the appropriateness thereof.

➢ To explore the difficulties experienced by medical officers in performing, maintaining and developing the required professional knowledge and skills for service rendering in district hospital practice, and how these difficulties could be addressed.

➢ To obtain expert and consensus opinions on appropriate content and methods for updating knowledge and skills needed for district hospital practice.

➢ To provide feedback and make recommendations on how to address the knowledge and skills gaps in terms of appropriate education and training, and human resource planning for medical officers who deliver district hospital services.

CHAPTER 2

LITERATURE REVIEW

2.1   THE DISTRICT HEALTH SYSTEM

South African health care policies provide a framework for the development of flexible health programmes responsive to the needs of the people of South Africa, an accessible primary health care (PHC) system; efficient governance of the public hospital system; and a more equitable private health sector. The comprehensive PHC approach is at the centre of plans to transform health services and is regarded as the highest priority (DOH 1996:2-6; Owen 1995:2,3; DOH 2000/2001:3).

Two strategies strengthening the implementation of efficient, effective and high quality health services are the revitalisation of hospital services and delivery of an essential package of services through the district health system (DHS). The comprehensive PHC service package is expected to be universally accessible and be guaranteed for every citizen of the country. An integrated package of services available to the entire population will provide the foundation of a single, unified health system, providing the driving force to promote equity in health care (DOH PHC Package 2001:5; DOH 1999:12).

The DHS has been adopted as the vehicle to deliver the comprehensive PHC package of services in South Africa. It is a decentralised health care delivery system, which seeks to provide health care services to all persons within a defined geographical area, referred to as a district. Clinics, community health centres and district hospitals form the platform for the delivery of the service package within a DHS. The district

hospital receives referrals from PHC services throughout the district (DOH 1996:12,13; HST 1999:Chapter 11; DOH PHC Package 2001:29).

In South Africa, emphasis is placed on the following aspects of the role of the DHS (Pillay *et al* 2001:11):

➢ Delivery of comprehensive and integrated services up to and including district hospital services.

➢ Decentralised management responsibility, authority and accountability.

➢ Planning and management of services delivered at the district level.

➢ Effective referral mechanisms within and between districts and the different levels of care.

➢ Care delivered in the most efficient and effective manner possible.

➢ Purchasing of service options.

➢ Utilising all district resources effectively, whether rendered by public, private or non-profit organisations.

The decentralised nature of the DHS allows for greater responsiveness to community needs within a given district and makes health services more accessible to the community. Community involvement is strengthened by greater community input into the delivery of health services. District health authorities are aware of the needs of the local population as they are situated within that district (Toomey 2000:9).

The DHS is more than just a structure or form of organisation. It is the manifestation of a set of activities that includes community involvement, integrated and comprehensive health care delivery, intersectoral collaboration and a strong "bottom-up" approach to planning, policy development and management. While the theory of the DHS may appear to be straightforward, its implementation is complex due to different interpretations of the following concepts (HST 1999: Chapter 11):

➢ The appropriate size of health districts.

➢ The role and relationship between the health district and local government.

- The relationship between local government and the Department of Health (DOH).
- The relationship between national, provincial and district levels of the health system.
- The role and relationship of the district hospital.
- The role and relationship between management and governance structures.

A key requirement for a well-functioning DHS is that health districts are appropriately sized, being large enough to provide the full range of district services, including a district hospital and some technical services, but small enough to promote meaningful community involvement and management contact with the primary level. The average population size of a district is 250 000-300 000 persons (Toomey 2000:9).

During 2001 the concept of the DHS became more entrenched with a number of crucial milestones having been reached. The formally finalised version of the third sphere of government was put in place; the Health Ministerial Forum endorsed the vision of a municipality-based DHS throughout South Africa, and a *Health Bill* was published for public comment, laying down the framework for the setting up of the DHS as the foundation stone for the national health system. In terms of governance, it was decided that the provision of community (district) hospital services would be a provincial function (HST 2001:Chapter 2; Pillay *et al* 2001:29).

The way to implement these decisions is through integration of PHC services in order to address current fragmentation and duplication in the DHS. Integration of health services is defined as the development of a shared commitment and vision of, as well as utilising common technologies and resources to achieve these goals. Functional integration means structured co-operation and collaboration between provincial and local government health service rendering authorities in the absence of legal, financial and administratively integrated governance and management structures, as opposed to structural integration. One of the key requirements for effective functional integration is political and top management vision and leadership (Pillay & Leon *et al* 2002:1,2-8).

The aim of integration is to render fully integrated and effective PHC services, without duplication, under the management of a district health team. The positive effects of functional integration were found to include the delivery of comprehensive services, improvement of administrative functioning and an increase in community participation. Negative effects were differing service conditions having a significantly negative impact on achieving integration. Differences in organisational culture resulted in power struggles to maintain an "own" identity. Training and refresher programmes need to be developed to prepare health care providers and communities for their roles in an integrated health system (WHO 1996:4; De Villiers & Sandison 1998:3).

2.2   THE DISTRICT HOSPITAL

The World Health Organisation (WHO) underlines the importance of a health service within the DHS where patients with complex medical conditions can be referred for diagnosis, treatment and care, and which can act as a resource centre for the health work of the district. This service is the first referral hospital (WHO 1992:11-12).

The district hospital plays a pivotal role in the DHS. It supports PHC services and serves as a gateway to higher levels of specialist care. The district hospital provides a wide range of level-one (generalist) services to in-patients and out-patients, ideally on referral from a community health centre or clinic. Each hospital has between 30 and 200 beds and provides a 24-hour emergency service and an operating theatre. Generalists covering a range of clinical disciplines supply these services. In some circumstances PHC services are rendered at district hospitals where there is no alternative source within a reasonable distance (DOH 2002:3).

The WHO has formulated a functional definition of the hospital at the first referral level. The district hospital has the following characteristics (WHO 1992:11-13):

➢ It has a place in the national system of health services, recognised as providing 24-hour clinical care, with a capacity for diagnosis, treatment, institutional care and rehabilitation.

➢ It relates effectively to the DHS in recognising itself as an integral part of the DHS, shares in district–wide information gathering, is concerned with the health of the population which it serves, is a resource centre and seeks to understand the practice of traditional medicine in the district.

➢ It supports PHC services and the development thereof and ensures appropriate linkages, referrals and continuity of care.

➢ It relates effectively to communities by interacting with community members and their organisations on matters of concern to the whole area and shares with the community in the planning, implementation and evaluation of health programmes.

➢ It has referral functions by appropriately responding to the needs of patients referred from the first level of care, referring safely to higher levels of care or back to the first level with appropriate information, and offers a reliable channel for referral of laboratory tests from the district.

➢ It has a teaching function in developing education and training programmes for all levels of its own personnel, shares an interest in developing training programmes for all levels of personnel and the community within the DHS, and facilitates community-based education and training programmes for students, where appropriate.

> It relates to other sectors of development in that it joins with district health personnel and with the community in linking health development with other development sectors.

> It is a problem-solving resource that has the opportunity and need to address problems that have a bearing on the health of the people and the effectiveness of health services.

From the above it is clear that the district hospital is more than a curative facility and is closely linked with every aspect of health care development within its district. District hospitals are crucial for providing support to PHC services and for providing basic level-one hospital services, thus forming an integral and important part of the DHS (DOH PHC Package 2001:31; HST 1999:Chapter11).

The district hospital was relatively marginalised in the district development process in South Africa due to the emphasis on establishing district offices and developing district managers, as well as a shift in thinking away from hospitals and curative care to clinics and public health. Few people see the importance of district hospitals in the delivery of comprehensive PHC and in the support of primary level services. There should be a drive to bring hospitals and clinics closer together. The relationship between the district hospital and other components in the DHS should be synchronised. Separating them by a district management team in charge of peripheral facilities would be artificial and an impediment to co-operative functioning of the district (HST 1998:Chapter 6; HST 1999:Chapter11).

It is important for all levels of care to achieve some integration with primary care so that patients can receive clear and consistent advice. This also facilitates the improvement of health outcomes by maintaining continuity of care and achieving comprehensive and co-ordinated care. Unfortunately, the integration of the district hospital with other DHS services remains poorly defined. Linkages for co-ordination and support are often unspecified, creating ambiguous relationships between the hospital and the PHC management. Provincial and district management teams need to

decide on how a hospital supports clinic personnel, what its role should be in maintaining clinical standards and providing in-service training, and how the governance of hospitals links with the governance of the district as a whole (Starfield 1994:1129; HST 1998: Chapter 6).

The district hospital serves three critical roles: To provide support to health workers in clinics and community services; to provide first level hospital care for the district; and to be the place of referral from primary care facilities. The range of services offered by the district hospital includes diagnostic services, treatment and care, counseling and rehabilitation services. The following clinical disciplines at generalist level should be covered, namely Family Medicine and PHC, Medicine, Obstetrics, Psychiatry, Rehabilitation, Surgery (including Orthopaedics and other smaller surgical disciplines such as Otorhinolaryngology and Urology), Paediatrics and Geriatrics (DOH 2002:3).

Effective management of a district hospital is essential in providing quality care. Couper & Hugo identified key factors that are important for the effective functioning of a district hospital. The first group of factors centres on the basic, but essential teamwork component. Teamwork is vital and includes regular meetings, inter-personal relationships based on respect and mutual co-operation, a sense of unity built on a common vision, commitment to the vision and the team, and continuous communication at all levels. A second group of factors, providing the framework for the functioning of the team, incorporates an ethos derived from a historical tradition, a particular approach to problem-solving and a solid underlying structure with systems to implement this approach.

A third group of factors relates to the position of the hospital in the community and in the district. Well functioning hospitals are clearly positioned within and integrated into districts. They express a sense of dedication to provide services to the community, involving reaching out beyond their gates, and they believe that they are answerable to the community with full mutual involvement. Finally, capacity building, assisting and encouraging personnel in the process, underpins all these factors (Couper & Hugo 2002:ii).

2.3 DISTRICT HOSPITALS AND RURAL PRACTICE

Most district hospitals are located in rural areas. Rurality can be defined in terms of population density, distance from a city, or available facilities. In Canada, "rural" includes communities of up to 10 000 inhabitants, or those living outside census designated metropolitan areas. Most commonly, a rural health service is defined as an area 80 km or one hour's travel by road from the nearest referral centre. Rural practice can be defined as practice in non-urban areas where most medical care is provided by a small number of general practitioners or family doctors with limited or distant access to specialist resources and high technology support. In rural areas, generalist practitioners provide most or all medical services, including maternity care, as well as services that are usually rendered by specialists in urban areas. Rural remote areas are regarded as communities ranging from 80-400 km from a major regional hospital and rural isolated areas as communities more than 400 km away or more than four hours' transport time. Finally, it is stated that rurality is in the eye of the beholder - if you think you are rural, you probably are! (Couper 2000:278; Rourke *et al* 1999:6; Solanke 1997:139-40; Norris *et al* 1996:90; CFPC 1999:2416; SRPC 2001:7).

In developing countries the majority of the population lives in rural areas and may lack basic health requirements such as clean water, adequate food and shelter, and have limited access to health services. Poverty, a major risk factor for poor health outcomes, is prevalent in rural areas. In the United States of America (USA), it was found that people living in rural and inner city underserved areas are more likely to live in poverty, experience higher mortality rates and have a poorer health status than suburban residents. Rural women face limited access to reproductive health services, and their reproductive choices are further limited by the impact of rural values, norms and belief systems. A lower termination of pregnancy (TOP) rate in rural areas is an example of the inequity of health care facing rural populations (Blumenthal 2002:109; Bennett 2002:112; HST 1998:Chapter 6; Rabinowitz & Paynter 2002:113).

A major part of the disparity between rural and urban health care is the longstanding shortage of doctors in rural areas. Developed countries also have significant shortages of rural medical practitioners, even where there is a general oversupply of doctors. In addition, rural communities have fewer hospital beds and nurses available *per capita* (Strasser *et al* 1995:9).

2.3.1   RECRUITMENT AND RETENTION

It is important to understand why medical practitioners choose to practise in rural versus urban areas, as this influences the access to health care of rural populations and will help to ensure appropriate policy decisions. The single most significant predictor of rural practice is rural origin. A body of literature repeatedly and consistently shows that rural-raised individuals are more likely to practise in rural areas after completing their education and training (Rabinowitz 1993:938; Kamien & Buttfield 1990:106; Stearns *et al* 2000:17-21; Rabinowitz *et al* 1999:255). In examining critical factors for designing programmes to increase the supply of rural medical practitioners, it was found that growing up in a rural area was the only independent predictor of rural primary care *recruitment*, and that participation in a programme specifically designed to qualify candidates for rural practice, was the only independent predictive factor for *retention* in rural practice (Rabinowitz *et al* 2001:1041). In South Africa, it was found that roughly a third of graduates from rural origin return to rural practice, compared to between five and 13% of urban origin graduates (De Vries & Reid 2003). Other studies have found that those who select rural careers are more altruistic and have higher interests in primary care and family practice (Pathman 1996:965).

Other predictors include undergraduate rural rotations, postgraduate education and training for rural practice, spousal influences and economic factors. Personal issues such as perceptions of lifestyle, desire to raise a family in rural settings, participation in outdoor activities, lower crime rates and living in a close knit community also play a role in rural versus urban practice location decisions. Another attraction is the variety of clinical practice in rural areas with opportunities for carrying out a broad

range of procedures (Rabinowitz & Paynter 2002:113; Edginton & Holst 1991:511; Jacques 1994:400; Strasser *et al* 1995:9; Strasser 1992:809, 810).

Calling or vocation is probably the most frequent reason for rural work encountered. Many doctors, especially those from overseas, have come to work in rural South Africa out of a sense of adventure, seeking something exotic and exciting. For others, the love of nature provides the attraction to rural areas. Rural hospitals are furthermore recognised as places where hands-on experience can be gained. Some doctors use rural hospitals as a place to escape from personal or professional problems, while others look for the opportunity to combine family life with work in a creative way. Doctors also stay in rural hospitals in South Africa because of the need for doctors in the area and the support of medical colleagues (Couper 1999:736-8; Couper 2000:277; Edginton & Holst 1991:511).

Excessive workload is a deterrent for rural practice. Rural doctors have been shown to work longer hours than their urban colleagues. Satisfaction with workload is an important factor in the retention of rural primary care practitioners (Strasser 1992:808; Damp 1997:145; Mainous *et al* 1994:790). Doctors are furthermore discouraged from working in rural regions by lack of a career structure, inappropriate education and training at undergraduate and postgraduate levels, spouse dissatisfaction, poor schooling opportunities for children, academic isolation, bureaucratic problems and poor working conditions (Wise *et al* 1994:315; Strasser 1992:809; Jacques 1994:398-400).

There are also a number of attitudinal and perceptual barriers that discourage medical graduates from entering rural practice. This includes the misconception that rural practice is somehow "second class" and a sense of "learnt" helplessness amongst practitioners resulting in an inability to manage patients in the absence of immediate specialist support (Strasser *et al* 1995:10).

Problems of rural practice in South Africa have been identified as a lack of utilities, poor housing, poor clinical facilities, violence, lack of recreational facilities and

inadequate pay. Higher salaries were identified as the main incentive that would make a period of rural service more attractive. Improvements in housing and clinic facilities were rated the second most important incentives. Lack of management support was also a reason for leaving rural service. Overwork because of understaffing and lack of stimulation due to lack of time or opportunity for continuing medical education were contributing factors to discontent and frustration (Sankar *et al* 1997:295; Edginton & Holst 1991:512).

In Canada it was found that the average practice life span of a generalist anaesthesiologist in rural practice is five years. This is due to burnout, resulting from professional isolation, limited opportunities for continuing education, and scarce opportunities for interaction and support from anaesthesiology peers. The lack of support systems for rural practitioners and their families has led to substantial migration and difficulty in recruiting qualified persons to replace those who have left (SRPC 2001:3; Gutkin 1998:2812).

The migration of medical practitioners from less developed to more developed countries is not a new phenomenon, but is a cause for concern in relation to the retention of practitioners in rural areas. Enticing economic opportunities continue to be offered by the developed world. While it is not possible to stop the desire of individuals to seek a more satisfying quality of life for themselves and their families, the ethics of national policies which allow countries to aggressively recruit medical practitioners, at no cost or penalty to themselves should be challenged (Bundred & Levitt 2000:245-6). Jacques states that "no amount of pious prattle" about the maldistribution of medical manpower and "no amount of wishful thinking" will entice sufficient numbers of doctors away from financially rewarding practices in larger centres and the intellectually and professionally satisfying tertiary medical centres. What is needed is to create an attractive career structure, not only to draw medical practitioners to rural areas, but also to keep them there (Jacques 1992:589-90).

The Rural Doctors Association of Southern Africa (RuDASA) has published a *Position Paper on the Crisis in Staffing Rural Hospitals* (Reid 2001:1-3). This is aimed at bringing to the attention of policy makers and senior managers in the

provincial and national DOH and the Health Professions Council of South Africa (HPCSA), the crisis that is facing many rural hospitals in the country in terms of staffing by medical officers, particularly those at a senior level with experience. The *Position Paper* makes a number of recommendations regarding community service, senior South African doctors, Cuban doctors and other foreign doctors, as well as constructive solutions to problems with recruitment and retention of professional personnel in rural areas. Rural hospitals have been staffed to a large degree by foreign doctors. For example in Kwazulu Natal, over 75% of doctors at rural hospitals in 1998 were foreign graduates, as opposed to a study in 1988 which showed that 70% of those doctors were South African (Clarke 1998:1; Edginton & Holst 1991:512).

The *Position Paper* also recommended that a Rural Health Unit be established in the national Department of Health to ensure adequate staffing of rural hospitals in terms of all categories of professionals, and to work with bodies such as the HPCSA and universities as part of a comprehensive strategy. This is in keeping with a "high road" for rural health, where government at the national and provincial levels develops a comprehensive and cohesive strategy for rural health. Implicit in this is an understanding that rural health is not just urban health in a different context, but a unique entity that requires a different approach (Reid 2001:1-3; Couper 1997:292).

Another RuDASA document on the registration and recruitment of foreign qualified doctors published in 2001 serves as a proposal towards alleviating the crisis in staffing of rural hospitals. It calls for appropriately qualified family practitioners from developed countries to be registered with the HPCSA for public service without the need for further examinations. This has been facilitated by a ruling of the Medical and Dental Professions Board (MDB) at the end of 2002 that suitably qualified practitioners from developed countries will be allowed to practise in areas of need in South Africa without having to fulfill the MDB's stringent examination procedures. Another strategy to address the shortage of doctors in rural areas is the Government-to-Government agreements between South Africa, Cuba and other countries. According to these agreements, doctors are recruited, assessed and placed in public hospitals in South Africa (Couper 2001:1-2; Van der Linde 1996:15; Engelbrecht *et al*

2000:2). A substantial increase in the rural allowance for health workers was also announced in the 2003 budget speech of the South African Minister of Finance.

2.3.2 SCOPE OF PRACTICE

The role of the generalist doctor in district hospitals is wide and considerably more diverse than in urban areas. In the absence of specialist support, these generalists are called upon to perform clinical duties ranging from primary care to emergency surgical operations, as well as administrative, teaching and leadership functions. They will need extensive clinical skills, appropriate surgical skills and community health expertise, but also need to have a sound grasp of basic management principles and economics. They must always be ready to support and mentor other team members and share their knowledge. Rural doctors must do and be all these things – all captured in one fundamental task – to maintain and promote optimal health outcomes for their communities. Rural health care requires the doctor to develop a wide range of competencies in the domains of primary adult ambulatory care, maternal and child health, surgery, psychiatry, public health, orthopaedics, diagnostic radiology, family counseling, occupational safety, and health service planning and administration (Jacques *et al* 1998:16; Couper 1999:736; CFPC 1999:2416; Rabinowitz & Paynter 2002:113; Couper 2000:284; Doolan *et al* 1997:34-35).

Like their urban colleagues, rural family practitioners are presented with a great diversity of medical and social problems in the course of a working day. However, the rural doctor often has to manage those problems for much longer without ready access to a variety of support services. To ensure that their patients receive quality care, rural doctors thus need the following attributes (Doolan *et al* 1997:18):

➢ Excellent clinical skills in diagnosis and management.

➢ Understanding the value and role of special investigations.

➢ Appropriate referral practices.

➢ Relevant skills to prepare patients for transport or evacuation.

There is a remarkable degree of uniformity in rural practice content which is encouraging, as it lends credibility to the hypothesis that a curriculum could be designed which allows for better preparation for the demands of rural practice (Norris *et al* 1996:91). Cameron described the work in a typical district hospital in South Africa. The emergency department manages motor vehicle accident victims, gunshot wounds, fractures, burns, ectopic pregnancies, acute life threatening medical emergencies such as asthma, diabetes, dehydration, severe infections and attempted suicide. In addition, there is a busy labour ward performing about 330 deliveries per month. A wide spectrum of common illnesses and chronic conditions such as hypertension, upper respiratory tract infection, depression and epilepsy are managed daily in the out-patient department (OPD) (Cameron *et al* 2002:276-7).

Rural practitioners are significantly more likely to practise a wider range of clinical and procedural skills, and practise them more frequently, than their urban colleagues. Rural doctors performed significantly more minor and major surgery and assisted in more major surgery than their urban counterparts. Rural doctors also tend to provide more pre- and post-operative care (Weddington *et al* 1986:250-51; Wise *et al* 1994:315; Couper 2000:284).

A doctor in a rural setting will be required to perform simple surgical procedures on lumps and bumps, plus appendycectomies, hernia repairs, as well as tracheostomies, laparotomies and other life saving procedures (Solanke 1997:141; Damp 1997:146; Hill 1995:674-77; Jacques *et al* 1998:6-10). For many doctors, the procedural nature of rural practice is a source of satisfaction. Performing these operations, however, requires appropriate training and a life-long commitment to critical analysis of performance (Watts 1993:1475).

Family practitioners play a major role in providing surgical and anaesthetic services in rural Canadian hospitals, providing such services at 83% of the hospitals in Western Canada. The anaesthetic services in these rural hospitals are provided primarily by generalists with limited formal education and training in Anaesthesiology. Sixty percent of these hospitals have generalists with limited additional training performing caesarean sections. Family practitioners actively practise obstetrics in rural hospitals.

The smaller the hospital, the more likely it is that family practitioners perform caesarean sections (Chiasson *et al* 1995:1450; Norrris *et al* 1996:457). Caesarean sections, which are potentially complicated and dangerous procedures, were also found to be commonly performed in rural hospitals in South Africa (Jacques *et al* 1998:6; Geldenhuys & Hanekom 1999:23).

The scope of an expanded procedural skills set broadens with increased distance from a referral centre, often to include advanced maternity skills and enhanced emergency surgical skills. In Australia, it was found that family practitioners living in towns of 5 000-10 000 inhabitants are most likely to be providing procedural services. Important variables in doing surgery in South Africa were the number of partners in a practice, whether the practitioner has undergone training in surgery after the basic qualification, and whether there is ready access to a theatre (Kelly 1998:469; Dickinson *et al* 1995:1276; Geldenhuys & Hanekom 1999:20).

The public health role of a family practitioner becomes more important when the doctor is living and working in rural and remote areas. The practitioner is often the only doctor working within a defined community, without the support of public health specialists. Public health knowledge and skills required by a rural doctor include health needs assessment, screening, preventive actions such as immunisation, communicable disease control, nutrition, environmental health and health information system management (Doolan *et al* 1997:118-9).

Emergency skills are an important part of the practice of rural doctors. Family doctors working in areas with populations of less than 150 000 inhabitants indicated that they were required to manage critically ill patients at least once a year. These doctors are often required to resuscitate seriously ill and injured patients, using specific management and procedural skills. In smaller centres, almost half of the doctors questioned, said they manage critically ill patients at least once a month (O'Connor & Davidson 1992:1790-1).

Mental health is of major significance to rural and remote communities. The doctor needs to be aware of the prevalence and patterns of psychiatric disease in rural areas, understand local ethnic cultures, and be able to assess and manage a range of mental health problems through all life stages (Doolan *et al* 1997:122-6).

In summary, rural practice has the following three broad components (Doolan *et al* 1997:66):

➢ Comprehensive family practice, including the provision of primary, continuing, comprehensive and community-based prevention-oriented care.

➢ A procedural component which includes dealing with emergencies, resuscitation and stabilisation of the critically ill, and other aspects of hospital-based practice.

➢ A public health focus, i.e. working with communities to improve their health status.

These three components function within a defined context, requiring the ability to perform in many settings in a multi-disciplinary manner, as a team worker and as a leader citizen.

2.4 EDUCATION AND TRAINING FOR RURAL PRACTICE

Two main arguments are found in the literature to motivate specific education and training for rural practice. Firstly, the unique nature of rural practice and the health needs of rural populations make it imperative that practitioners receive relevant and focused education and training. Rural family practice requires doctors with the knowledge and skill to practise in settings where high technology and specialist resources are unavailable. Rural doctors perform a wide range of procedures. For this reason educators should ensure that graduates who are planning a career in rural

practice are qualified to execute a broad spectrum of surgical skills (Rourke 1996:1134; Chaytors *et al* 2001:770).

Secondly, it is argued that appropriate education and training for rural practice can influence the shortage of doctors and problems experienced with recruitment and retention of medical practitioners in rural areas. The maldistribution of medical human resources is found in many countries. Worldwide there is a surplus of doctors working in urban, as opposed to rural settings. Education is seen as a key modifying factor in addressing these issues (Lewis 1995:1041; Rourke 1993:1282; Mazwai 1997:147; Mulimba 1997:142).

Education for rural practice begins by fostering an interest in rural health amongst prospective students. Firstly, selection of the right kind of medical students should take place. The selection process should facilitate the entrance of those from rural areas as they are more likely to choose rural practice as a career. Secondly, it is necessary to identify the skills required for rural practice and, lastly, the teaching of these skills and knowledge should take place in a setting that will bolster confidence and promote interest in rural practice (Carter 1987:1713). A consistent and significant association between infrequent choice of rural practice and a poor level of preparation for entering rural practice has been reported (Wise *et al* 1994:315).

Exposure to rural practice in undergraduate education and training, focused and specific postgraduate education and training and maintaining knowledge and skills through appropriate continuing professional development activities, all assist in preparing and supporting rural practitioners (Rourke 1993:1282).

2.4.1   UNDERGRADUATE EDUCATION AND TRAINING

The literature highlights influences that predict the likelihood of graduates entering rural family practice. Characteristics of students (rural background or origin), as well as of teaching institutions (mission and type of education and training) strongly influence students' choice of career and destination. Data indicates that students with

a rural background or interest in family practice on entering medical school are more likely than their peers to practise in rural areas. Not all of them return, as some will be "urbanised", but few doctors who grow up in the city are willing to practise in rural areas (see also subsection 2.3.1 which relates to recruitment and retention).

Reserving a number of places for rural origin students in medical schools, or alternatively a selection procedure that adds some weighting for rural origin can be used to increase numbers of rural origin students (Kamien & Buttfield 1990:106). In Australia, rural undergraduate support grants are available from medical schools to enable medical students to gain increased experience and understanding of rural practice (Humphreys & Rolley 1998:941). The Mosvold Scholarship Scheme, attached to Ingwavuma Hospital (a large district hospital in Kwazulu Natal, South Africa), is a local example of an innovative approach. The hospital provides a scholarship scheme for prospective students in health sciences from the surrounding communities; it negotiates with teaching institutions for the placement of these students; provides vacation and elective training experiences in the hospital; and contractually binds these students to serve at Ingwavuma Hospital after completion of their studies (Personal communication: A Ross).

The Physician Shortage Area Programme, established at Jefferson Medical College in 1974, recruits medical school applicants from rural backgrounds who intend to enter family practice in rural and underserved areas. The students receive financial aid, undergo a special family medicine programme and do a clerkship in non-metropolitan areas under supervision of a rural preceptor. Early evaluation of the programme showed an almost five times higher likelihood of these graduates entering family practice, and a three times greater likelihood of them entering practice in rural areas. An evaluation after 22 years showed that 34% of the graduates from this programme were practicing in rural areas, compared to 11% of their peers. The results suggest that selectively admitting applicants who are more likely to become rural doctors, supporting them during training, and providing relevant training experiences has had a substantial impact on medical care in rural areas (Rabinowitz 1993:934; Rabinowitz *et al* 1999:255-260).

Medical schools have a major influence in shaping students' ideas, values and knowledge. It is during undergraduate education and training that students absorb concepts about medical status and begin to decide on career priorities. Predominant teaching by subspecialists in tertiary hospitals does not provide students with the opportunity to see high quality medicine practised by a generalist with limited resources in a rural area (Kamien & Buttfield 1990:107).

A medical school's focus on family medicine, measured by the existence of a formal department and the percentage of family medicine graduates, is also positively correlated with eventual rural practice. Medical schools can influence both the specialty and practice choices of their graduates. A large study that examined the rural and urban practice locations of graduates from American medical schools, found that medical schools varied greatly in the percentage of their graduates entering rural practice, ranging from 41.2% to 2.3%. Only twelve medical schools accounted for over 25% of rural practitioners. The tendency to produce rurally oriented graduates was simply associated with location in a rural state, emphasis on family medicine and primary care education and training, as well as promoting public responsibility. Schools dedicating themselves to basic scientific research are less likely to produce graduates for rural practice than schools emphasising the education and training of family doctors. At the same time, medical schools have little or no control over the medical market place that shapes the rewards and disincentives that affect students' choice of career and practice locations (Rosenblatt *et al* 1992:1559-1564).

The literature supports the notion that the place of training influences graduates' choice of practice locations, since training experiences in rural settings are associated with striking increases in postgraduate rural recruitment. This training may include preclinical and clinical theoretical components of rural practice; limited, extended or repeated clinical attachments to rural hospitals; rural electives; or a full rural practice stream (Strasser 1993:297). Features thought to promote a rural practice choice include the opportunity to qualify under faculty less biased towards tertiary care and technology, as well as the development of contact during residency to keep graduates near their training sites (Pathman *et al* 1994:41).

Changing the medical school curriculum by providing appropriate theoretical and practical education and training will prepare future doctors to be conversant with the lives and needs of rural people. Students reported that experience in a rural clinic changed their vision about themselves and their future careers, cross-cultural exposures, and the difficulties and frustrations of an inadequate health service (Cameron 2000:17).

Characteristics of successful rural undergraduate education and training programmes include skilled preceptors and rural role models, exposure to health education, health prevention activities, common and chronic conditions, continuity of care, experiencing high-quality medicine in small centres, and a healthy respect on the part of specialists and tertiary hospital personnel for rural practitioners. Training sites commonly used are community hospitals, primary health care clinics and regional hospitals in rural areas. Learning opportunities were provided by supervised consultations, working with nurses in clinics, role play, case discussions, procedural practice under supervision, videotaped consultations, evaluations of the health service, reflective reports, supervised after-hour duties and special theoretical blocks on rural practice. A community-oriented primary care strategy has also been successfully used for students to learn how to integrate population health approaches with individual health issues (Lewis 1995:1041; Kamien & Buttfield 1990:107-8; Cameron 2000:18; Roberts *et al* 1993:122; Verby *et al* 1991:110-112; Summerlin *et al* 1993:95-9).

Goertzen *et al* examined effective teaching behaviours of rural family practice preceptors. They found that successful rural preceptors involve the students in the clinical situation, maximise the preceptor-student relationship to foster learning and emphasise problem-solving. Clinical and teaching activities are co-ordinated and competence in both is demonstrated. The preceptor uses an organised approach, with clarification of educational goals along with debriefing and summarising, while keeping in mind the continuous process of learning on the part of the student. As part of this process, students are provided with ongoing feedback, assessment and evaluations (Goertzen *et al* 1995:167).

A clear rural orientation bias in the curriculum is required. Students should spend more time in rural hospitals to acquaint and sensitise them to the needs of rural populations. Students studying at the University of the Transkei in South Africa spend 30% of their training time in rural settings, including a three-month stint in the final year (Mazwai 1997:147). At Flinders University in Australia, the curriculum includes a three-day cultural weekend in year 1, a rural week in year 2, a two-week rural general practice attachment in year 3, and a six-week rural selective in the fourth year. Some students have the opportunity to spend the whole of the third year in a rural community (De Villiers 2000:937).

Roberts *et al* indicated that a medical school approach which encompasses a focused mission towards rural health, appropriate recruitment and admission of students, early and long-term clinical training in rural sites and rural location of the school, positively influence undergraduate education for rural practice (Roberts *et al* 1993:122). Other initiatives to stimulate interest in rural practice amongst undergraduates include focused promotion of rural practice at high schools, establishing rural practice students clubs, mentor programmes, rural preceptorship and rural electives (Rourke & Strasser 1996:466).

In the USA, longitudinal and multidimensional programmes were found to be more effective. Students assigned for an entire year to a rural campus were twice as likely to pursue rural careers as their peers (Pathman 1996:965-6). The Minnesota Rural Physician Associate Program is an example of a longitudinal programme where students spend nine months in 3rd year with carefully selected rural preceptors in rural settings. Three principles must be in place, namely an accredited rural hospital training site, a balanced patient population, and a community which accepts student training in its health services (Verby *et al* 1991:110-12). The Illinois Rural Medical Education programme builds a comprehensive multifaceted curriculum throughout four years in its curriculum. Table 2 illustrates the comprehensive and extensive integration of rural training in the curriculum. This programme received the 1999 Society of Teachers in Family Medicine Programme Award (Stearns *et al* 2000:17-21).

TABLE 2: ILLINOIS RURAL MEDICAL EDUCATION (RMED) CURRICULUM COMPONENTS

RMED Course	Curriculum Focus	Methods	Contact Hours
Foundations in Rural Family and Community Medicine I: (First Year)	Community health concepts, core concepts of family medicine, rural health issues	New student summer orientation, seminars, case-based small-group discussions, field trips, rural health conferences, shadowing rural family physician for a day, selected readings and Internet-based assignments	3-day orientation, eight-nine monthly sessions/ inner meetings (approximately 3 hours/month)
Foundations in Rural Family and Community Medicine II: (Second Year)	Community health concepts, core concepts of family medicine, rural health issues	Seminars, small-group discussions, field trips, development of annotated bibliography on rural health topics with group presentations on four selected topics, selected readings, and Internet-based assignments	Nine monthly sessions/dinner meetings (approximately 3 hours/month)
Interface Between Family Medicine and Community: (Third Year)	Concepts of community-based medicine and COPC, core concepts of family medicine and rural practice	Seminars, small-group discussions, community health survey, "windshield analysis", COPC project, selected readings	Nine monthly evening sessions (approximately 3 hours/month)
Rural Family Medicine Preceptorship: (Fourth Year)	Clinical skills development in rural settings, community structure study, implementation of COPC project in rural community	Immersion experience: 60% clinical responsibilities, 40% community projects, which include collaboration with community individuals/ organisations. Log clinical encounters into computer database, present COPC project in poster session, compile community notebook	6-week preceptorship in rural Illinois community, working with a rural physician

It is unlikely that modest programmes such as a four-week primary care stint in clinics will be effective in changing students' career choices. Long-term, intensive, multifaceted and carefully designed curricula in rural and underserved settings are more likely to be effective. The need for a balanced medical practitioner workforce, and medical education and training to influence this balance, demands ongoing, rigorous assessment of the efficacies of various rural teaching programmes (Pathman 1996:963,966). To change medical curricula, however, is not sufficient to prove the value of an innovative approach. Any reform means a substantial shift from the known successes of the biomedical approach to training, to the emerging systems

view now being incorporated into modern medical education strategies (Mash & De Villiers 1999:728-9).

2.4.2 INTERNSHIP

The internship (pre-registration) year of training is rich in opportunities for development, with the emphasis placed on putting into practice the skills learnt in medical school and demonstrating confidence. Young doctors should acquire defined clinical skills enabling them to practise in the absence of specialist services as this is what they will encounter during their community service which often includes a considerable period of time in community-based locations. The MDB has instituted a two-year internship to replace the present one-year programme in order to address the perceived lack of readiness for independent practice on the part of doctors after completion of their internship training, which leaves them demonstrably short of the required ranges of experience and skills. The two-year programme will for the first time include a mandatory family medicine rotation (Pick 2001:xi; Van Niekerk 2002:830).

Unfortunately, much of the potential of internship training is not realised, due to service pressures, lack of and inexperienced supervisors, and competition with registrars (student specialists) for gaining procedural skills (Kopelman 1997:18). Mazwai proposes that during the final year of undergraduate study (presently referred to as the student-intern year), attention should be focused on minor procedural skills such as suturing and resuscitation. In the internship year, the focus should be on formal surgical operations such as appendycectomies. Performing an uncomplicated caesarean section should also receive attention (Mazwai 1997:147-148).

One of the challenges facing a newly qualified doctor is the adding of practical skills to theoretical knowledge. A study performed in a large district hospital in the North West province of South Africa, demonstrated that young doctors gain sufficient experience while working in a district hospital under appropriate supervision to develop confidence in their ability to manage the majority of common conditions

encountered at rural district hospitals. However, it is an area of concern that South African interns expressed a lack of confidence in their ability to administer a general anaesthetic at the end of their internship year, despite a two-week obligatory anaesthetic rotation under supervision (Cameron *et al* 2002:277). Interns and community service doctors also had difficulties in performing their tasks satisfactorily due to the lack of equipment, drugs and transport, especially where management systems were faulty or absent (Reid *et al* 2002:4).

2.4.3   POSTGRADUATE AND VOCATIONAL TRAINING

There is a plethora of literature on postgraduate education for rural practice, considerably exceeding similar literature on undergraduate training, as well as on continuing professional development for rural practice. The literature does not always make a clear distinction between postgraduate and vocational training. For this reason this discussion is placed under one heading. Structuring postgraduate education and training to adequately qualify medical practitioners for rural practice is complex. Issues such as the establishment of a core curriculum, listing of technical skills for inclusion in the training course, duration of training and types of rotations are widely published.

The WONCA Policy on Training for Rural Practice indicates a need for specific residency training programmes to prepare rural practitioners for delivering a wide range of services. The Policy recommends that training should take place in rural settings with specific emphasis on hands-on learning of procedural skills. Participants should encounter the spectrum of illnesses found in rural communities, while experiencing the sociology and psychology of the people, and the personal and professional aspects of living and working in rural communities. Training positions for advanced rural practice need to be developed and funded (Strasser *et al* 1995:13).

Many authors support the notion that community-based, experiential postgraduate learning in an academically monitored rural environment is a valid and effective way to educate rural family doctors. Results of a Canadian study suggest that a structured,

community-based training programme for medical practitioners interested in rural practice, encourages doctors to locate and stay in rural areas. Rural programme graduates reported that they were better prepared in family medicine, community medicine, practice management and behavioural sciences (Whiteside & Mathias 1996:1113).

a.   Principles and objectives

Postgraduate educational models for rural practice should foster practitioner attitudes, behaviour and skills suitable for small town practice. This can be achieved by experiential learning, guided by a suitable mentor, in a learning environment which mimics the circumstances of the trainee's future professional work and considers the personal needs of the trainee. Training should be rural-centric, competency focused, with flexibility in attachments and access to educational activities, while emphasising the acquisition of lifelong learning skills (Rourke 1996:1134; Longhurst 1987:2764; Doolan 1997:41).

The essential components of graduate training for rural practice are patients, hospitals, core faculty in family medicine, and teachers in specialties. Also needed are part-time rural preceptors, mentors, training posts and funding. The hospitals used for training should provide a range of opportunities, including primary care and procedural services. In such a setting, training should take place in a one- or two-to-one ratio under supervision of a qualified local rural preceptor. Permanent faculty members should be responsible for the course as a whole (Rosenthal *et al* 1992:689).

Recognition of prior learning (RPL) is essential for rural education and training programmes, to cater for the varying educational needs of individuals. RPL considers the extent to which the prior experience has met the expected outcomes of the training and/or the extent to which the prior experience embraces the process and content elements of the training (Doolan 1997:154).

In the past, those entering rural practice often did so with a poor understanding of the knowledge and skills required. There is a need for specific rural medicine learning objectives (Rourke 1996:1134). The following serve as guides (Whiteside & Mathias 1996:1115):

➢ Graduates will have the necessary knowledge, skills and attitudes to manage the range of conditions encountered in rural populations.

➢ Graduates will have the necessary knowledge, skills and attitudes to manage and evaluate acutely ill patients.

➢ Graduates will demonstrate confidence and competence in clinical skills required for rural practice.

➢ Graduates will effectively use investigative tools available in their setting.

➢ Graduates will demonstrate knowledge, skills and attitudes appropriate for dealing with cultural issues in their communities.

➢ Graduates will demonstrate appropriate use of non-medical services in their community.

b.   Programme structure

Rourke describes the training for rural practice provided by 18 Family Medicine programmes in Canada. These programmes have developed a variety of models that integrate training in the rural setting into the two-year postgraduate programme. In general, they are educationally intense, learner-centered, two-year family medicine training courses. The rural emphasis varies from one-month compulsory rural family medicine blocks to fully integrated rural training models where all of the training occurs within the context of a rural setting. In 12 of the 18 programmes, a rural block

is compulsory (Rourke & Rourke 1995:999-1000; Rourke & Strasser 1996:466). Others recommend that an additional fellowship year be spent specifically in preparation for rural practice to increase the confidence of graduates. This is structured to include a one-month rural rotation, six months' advanced obstetric training, and five months of elective rotations (Norris & Acosta 1997:414). Short rural placements expose trainees to the joys and challenges of rural practice, while long-term and in-depth rural blocks provide extensive contextual experiences (Rourke 1996:1135).

Rosenthal describes four residency programmes in the USA, each being of three year duration with established rural training tracks. The first year is usually completed in an urban tertiary centre, while the second and third years are spent in a distant rural community where the teachers are part of a rural family practice group (Rosenthal 1992:685). In another programme, the third year is used to establish competency in practical skills (Longhurst 1987:2768).

In Australia, the Faculty of Rural Medicine of the Australian College of General Practitioners (currently the Rural and Remote College), has developed a four-year rural training stream that includes 18 months of rural general practice training, appropriate hospital rotations, and an advanced skills year. Furthermore, the Rural Medicine Curriculum Design Project incorporates training curricula in Surgery, Anaesthesiology and Obstetrics, consisting of a 12 month programme in each discipline. The trainee spends nine months in hospital attachments and three months in a rural family practice (Strasser 1994:725; Craig & Nichols 1993:1218-19). Monash University offers a Diploma and Masters programme in Rural Health (Strasser 1993:298).

The McCord Hospital vocational training programme in South Africa offers a two to three year programme, depending on the needs and experience of the applicant. The trainees do six months' rotations through various clinical departments (Personal communication: J Giddy). Similarly, the University of Stellenbosch Masters in Family Medicine offers six months' rotations in clinical disciplines in regional and district hospitals.

Concern has been expressed about providing short training programmes in surgical and technical skills. It is assumed that these procedures can only be performed safely if taught in an extended residency programme and Mazwai advocates a two-year Diploma in Surgery course (Mazwai 1997:148). The most contentious issue is the length of time required for training in Anaesthesiology and Obstetrics, with suggestions attempting a compromise between breadth and depth of training (Kamien & Buttfield 1990:112). In the *Joint Position Paper on Training for Rural Family Physicians in Anesthesia in Canada*, there is a difference of opinion between the specialist College and their generalist colleagues on the duration of training for rural Anaesthesiology. The Canadian Anaesthesiologist Society strongly defends a minimum training time of twelve months. In contrast to this, the Society of Rural Physicians of Canada and the College of Family Physicians of Canada advocate a competency-based approach, requiring that the duration of training time should vary with the participant's pre-existing capabilities, their capacity to learn and their anticipated role in practice. The required training, in their view, could be accomplished within a range of six to twelve months. It is also felt that the training does not need to be completed within a continuous time period (SRPC 2001:13).

Couper expressed the opinion that the process of obtaining a Diploma in Anaesthesiology (a twelve month qualification of the Colleges of Medicine of South Africa (CMSA) where accreditation of practical experience is limited to central hospitals) presents a barrier to rural doctors because of the time required at an approved training facility. Doctors wanting only to work in a rural hospital for a limited period cannot afford an additional six to twelve months in a range of disciplines acquiring all the skills that specialists believe they need for rural hospital work (Couper 2000:326).

"Add-on" models, where time gets added on to programmes for each area needing cover, will result in an impossible five-year training period for rural practice. Unfortunately, no evidence-based information is available to provide details on the length of time it takes for a generalist to acquire these skills. In the absence of good evidence, training programmes for rural practice should be set at pragmatic and not

theoretical standards, otherwise the goals for rural practitioners become unattainable. Also, rural doctors are currently administering anaesthetics, managing trauma and performing caesarean sections competently without lengthened periods of prior training (CFPC 1999:2418-19).

Kamien & Buttfield (1990:112) propose a solution by basing skills training on competency rather than time, or accreditation of skills after training. Flexible and integrated training programmes need to be devised with rotations moving away from tertiary university-type hospitals to community hospitals (Rourke 1988:1058-59).

A two-year training period preparing doctors for service in district hospitals in Africa has been proposed. This should include three months' Anaesthesiology, six months' Obstetrics and Gynaecology, one year General Surgery and Orthopaedics, and a three months' option in Urology, Otorhinolaryngology or Ophthalmology. With a further two years' experience under supervision in a district hospital, this would entitle the trainee to sit an examination for a further qualification in "district hospital medicine" (Watters & Bayley 1987:763).

Rourke recommends a six-month rotation in obstetric care, including some exposure to Neonatology (Rourke 1988:1058). The *Canadian Joint Position Paper on Training for Rural Practitioners in Advanced Maternity Skills*, recommends a period of training which will vary with the pre-existing capabilities of the trainee, his or her capacity to learn, the intensity of training, complementary skills to be acquired, and the role which practitioners will ultimately play in their community. The number of procedures that have to be performed to achieve competency, range from 10-100, indicating the considerable commitment required for training in advanced maternity skills (CFPC 1999:2419).

Ultimately there needs to be a systematic, appropriate vocational training programme for rural doctors, most of which should take place in a rural context. This should cover Anaesthesiology, Maternal and Child Health, Surgery, Orthopaedics, Public Health and Family Practice (Couper 2000:324-5). Hospital-based educational opportunities should be available in rural hospitals where family doctors function

collaboratively with their specialist colleagues. Within this training context, residents will acquire competence and confidence at the same time as they are immersed in appropriate role modeling for interdisciplinary patient care. Most, if not all of the training for rural practice should occur in regional and community hospitals away from university-based tertiary care centres. Only those experiences that cannot be provided in the rural or regional setting should be assigned to the urban milieu. It is important that specialist departments participating in the training of rural practitioners, should embrace a vision that is broader than simply reproducing another generation of specialists (Rourke 1996:1136; Rourke *et al* 1999:27).

c. Curriculum content and methods

Curricula and lists

Comprehensive curricula need to be developed that provide appropriate core subjects and the specific skills for rural practice (Rourke 1996:1133; Whiteside & Mathias 1996:1113). The content of any curriculum for training in rural practice must be defined so that teaching can be focused appropriately. The scope and content of rural practice is well defined and includes all the elements of family practice and primary care training, supplemented by specific procedural skills training, and an understanding of rural communities (Strasser *et al* 1995:13; Longhurst 1987:2765; Carter 1987:1715; Rourke 1988:1057; Wise *et al* 1994:317; Kamien & Buttfield 1990:112).

The literature distinguishes between a "primary curriculum" and an "advanced curriculum". The primary curriculum includes all the areas usually covered in family practice training such as the management of undifferentiated problems on a primary care level. Specific training in family medicine should remain the cornerstone of all rural practice education. Knowledge of public and community health and disease patterns peculiar to rural practice is also important (Rourke 1988:1058). The advanced rural skills curriculum should explore areas such as Obstetrics, Anaesthesiology, Surgery, Emergency Medicine and others to over an additional six to twelve months period of advanced training (Doolan *et al* 1997:43-46; Rourke 1996:1134).

In the development of a Diploma in Rural Health for South Africa, core, priority and elective areas are proposed. Primary care and emergency care are seen as core areas in the curriculum. Priority areas for the curriculum are obstetrics and maternal health; general medicine and chronic and infectious diseases; paediatrics and child health; clinical audit; quality improvement; family-oriented and community-oriented care. Elective areas could include Orthopaedics; Anaesthesiology; Surgery; Gynaecology; population-based planning; health management and research (Personal communication: S Reid).

The comprehensive report of the Canadian working group on postgraduate education for rural practice, uses four principles of family medicine as the basis upon which the curriculum for rural practice must rest. These are as follows (Rourke 1999:12):

➢ The family physician is a specially skilled medical practitioner.

➢ Family medicine is a community-based discipline.

➢ The family physician is a resource to a defined practice population.

➢ The patient-doctor relationship is central to the role of the family physician.

That report includes lists of rural family practice problems and associated skills required for rural practice. Acquisition of the knowledge, skills and attitudes listed need appropriate learning opportunities and environments and the involvement of relevant preceptors, as well as appropriate monitoring and evaluation. The report makes extensive recommendations, including the incorporation of rural streams into current family medicine programmes, where rural rotations are important and a minimum of six months' postgraduate training should occur in a rural setting (Rourke 1999:13; 23; 43-50).

The Australian Rural and Remote College's Prospectus is another useful and comprehensive document which provides the full primary and additional curricula for postgraduate training for rural practice (Doolan *et al* 1997:1-214).

Attempts have been made to compile a comprehensive list of procedural and technical skills to be included in a core curriculum, according to the skills and competencies needed for rural practice (DOH 2002:3). Hospitals, communities and changing situations, however, give rise to varying needs which cannot be addressed by lists. Regional variations in the provision of medical care are so diverse that they cannot be met by a prescribed set of knowledge and skills. There are also limits to what can be incorporated into two or three years of postgraduate education and training. Longhurst argues that if a curriculum comprised a list of skills, it would fail to be a relevant curriculum for rural practice. Learning to practise in a small community is more complex than just acquiring skills, as it demands risk taking, clinical judgment and organisational insight. The appearance of a procedure on a curriculum list also does not ensure its mastery (Rourke 1999:25; Longhurst 1987:2764; Wise *et al* 1994:317).

Lists of topics have advantages and limitations. Lists can act as a reference point for both trainee and supervisor to ensure an adequate range of exposure, be used to form the framework for a portfolio to demonstrate experience and competence to external evaluators (Doolan *et al* 1997:20). Lists can also delineate which procedural skills rural doctors should be able to competently perform after graduation.

General skills

A Canadian study found that only five procedural skills appeared on 80% of the skills lists which they examined from 65 postgraduate programmes, illustrating the difficulty in reaching consensus on listing priorities (Van der Goes *et al* 1999:79; Tenore *et al* 2001:29). Much variation in skills training across the USA has also been reported. Having carried out extensive surveys on procedures taught and procedures performed in family practice, Norris *et al* presented a rationale that can be used to determine which procedures should be included in a skills curriculum. Based on the American Academy of Family Physicians' (AAFP) research, it is recommended that family practice residencies should teach the procedures that are taught by the majority of programmes. Furthermore, they teach the procedures that are performed by the majority of practicing family doctors (Norris *et al* 1997:100-02).

A core list of essential procedures is useful to provide guidelines for the training of both teachers and trainees, to clarify the scope of practice and to focus on explicit competency assessment (Tenore *et al* 2001:29). The Department of Family Medicine at the University of Stellenbosch developed a procedural skills list for postgraduate students categorising "office" versus "theatre", as well as "absolutely necessary" versus "add-on's" for varying practice environments (Personal communication: P Hill).

A way of prioritising training is to group operations according to complexities and the extent of surgical training required. Group A, for instance, includes procedures that any qualified doctor can perform, i.e. abscess drainage and wound repair. Group B includes operations that need specific training such as caesarean section, evacuation of the uterus and hernia repair. Group C includes operations that normally would be performed by someone with a higher qualification, for example a hysterectomy and internal fixation of fractures. Group D includes operations that require subspecialty training such as hip replacement. The authors recommend that doctors training for district hospital practice should master procedures in groups A and B. Not all doctors need to carry out all the listed operations, but a mix of skills in any hospital is required so that commonly needed and lifesaving procedures can be performed (Watters & Bayley 1987:761-763).

An innovative way of "getting through a list" of specified procedures is to differentiate between the terms *skills* and *procedures*. Basic surgical skills are the basic psychomotor skills of using a scalpel, dissecting forceps, tying knots, swabbing etc. By acquiring these skills, together with appropriate knowledge of clinical anatomy, a practitioner can use procedural imprinting and map-reading that are achievable by reading up and studying a procedure, to perform a wider range of procedures than any list would ever be able to delineate (Personal communication: R Ingle).

Specific skills

There is general consensus in the literature that the frequency of the performance of obstetrical procedures in rural practice demands extra attention to advanced obstetric training (Norris & Acosta 1997:415).

Anaesthetic training should also include some critical care components. Use should be made of local, regional and spinal anaesthetics, and these techniques should be taught to all district hospital practitioners (Rourke 1988:1058; Watters & Bayley 1987:763).

Advanced psychiatric skills are also seen as an important part of rural practice, requiring additional training (Rourke 1999:31-2).

Training in emergency medicine, including an element of critical care, is essential for rural practice. Advanced trauma and cardiac life support courses (such as the ATLS and ACLS) are seen as good training options. In Canada, doctors working in most emergency facilities are expected to have successfully completed the ATLS course (Rourke 1988:1058; Van der Goes *et al* 1999:79). All Canadian postgraduate programmes in family medicine require formal clinical rotations in emergency medicine. Graduates who receive adequate supervision during their training are most likely to continue performing such procedures in their practice (O'Connor & Davidson 1992:1789,91). Doolan describes a comprehensive curriculum for emergency care training for rural practice (Doolan 1997:54-64).

Postgraduate education and training programmes for rural practice should also develop research skills. The four broad categories of research in rural health are the following:

- ➢ The context of rural health and rural practice.

- ➢ Rural health services.

- ➢ Issues in rural practice.

- ➢ Specific clinical tasks and topics in rural medicine (Doolan *et al* 1997:164).

Learning

Teaching strategies for postgraduate education and training for rural practice should encompass a continuum of experiential learning, self-directed learning, and supervised learning activities. All of these should interact and lead from one to the other. Experiential learning includes "on the job" or "real world" experience under supervision. Supervised learning activities are used to augment experiential learning and to ensure coverage of the required curriculum. It also brings learners together in interactive sessions which result in prompting, sharing and networking. To facilitate supervised learning activities the curriculum should be distilled into learning modules which are discussed in weekly tutorials, using a problem-based approach. Distance packages should be developed to facilitate self-directed learning. Extensive on-site support provided by visiting educators with experience in rural practice, is a feature of some programmes. Such programmes also make use of telephone conferences, regional workshops or seminars, and telephone support structures to train postgraduates in rural medicine (Doolan 1997:41; Hays 1990:546-7).

d.   Strengths and limitations of training

A variety of factors contributes to or detracts from the popularity of rural family practice training.

On the positive side, residents are often welcomed into communities, feel personally involved, and are exposed to diverse clinical learning opportunities (Rourke & Rourke 1995:996).

The literature highlights a number of problems experienced by residents and teachers in postgraduate training programmes for rural practice. Isolation is the most frequently articulated challenge for both groups. Resident supervision and accommodation were also problematic to some residents. For the teachers, lack of

faculty development and inadequate compensation were difficulties, as were a lack of financial resources and commitment from the medical school. Difficult working conditions such as a demanding schedule, regression to trainee status and a reduced income places strain on residents (Rourke & Rourke 1995:996; Longhurst 1987:2768; Norris & Acosta 1997:418).

The patient population of rural hospitals varies and it is unpredictable as to whether it will provide for an adequate caseload and profile for appropriate skills learning. Many programme directors reported inadequate numbers (volumes) of procedures as a barrier to effective procedural training, as well as a lack of skilled or interested teachers (Sierpina & Volk 1998:423). The use of simulators to learn procedural skills is useful in the initial phases of gaining technical skills, but should not be a substitute for performing procedures on actual patients (Leventhal & Goodman 1981:889, 91).

In some clinical areas, circumstances make it difficult to gain sufficient learning experiences during training. A surprise finding in a study by Norris and Acosta was the strained relationship between rural practice training programme participants and residents in a family medicine programme over the perceived "competition" for clinical experience in obstetrics (Norris & Acosta 1997:418). Holding subordinate, rather than responsible residency positions may also result in feelings of inadequacy due to limited exposure to skills training (Rourke 1988:1058; Watts 1993:1475). Solutions to this dilemma require an understanding of the rural situation, as well as the goodwill of those who control training positions. This implies closer cooperation between specialist and generalist training programmes, using creative solutions to access skills training for rural practitioners within and beyond residency programmes (Kamien & Buttfield 1990:113; SRPC 2001:5; Kelly 1998:469-470; Hamilton 1995:199; Sierpina & Volk 1998:422).

2.4.4   CONTINUING PROFESSIONAL DEVELOPMENT (CPD)

A review of the literature on education and training for rural practice shows a variety of educational interventions applied during undergraduate and residency education

and training, with little focused attention on CPD strategies for rural practice (Norris 1996:86). Medical practitioners have an obligation to their patients to maintain an acceptable standard of care. The information explosion of the modern era leaves the knowledge of medical practitioners already outdated at the time of graduation. Doctors who have been in clinical practice for a number of years find it a challenge to keep abreast of new trends and developments. Also, communities and patients have an increasing awareness of health and disease, and are no longer satisfied with being passive recipients of health care. These elements place an ever-increasing demand on the professional competency of the medical practitioner. CPD aims to change doctors' behaviours and improve patient outcomes, while providing doctors with an opportunity to maintain and improve their clinical performance (Wilkinson 1994:732; Nel & Kent 1994:462; Kelly & Murry 1994:469; Shannon 2003:618).

Deficiencies in providing vocational training and continuing educational support are major barriers to the recruitment and retention of rural family practitioners (SRPC 2001:14; Wise *et al* 1994:314). On the other hand, participation in CPD programmes is an important way for rural practitioners to avoid professional isolation and for sustaining interest and confidence. Another role of CPD is to broaden doctors' horizons and make them more aware of health economics and other concepts used in health care planning. This is important for rural practitioners as they practise at the coalface of where the medical world converges with social and environmental issues (Hamilton 1995:200).

A key recommendation of the WONCA Working Party on Training for Rural Practice is the development of specifically tailored CPD programmes, which meet the needs of rural practitioners (Strasser *et al* 1995:14). The potentially favourable contributions of CPD are, however, undermined by the common use of methods known to be least effective, the absence of learning needs analyses, the *ad hoc* occurrence of CPD activities, and the use of inappropriate educational formats (Cantillon & Jones 1999:1276; Davis *et al* 1995:700; Crozier 1994:783; Stanley *et al* 1993:210; Fox & Bennet 1998:466). CPD activities are more readily available to general practitioners residing in urban than in rural areas (Wise *et al* 1994:314).

Objective needs assessment methods have been shown to be a necessary precursor of effective CPD interventions for rural practitioners (Davis *et al* 1999:867; Gill & Game 1994:663; Kamien & Buttfield 1990:168). There is inadequate data on specific training needs of rural practitioners, with the maintenance of knowledge and skills throughout a career in rural practice receiving little attention. Rural doctors want more input in planning CPD programmes, not so much to influence the topics, but to help ensure that the themes are appropriate to the rural context (De Villiers 2000:12; Wise *et al* 1994:314,316).

a.   CPD content and methods for rural and district hospital practice

The broad nature of rural practice creates the need for a variety of content issues for CPD in rural practice. Rural doctors are likely to have educational needs covering the broadest range of topics, including knowledge and procedural skills. In Australia the content of CPD for rural practice includes training in all of the procedural disciplines and surgical skills to provide emergency care in communities removed from regional support services. Communication skills, an understanding of the rural context and role of other health workers, public health skills, and teamwork are all regarded as important. Narrow categorical programmes are of dubious benefit to rural health care practitioners (Kamien & Buttfield 1990:169; Wise *et al* 1994:317).

Rural practitioners in the Northern and Western Cape provinces of South Africa indicated a preference for clinical subjects, and appeared not to appreciate the importance of learning about public health issues, forensic medicine and ethics. This may be partly due to the large clinical workload that these practitioners manage on a daily basis (De Villiers 2000:15).

McGill University in Canada presents a special CPD course entitled "Rural/Remote Area Medicine". This two-day course is designed by and for rural practitioners to cover their CPD needs, and to allow rural doctors to meet and exchange ideas. Topics range from air transport of critically ill patients, poison antidotes, health issues in

rural communities and the future of rural medicine. Rural doctors also need CPD to help them develop skills in communication technology (Hamilton 1995:197,200).

CPD may take the form of outreach programmes, refresher modules or short resident training periods. Historically, rural doctors have developed their skills in different ways, such as taking time off from practice to attend courses, residency training or to work as an apprentice with experienced colleagues (Rourke 1988:1059; Gutkin 1998:2812; CFPC 1999:2416). Journal reading, telephone and visiting consultant advice, visiting drug representatives, local case discussions and meetings were the most frequently used CPD methods of rural doctors in Canada. Reading was also found to be the main method of CPD used by Australian doctors (Wise *et al* 1994:314-318; Kamien & Buttfield 1990:169; Strasser 1992:809).

In South Africa, rural practitioners in the Northern and Western Cape most commonly used CPD activities readily available to them, namely journal reading and visits by pharmaceutical representatives (De Villiers 2000:14). A more recent study of rural practices in the Western Cape indicated that the most popular methods of CPD were journal reading, attending evening lectures sponsored by the pharmaceutical industry, and refresher courses (Van den Berg & De Villiers 2003:10).

Didactic lectures are not effective in changing doctors' behaviour and have little impact on professional practice. This method still dominates medical education and training and it is almost an admission of failure that it remains the most popular method of formal CPD. Interactive techniques, such as small group discussions, outreach visits and practice-based activities are more effective in facilitating learning (Davis *et al* 1995:700; Stanley *et al* 1993:210; Davis *et al* 1999:867; Delva *et al* 2002:1218; Wilkinson 1994:732). The methods used most frequently by rural practitioners do not always coincide with those deemed most effective.

Outreach visits have been identified as an intervention that may improve the practice of health care professionals. In a Cochrane Library Review on the effects of outreach visits on improving practice or patient outcomes, it was found that educational

outreach visits, particularly when combined with social marketing such as printed materials, appear to be promising in modifying health professional behaviour, especially in relation to prescribing. The outreach interventions reviewed, consisted of a variety of components including written material and conferences plus reminders or audit and feedback. Outreach visits were found to be expensive, but savings may outweigh the costs if targeted at inappropriate prescribing. Further research is needed to assess the effects of outreach visits on other aspects of practice and to identify key characteristics of successful outreach visits (O'Brien *et al* 2003:1-5).

Evidence from educational research underscores the need to develop interventions that focus on the learning needs and practice problems of the individual learner (De Villiers *et al* 2003:1-5). Strategies that have been effective in changing the clinical behaviour of medical practitioners include using respected peers as teachers, identifying authentic as opposed to speculative learning needs, facilitated group discussions, giving feedback on performance and providing opportunities to practise or discuss the application of new learning in practice (Premi *et al* 1994:801). A practice-based small group programme has been developed in Canada and is currently successfully used throughout that country. General practitioners organise themselves into local small groups with the help of programme personnel and meet twice monthly. A chosen group member receives facilitator training. The group activities are centered on specific case material and information sheets that contain reviews of the literature emphasising issues of particular relevance to primary care practice. They found that there was a highly significant overall gain in knowledge from this type of intervention (Premi 1994:801-2).

Rural doctors feel that interactive learning and "hands-on" procedural training were the most effective CPD methods, but that they have poor access to these methods (Wise *et al* 1994:316,317). There is concern that practitioners favour meetings funded by the pharmaceutical industry, which are not necessarily designed to meet the educational needs of the participants, but form part of a marketing campaign. Mismatches between perceived CPD needs, frequency of use and perceived effectiveness of CPD methods, indicate that pharmaceutical companies should move funding from expensive country tours to interactive face-to-face small group learning

activities (Wilkinson 1994:732; Wise *et al* 1994:317; De Villiers 2000:14). Appropriate CPD for rural practice should accentuate the unique problems of the rural doctor, rather than extrapolations from teaching hospital practice. It is also argued that "inreach" programmes are valuable where rural doctors can provide perspectives to tertiary-based colleagues (Kamien & Buttfied 1990:169).

An apparent paradox is the low use of computer assisted learning, despite the exponential growth of interest in this technology (Wise *et al* 1994:318; De Villiers 2000:12). In South Africa, a successful e-mail list, *Mailadoc*, is available for rural practitioners. The list is used for *ad hoc* discussion of clinical problems and also serves as a support group. Further research is needed to investigate whether more practitioners are using this method in recent years and on the usefulness and effectiveness of the medium.

Voluntary medical audit and other self-directed methods based on a doctor's actual practice produce a greater educational dividend. Contact with visiting specialists was perceived to be a highly satisfactory way of learning, provided that these specialists know and understand the rural context. A specialist can provide support and advice and help maintain or improve the country practitioner's skills, but care must be taken to strike an appropriate balance between specialist and generalist care (Kamien & Buttfield 1990:169).

Mazwai proposed that CPD for rural doctors could consist of attachments to academic complexes, visits to rural hospitals by academics, access to a library service and telemedicine (Mazwai 1997:148). Apart from the conventional continuing education methods, training for procedural skills can include self-instruction and practise, tutoring, precepting, one-on-one in-depth training, mini-fellowships and fellowships (Miller 1997:236).

Special courses in emergency medicine such as the ACLS and similar courses have proved to be very useful to rural practitioners (Kovacs 1997:389-90). Also, special conferences for rural practitioners, rural support programmes providing locum

services and financial support for attending CPD have been very successful in Canada and Australia (Rourke & Strasser 1996:467). In South Africa, RuDASA organises yearly conferences to assist in mobilising and educating rural practitioners. Co-operation with the SA Academy of Family Practice/Primary Care has resulted in a regular column on rural practice in the *SA Family Practice* journal and special streams on rural practice presented at National Family Practitioners' congresses.

b.   Maintenance of competence

Competency is defined as the ability to perform a complex task at a certain level of skill that suggests professional performance as judged by recognised experts in the field. Competence has several components including knowledge, decision-making, technical skills, attitudes, professional habits and interpersonal skills. Before a procedure can be performed, the clinician must have the knowledge to be able to form own judgments about the facts related to anatomy, physiology, pathology, pathophysiology, diagnosis, prognosis etc. Knowledge of the equipment used and of the specific procedure is also required. Practitioners wishing to gain proficiency in performing a procedure should examine how the procedure is relevant to their professional goals, place the procedure in a familiar context, learn according to expected outcomes and practise self-evaluation skills (Miller 1997:232-236).

Methods for evaluating skills competency vary, commonly using supervisor evaluation sheets while other programmes rely on self-reporting. The use of a logbook or a portfolio to record and evaluate clinical experience is useful in assessing maintenance of competence (Tenore *et al* 2001:31; CFPC 1999:2419; Gibbs 2002:609). The competency assessment tool used by the McCord's Hospital vocational training programme provides a list of skills intended as a self-assessment guide, as well as an objective checklist for supervisors. Trainees indicate their self-rated competency for a range of skills on a Likert scale from 0 – 5 where 0 indicates "know nothing" and 5 indicate "can teach someone else happily" (Personal communication: J Giddy).

Competence is furthermore defined by self-assessment in absolute terms (yes or no) or represented by the number of exposures to a particular procedure. Practice is an important component in achieving competence, which assumes that the number of procedures performed is viewed as a measure of competence. Although questionable, the number of supervised practice exposures does play a role in attaining and maintaining competence. However, this number will depend on the procedure under consideration, as well as the individual student, which implies that competency after performing the same number of procedures would not be similar in different students (Kovacs 1997:390,391).

Considerable attention has been dedicated to the discussion on whether a minimum caseload is essential to maintain competence. In the *Joint Position Paper on Training for Rural Family Physicians in Anesthesia In Canada*, the proposal for a minimum caseload was discarded, reflecting the absence of evidence in the literature linking competency with caseload, and advocating a different approach based on continuing education, audit, peer review and quality assurance. Individuals achieve competency at different rates, ruling out rigid competency thresholds based on numbers (SRPC 2001:13; Miller 1997:232).

In South Africa, the MDB has established a technical committee which is currently investigating the awarding of "competency certificates" for certain procedures. Others express concern about the "numbers war" that threatens to exclude family doctors from obtaining privileges for performing procedural skills and the controversy surrounding the documentation of clinical competence. In critiquing an article that attempted to define the number of gastrointestinal endoscopic procedures performed to achieve competency, Susman and Macmillan make the point that competence in different procedures is achieved at different rates, that reliance on success rates can be misleading, and that performing a procedure in general practice on a stable patient is very different from performing the same procedure in a tertiary hospital on a seriously ill patient. They conclude that medical practitioners "must remain alert to the inappropriate amalgamation of numbers, procedural skills and science". There is little evidence that completing a predetermined number of procedures is a valid measure of technical competence (Susman & Macmillan 1994:1591-2; Tenore *et al* 2001:28).

De-skilling is a jargon applied to the alleged attrition of skills through their infrequent use, yet the evidence suggests that the skills themselves are unlikely to decline. Jackson and Diamond performed an extensive review of the literature finding little evidence to suggest that psychomotor skills that are important in the practice of procedural medicine will be lost if not practised regularly. The extent to which the skills were practised during the initial learning phase, is likely to be of greater importance. Thus, it appears of far greater significance to perform more procedures during initial training, allowing for a certain extent of "overlearning", than the regular practice of such skills. Unsubstantiated criticism may, however, adversely affect doctors' skills by reducing their confidence levels (Jackson & Diamond 1993:1633-1639).

There is some evidence that rural doctors who have acquired competence in a procedural skill, for example caesarean section, can maintain their skills with as few as five cases performed annually. The extent to which the skill was practised during the initial learning phase, namely repetition past the point of learning, gives a better index of the erosion of the skill (Deutchman *et al* 1995:81-90; Jackson & Diamond 1993:1633). The *Canadian Joint Position Paper on Training for Rural Practitioners in Advanced Maternity Skills*, points out that the volume of procedures required to achieve competency is poorly understood and that numbers for competency at caesarean section in the literature range from 10 to 100 (CFPC 1999:2419).

Practice experience can improve skills, as Bowman *et al* showed in a study on interview skills. Daily practise resulted in improvement of the skill after qualification without additional training (Bowman 1992:67,68).

A study by Norris *et al* found that the comfort level of family doctors in performing caesarean sections was closely related to the extent of formal training during residency, which included the number of procedures performed during training. Respondents who have performed on average over 30 caesarean sections during residency training, felt either extremely comfortable or very comfortable performing

this procedure, whereas those with little formal training were not comfortable performing the procedure (Norris *et al* 1996:459).

Medical incompetence may in part be due to a lack of skills learnt, thus emphasising the importance of defining course content and curricula for procedural practice (Spike & Veitch 1990:1545). Experienced rural practitioners need appropriate retraining to deliver the safe and cost-effective services that their communities require. Factors driving retraining were found to be patient expectations, and information management, but taking time out for training entails an income loss and possible patient-base loss for those in private practice. Flexible, learner-oriented programmes need to address these issues (O'Brien *et al* 2003:1; Kelly 1998:469).

What is an acceptable minimum standard of competence? When should a rural generalist refer a patient for specialist care, rather than attempt to manage the patient locally? A large gap was found between theory and practice in answering these questions. The pragmatics of the situation such as the logistics of the referral, the local equipment and personnel available, and other factors determine the actual scope of practice more than written standards as reflected by large variations in the scope of practice of generalists depending on their context (Jacques *et al* 1998:17). It is also important to differentiate between competence and confidence. Confidence is the subjective belief in one's ability, while competence is an objective assessment, usually by a more experienced person. Self-expressed confidence must be accompanied by objective feedback for it to be a valid measure of competence (Cameron *et al* 2002:278).

c.   **National organisational approaches**

The literature makes it clear that co-ordinated, national approaches need to be followed in order to facilitate training for rural practice. Such organisation will require leadership from National Colleges of Family Practice, deans of medical schools, licensing authorities, specialist Colleges, provincial and central governments (Gutkin 1998:2812). Various authors propose the creation of academic departments,

which can provide a focus for rural practice training through all stages of medical education and training (Strasser 1993:297; Strasser *et al* 1995:15; De Villiers & Van Velden 1996:1528; Damp 1997:146). These have been established at three Faculties of Health Sciences in South Africa (Bateman 2002:754).

A comprehensive article by Rourke and Strasser compares the organisational approaches used in Canada and Australia and the strengths and limitations of each. The two countries are similar in that a third of their populations live in geographically large, but sparsely populated rural and remote areas, with the balance of the population concentrated in coastal cities. In Canada, strong autonomous university departments of family medicine have developed a range of undergraduate and postgraduate training initiatives for rural practice. This has resulted in intensive training with a strong educational focus. In Australia, postgraduate training is provided by the Royal Australian College of Rural and Remote Medicine, with little input by university departments of general practice. This has resulted in a uniformly integrated national curriculum for rural practice with a strong service focus, while the academic general practice departments remain relatively small (Rourke & Strasser 1996:464-469).

In the Canadian programmes, the residents can choose from a variety of different programmes to suit their needs. Unlike the Australian common national curriculum, Canada does not have a common curriculum for rural practice or advanced skills training. The strong academic departments in Canada, however, perform focused research, as opposed to the Australian College which lacks a focus on research.

In Australia, much debate was generated by the formation of the Royal College for Rural and Remote Practice separate from the Royal College of General Practice. Some argue that a national organisation is necessary to focus on the development of education for rural practice, while others feel that this focus should be inside the national family practice body to ensure cohesion of a bigger group (Rourke & Strasser 1996:468; Gutkin 1998:2812). RuDASA sees rural practice as a branch of family medicine, which fits into the regulatory framework developed for family practice.

The notion that family medicine should primarily drive rural education and training is thus supported.

Many authors argue for the education and training for rural practice to be hosted in Departments of Family Medicine. The majority of rural practitioners are family doctors and a large part of rural practice involves primary care. It is also claimed that family physicians are more able to integrate various vertical areas into comprehensive care than specialist-trained practitioners. Rural family medicine training streams provide the best education for family doctors who plan a career in rural practice (Carter 1987:1715; Rourke 1988:1058; Rourke 1996:1133). This is supported by research demonstrating that formal family practice training had a positive and statistically significant effect on whether respondents reported performing selected procedures or not, as well as on the quality of five specific procedures performed (Weddington *et al* 1986:250).

In South Africa, education and training for rural health care is the responsibility of the academic Departments of Family Medicine. The MBChB courses produce a graduate described as a "basic doctor". Structured postgraduate training courses for rural practice are limited and suffer from a lack of funds, training posts and trainers. The main limitation of these courses is the lack of procedural skills training for rural practice (De Villiers & Van Velden 1996:1528). A few independent organisations such as the McCord's Hospital and the SA Academy of Family Practice/Primary Care, provide vocational training for rural practice. The South African Academy of Family Practice/Primary Care, furthermore, is responsible for the development of the discipline through CPD activities such as national congresses and a national journal, working in close co-operation with RuDASA on educational issues for rural practice (De Villiers & De Villiers 1999:719).

The development of a diploma in rural practice is currently under investigation in South Africa which could be accepted as credit worthy towards training in family medicine (Personal communication: S Reid). Ways in which postgraduate training in family practice in South Africa could become more relevant to the needs of rural practice should be incorporated into postgraduate programmes in family medicine.

The provision of high-quality and accessible medical care for rural populations requires appropriate education of a sufficient number of medical practitioners who can be recruited to and retained in rural practice. The education process is a continuum which begins prior to medical school, involves rural-oriented undergraduate and postgraduate medical school education and training, and extends to continuing professional development for rural doctors. Educational advances on their own are not sufficient for solving the problem of a shortage of rural doctors. Other influences on recruitment and retention must be addressed at the same time, recognising that rural medicine requires specific education and training (Rourke & Strasser 1996:468).

2.5   THE DELPHI TECHNIQUE

The Delphi technique was the method of choice for conducting the third phase of this study. A comprehensive literature survey was done on the Delphi technique in order to gain information that would assist in the valid and quality use of the technique.

2.5.1   BACKGROUND AND DEVELOPMENT OF THE DELPHI TECHNIQUE

The Delphi technique is a method used to manage the complexity of generating, developing and selecting ideas by a geographically separated group of people. It is typically used to address ill-defined problems that require the input of those involved in the issue. The technique derives from the premise that an individual authority is unlikely to solve consensus-based problems, and that "pooled intelligence" is more effective in addressing complex and ill-defined issues (Moore 1987:50).

The Delphi method was invented in the early 1950's by Olaf Helmer and Norman Dalkey as a tool for determining military priorities. Working for the RAND

Corporation, they developed Project Delphi for the purpose of estimating the probable effects of a massive atomic bomb attack on the USA (Linstone & Turoff 1975:xix; Clayton 1997:376; Murry & Hammons 1995:423). The rationale used by its founders was that the properly combined judgement of a specifically chosen group, is better than the opinion of an individual. The first use of its different forms for various applications was published in the 1970s and included a first substantial critique of the technique (Linstone & Turoff 1975:3). At that time its principal use was to make projections in the field of technological forecasting. It has since become adopted as a popular technique in the domains of health and education (Clayton 1997:377).

The Delphi technique is named after the Oracle at Delphi in Greece. An ancient Greek myth held that the Greek god Apollo Pythios, master of the island of Delphi, was able to predict the future with infallible authority (Clayton 1997:376; Jones & Hunter 1995:377; Goodman 1987:729). The Delphi technique is a group method similar to the nominal group technique that allows groups to realise a collective perspective, using structured and well-developed frameworks, resulting in reduced group frustration and improved outcomes. These techniques can markedly increase the quality of group work by improving the group's productivity, promoting appreciation of realities, eliminating possible confusion and inventing alternatives. The nominal group technique is useful to generate ideas and is sometimes used prior to a Delphi survey to identify issues for inclusion in the Delphi technique (Moore 1987:15,50; Jones & Hunter 1995:376; De Villiers *et al* 2003:1-5).

2.5.2 DEFINITION AND CHARACTERISTICS OF THE DELPHI TECHNIQUE

The Delphi technique is defined as a method for the systematic solicitation and collection of judgements on a particular topic through a set of carefully designed sequential questionnaires interspersed with summarised information and feedback of opinions derived from earlier responses (Murry & Hammons 1995:423). Over the years the definition has been extensively modified, becoming more inclusive to cope with changes in the purpose for which it was used. Linstone and Turoff use a broad definition characterising it as a method for structuring a group communication process

so that the process is effective in allowing a group of individuals to deal with a complex problem (Linstone & Turoff 1975:3).

The Delphi technique is described as having a number of main features or characteristics. These include the use of structured and focused questionnaires, allowing respondents to reconsider their opinion through several iterations or rounds, controlled feedback, freedom of expression facilitated by an anonymous process and a statistical response (Jones *et al* 2000:331; Jones *et al* 1992:37; Goodman 1987:729-30).

The difference between the Delphi and other group techniques is that it allows for anonymous group participation. It thus reduces the influence of personalities or imposing views on a group, allows for a larger group to participate in the same process than would be possible in a face-to-face meeting, prevents unproductive disagreements, and permits individuals to anonymously express their opinions without fear of embarrassment or intimidation (Moore 1987:22; Linstone & Turoff 1975:4; Bellamy *et al* 1991:1911).

Anonymity also reduces the effect of the views of the most articulate member on the group, and provides participants the opportunity to change their opinion without embarrassment (Keyes *et al* 1975:320). Anonymity may lead to reduced participant accountability, which necessitates commitment to provide considered responses (Goodman 1987:730).

2.5.3 APPLICATIONS AND CRITERIA FOR USE OF THE DELPHI TECHNIQUE

The Delphi technique is useful wherever it is desirable to obtain the combined judgement or opinion of a group of experts on a particular problem. It provides ways to generate, develop and select between ideas. Delphi surveys can address complex problems by harnessing the collective judgment and informed intuition of experts and

is useful to obtain interdisciplinary dialogue on a particular topic (Jones *et al* 2000:331).

The Delphi technique can be used to (Moore 1987:50) -

> ➢ identify goals and objectives;

> ➢ obtain possible alternatives;

> ➢ establish priorities;

> ➢ gather information;

> ➢ educate a respondent group; and

> ➢ obtain stakeholder views.

The Delphi process provides the individual respondents with a considerable degree of freedom in their expression of an opinion on a problem (Linstone & Turoff 1975:6). Some of the technique's strengths lie in recognising the multiplicity of interests involved in issues, the value of different front-line expertise and the desirability of proceeding on the basis of a consensus informed opinion. It also offers a means whereby a rational review of a social issue may emerge, and enables areas of agreement and disagreement to be identified in a way that is often not possible through other means. It straddles the divide between qualitative and quantitative methodologies (Critcher & Gladstone 1998:431-3). Another advantage is that it enables a large group of experts to be canvassed inexpensively with few geographical limitations (Fink *et al* 1984:979).

Lintstone and Turoff developed criteria for determining when the Delphi technique should be used. It is useful when a problem will benefit from subjective judgments on a collective basis; more individuals are needed to participate than could comfortably do so in a face-to-face meeting; regular meetings are not an option due to time and cost considerations; anonymity is necessary and a heterogeneity of participants should be sought to ensure valid results (Linstone & Turoff 1975:4).

2.5.4   TYPES OF DELPHI

There are three types of Delphi, namely conventional, real-time and policy. Delphi types are also described as classical, policy and decision (Linstone & Turoff 1975:5; Crisp *et al* 1997:116).

The *conventional or classical Delphi* is a forum for facts. It consists of a questionnaire designed by a monitoring team, sent out to a group of experts, with a second questionnaire based on the results of the first. Respondents are usually given at least one opportunity to re-evaluate their original answers based upon the group response. The idea is that the expert panel uses facts to come to a consensus (Moore 1987:51; Linstone & Turoff 1975:5; Clayton 1997:376).

The *real-time or modified Delphi* is a shorter variant. Rather than taking weeks to complete, the process takes place during the course of a meeting, using mechanisms to summarise responses to the respondents immediately (Moore 1987:51; Linstone & Turoff 1975:5; Clayton 1997:377). This is sometimes also called the decision Delphi. This type differs from the others in that the panel members are known to each other, but their responses are anonymous (Crisp *et al* 1997:116,117).

The *policy Delphi* is a forum for ideas. The decision maker is interested in having an informed group present options and supporting evidence rather than having a group reach a decision. Generating consensus is not the prime objective, but rather a clearer understanding of the plurality of points of view. The panel used in the policy Delphi consists of lobbyists who interact with other members of the panel to define and differentiate views (Moore 1987:51; Linstone & Turoff 1975:5; Clayton 1997:377).

2.5.5   HOW THE DELPHI TECHNIQUE WORKS

The conventional Delphi uses a series of questionnaires to aggregate the knowledge, judgments and opinions of experts in an anonymous fashion. This takes place over a series of "rounds", obtaining the opinions of experts about a particular issue, rating agreement repeatedly in response to feedback from previous rounds (Jones *et al* 1992:36).

According to Turoff (1975:88), the Delphi consists of six phases, namely -

- ➢ formulation of the issue;

- ➢ exploration of the options;

- ➢ determining initial positions;

- ➢ exploring reasons for disagreement;

- ➢ evaluating underlying reasons; and

- ➢ re-evaluating the options.

The literature describes the phases in various ways. Firstly a problem must be identified and an appropriate research question phrased. Secondly, a team of experts (panel) is identified and invited to provide opinions based on their knowledge or experience. Commonly the research team or "monitoring group" devises a set of assumptions, solutions or options. These are presented to the panel for its opinion. The panel is requested to participate in a number of questionnaire rounds. On receipt of the responses, the research team analyses and ranks the opinions, using predetermined criteria for agreement and disagreement. A second questionnaire is developed using the results of the first and sent to the participants, including relevant feedback from the first round. Participants then rerank their responses, using the opportunity to change their reply in view of the group's response. The rankings are then again summarised and assessed for consensus (Jones & Hunter 1995:377).

The process ceases when an acceptable degree of consensus is reached. The decision over the number of rounds is largely a pragmatic one. Three rounds are usually sufficient to achieve consensus, with the largest adjustments occurring between Rounds 1 and 2, while fewer changes occur between Rounds 2 and 3 (Bellamy *et al* 1991:1911). The advantages of allowing respondents to reconsider their responses need to be balanced against the level of non-response at each round (Murry & Hammons 1995:424; Jones *et al* 1992:39; Critcher & Gladstone 1998: 432).

2.5.6   FINDING CONSENSUS

Consensus methods are primarily concerned with deriving quantitative estimates by using qualitative approaches. The Delphi and Nominal Group Techniques are two such methods. Features of consensus methods should include anonymity, which avoids dominance and minimises interference. Iteration, controlled feedback and the forming of statistical group responses are important features, the latter using summary measures of the whole group response, thereby giving more information than just a consensus statement (Jones & Hunter 1995:376).

Since the achievement of consensus is the primary objective of the Delphi, it is of crucial importance that consensus criteria be defined for each study using this technique. Consensus can be defined as a gathering of individual evaluations around median responses with minimal divergence (Murry & Hammons 1995:429). The researcher should carefully determine in advance what the definition of consensus for that particular study will be - be it the percentage of panel responses to any item or, in the absence thereof, when stability occurs. Stability is defined as "a measure that takes into account variations from the norm that measures not consensus as such, but stability of the respondents' vote distribution curve on successive rounds of the Delphi" (Murry & Hammons 1995:431). Convergence, meaning little shifting of positions by the participants, can also be used as consensus (Murry & Hammons 1995:429).

Critics of the Delphi find the issue of consensus one of the most contentious components of the method, as definitions range from true consensus to "majority rule". Limiting the method to a predetermined number of rounds cannot be seen as achieving consensus, and arbitrarily determined numerical values are also unconvincing. The difficulties surrounding consensus reiterate the need for alternatives such as focusing on the stability of the response (Crisp *et al* 1997:117).

The literature does not demand hard and fast rules for consensus, but recommends that strict prior defined criteria are laid down on what is meant by achieving consensus in any Delphi study. Criteria that can be used for describing consensus include the support of X percentage of participants and Y number of topics receiving the most votes. The acceptance of ratings higher than a previously determined number such as by at least 51% of the participants, and the elimination of topics that are vigorously opposed by at least Z percent of respondents, are also ways of defining consensus (Fink *et al* 1984:982).

Over-aggressive consensus seeking may invalidate results where it may have been more important to explore areas of disagreement. Resistance to consensus in the form of non-consensual distributions or outlying opinions should be treated with interest, as this may yield new perspectives on the issue under investigation (Critcher & Gladstone 1998:434; Goodman 1987:733).

2.5.7   SELECTION OF EXPERTISE – THE EXPERT PANEL

A fundamental component that sets the Delphi apart from other forms of survey research, is the use of a panel of experts to provide input and judgment on the topic being studied. With each round expert input is used to condense responses, clarify terms, and eliminate duplication for subsequent questionnaires. The validity of the results relies on the participants' commitment and understanding of the aims of the project at the outset (Jones *et al* 2000:331; Keyes *et al* 1975:319; Goodman 1987:732).

Deciding on what constitutes expertise is critical for the Delphi's validity. This means that the researcher has a responsibility to provide and justify the selection procedures used in constituting a particular expert panel (Goodman 1987:731). A suitable participant expert is defined in the literature as someone who possesses the knowledge and experience necessary to contribute to a specific Delphi; or a person who has more knowledge about the subject matter than most other people; or a person who possesses certain work experience; or is a member of a relevant professional association (Clayton 1997:377; Murry & Hammons 1995:429). Participants should qualify for selection because they are representative of their profession and are not likely to be challenged as experts in their field (Fink *et al* 1984:980).

Each participant must be an expert on the matter in some or other way. For clinical issues, an appropriate person would be a clinician in the relevant field; alternatively for health service priorities, participants should include lay persons as well (Jones & Hunter 1995:376). Failure to adhere to carefully determined selection procedures undermines the strength of the Delphi. Furthermore, consensus may be improved by careful selection of the expert panel (Clayton 1997:378; Fink *et al* 1984:981).

The size of the panel is an important consideration. A panel usually consists of 15 to 30 participants of a homogeneous population (i.e. experts from the same discipline), and 5 to 10 per category if the experts constitute a heterogeneous population (i.e. people from different professional stratifications) (Moore 1987:58). The number of participants will vary according to the scope of the problem, available resources, the purpose of the study, the complexity and, therefore, the expertise required. Little improvement results from using groups of more than 25 participants (Fink *et al* 1984:981; Clayton 1997:378; Murry & Hammons 1995:428).

2.5.8   THE QUESTIONNAIRE AND ITS ANALYSIS

The questionnaire is the essential tool of the Delphi and it is important to develop it carefully. Questionnaire development for a Delphi should ideally go through at least ten stages, namely (Moore 1987:57) –

- ➢ deciding to administer a questionnaire;

- ➢ selecting the respondent group;

- ➢ designing the questionnaire;

- ➢ notifying participants (optional);

- ➢ using a pilot questionnaire (optional);

- ➢ producing the questionnaire;

- ➢ distributing the questionnaire;

- ➢ dispatching reminders;

- ➢ receiving completed questionnaires; and

- ➢ analysing the responses to questionnaires.

The research team commonly devises the first questionnaire, using their own background knowledge and literature available on the problem. Alternatively, first round questionnaires may use an open-ended format to elicit individual judgments from panel members, amounting to a brainstorming session (Murry & Hammons 1995:424; Jones *et al* 2000:331). It is important that a balance between open and closed questions be maintained, especially in the earlier rounds, so that respondents can refine or challenge the way the questionnaire defines the field (Critcher & Gladstone 1998:435).

Demographic information on the respondents can be obtained to demonstrate the similarity or diversity of the panel which may influence their responses. Instructions to assist the participants in completing the questionnaire must be clear and simple and the participants must be assured of anonymity (Moore 1987:59).

Commonly, participants are required to indicate their level of agreement with each statement by rating the statements using a five point scale, (sometimes a 7- or even a 9-point Likert scale is used), using zero as a mid or neutral value. Participants are

invited to suggest further possible opinions (Clayton 1997:379; Keyes *et al* 1975:320; Jones *et al* 1992:37).

Ranking responses assists panelists to see how their responses compare with those of the group, supporting prioritisation of outcomes. Forcing participants to identify specific items by offering a finite number of ranking options is a way of allowing the participants to commit themselves on a particular item (Jones *et al* 2000:331; Goodman 1987:732).

The elaborateness of evaluation procedures depends on the purpose of the study. Often single dimension calculations of overall means and ranges are sufficient to identify consensus (Critcher & Gladstone 1998:436).

Statistical group responses are important features of the Delphi. This provides a statistical summary of the group's view on specific items. Median, mean scores and percentages for each statement can be calculated to provide an indication of the level of agreement amongst respondents. Standard deviation (SD) is used to provide a measure of dispersion and as such gives an indication of the degree of consensus. Data summary can consist of the group mean (x) and standard deviation (l---x---l) indicating results of corresponding items on the Likert scale. Feedback is usually given showing the responses of the group, as well as the particular person's response (Jones *et al* 1992:37; McKnight *et al* 1991:56; Goodman 1987:730).

2.5.9   CHALLENGES AND LIMITATIONS OF THE DELPHI TECNIQUE

One of the problems of the Delphi technique is that those who apply the Delphi do not always adhere to its basic principles. Many variants of the Delphi have thus emerged (Goodman 1987:731).

The Delphi technique is time consuming (average estimate of 44.5 days) and this may cause frustration for the participants who may not see immediate results for their

efforts (McKnight *et al* 1991:57). Costs involved include postage (if mail questionnaires are used), printing, personnel and respondent time. The researcher may have a bias that could distort the results, or be inclined to impose restrictive processes in order to achieve consensus so that useful extreme views are suppressed. There may be interpretation difficulties amongst the respondents and the lack of face-to-face contact may create a feeling of detachment and loss of interest on the part of respondents. It is important that the latter point be countered by providing as much contact and information to the respondents as possible (Moore 1987:66).

Reasons for failure of some Delphi studies include the imposition of preconceptions on respondents and poor techniques of summarising and presenting the group response. The researcher should not underestimate the demanding nature of the process. The role of the respondent is more that of a consultant than only that of a passive participant. Disagreements should be explored and not ignored in the push to achieve artificial consensus. The integrity of the researcher must be unquestionable and technical difficulties such as participant selection, balancing open-ended and closed questions, and estimating time required to completion need to be taken into account (Linstone & Turoff 1975:6; Goodman 1987:732).

2.6   CONCLUSIONS ON THE LITERATURE

➢ The literature review outlines the premise of the DHS in South Africa, linking that to the specific role of the district hospital in the DHS.

➢ As district hospitals are mostly situated in rural areas, the scope of practice for district hospitals and rural practices are described in order to advise on the development of appropriate education and training for district hospital practice.

- Furthermore, factors influencing the recruitment and retention of rural practitioners are outlined. The literature on these areas to a large extent informs <u>Phase One</u> of this study.

- The literature on education and training for rural and district hospital practice is described by outlining areas of importance in undergraduate education and training, internship training, vocational training, postgraduate education and training and continuing professional development for rural practice.

- In addition, an extensive review of the literature on the use of the Delphi technique is provided. This literature informs <u>Phase Three</u> of the study.

CHAPTER 3

METHODOLOGY

The study was conducted in three phases, consisting of the following elements:

Phase 1: Knowledge and skills gap analysis:

- ➢ Medical officer questionnaire.

- ➢ District hospital data.

- ➢ In-depth interviews.

Phase 2: Feedback to stakeholders:

Phase3: Expert consensus:

- ➢ Delphi round 1.

- ➢ Delphi round 2.

- ➢ Delphi round 3.

3.1 PHASE ONE: KNOWLEDGE AND SKILLS GAP ANALYSIS

Phase One utilised two sources of information; namely district hospital medical officers and district hospital records. The two instruments used to collect data from medical officers, were a questionnaire containing quantitative, as well as qualitative elements, and in-depth interviews based on the free-attitude interview technique.

3.1.1   MEDICAL OFFICER QUESTIONNAIRE

The medical officer questionnaire was developed in conjunction with the Provincial Government, Western Cape (PGWC) Health Department and consisted of the following four sections:

- ➤ Demographic information.

- ➤ Education, training, experience and updating.

- ➤ Competency ratings.

- ➤ Open questions.

The section on competency ratings of knowledge and skills required district hospital services to be divided into five categories, using the existing district hospital service platform as follows:

- ➤ In-patient services.

- ➤ Emergency and trauma services.

- ➤ General out-patient services.

- ➤ Outreach and support to Primary Health Care (PHC).

- ➤ Hospital management and public health issues.

In each of these categories, three specific issues were explored. These were competency ratings, reasons for low competency ratings and referrals. A competency rating scale was developed which employed the tools developed in the McCord's Hospital vocational training programme (Personal communication: S Reid). The rating used for exploring low competency was derived from a review of the literature and adapting it to local conditions.

It was not possible to include competency ratings in all the knowledge and skills areas required for district hospital practice due to their extensive nature. For this reason, a

number of proxy markers which defined the ability to function in a district hospital were identified in each of the five categories. In the surgical category, the proxy markers were the most advanced procedure in that discipline which was included in the national district hospital service package document (DOH 2002). The identification of proxy markers for problems in medicine proved more difficult. Management of specific conditions was identified as the gold standard for competency in particular areas, assuming that, if a practitioner was able to manage that particular problem, she or he would be able to manage others which were deemed to need a lesser degree of knowledge or skill.

The open questions were drafted to explore the respondents' opinions of their knowledge and skills; conditions in district hospitals; and issues influencing the retention of district hospital medical practitioners. The questionnaire was presented in English and Afrikaans with both versions included in the documentation. The questionnaire was piloted and adapted before it was administered. The questionnaire is attached as Appendix A.

3.1.2   DISTRICT HOSPITAL DATA

Data collection sheets for information gathering from district hospitals were developed, piloted and subsequently adapted before distribution. The following district hospital records were utilized:

- ➤ Casualty registers (the reason for the encounter).

- ➤ Theatre registers (the surgical procedure and the type of anaesthetic administered).

- ➤ Routine monthly hospital reports (district hospital statistics "Hospital Throughput and Capacity").

> ➤ A short questionnaire to define each district hospital (size of the hospital and community, number of beds, personnel establishment, distance from referral hospital, and support of PHC services). The data collection sheet is attached as <u>Appendix B</u>.

3.1.3   THE SAMPLE

The quality of the research was dependent on the accuracy of the data collected from all district hospitals in the Western Cape, the medical officers staffing those hospitals, and hospital details. The database of hospital information received from the Health Department of the PGWC was inadequate and out-dated. A new database for the study, therefore had to be developed, including all district hospitals, their geographical positioning, number of beds, and number of full-time medical officers, part-time medical officers and community service doctors employed in each hospital. All district hospitals were contacted by telephone to obtain the information from either the Medical Superintendent or Matron-in-charge.

In setting up the database it was found that a total of 147 medical officers (part-time, full-time and community service) staffed district hospitals at the time of the study. All medical officers were included in the sample for the questionnaire due to the limited study population and the possibility of introducing bias with sampling. A target response rate of 80% was set in order to minimise returnee bias. Similarly, all hospitals were included for the collection of information from district hospital records.

The sampling of district hospitals for in-depth interviews was done as follows: District hospitals were grouped according to geographical areas. Purposive sampling was done from each of the areas to include at least one hospital each of different sizes, (> 80 beds; 40-80 beds; < 40 beds), as well as all hospitals staffed predominantly by full-time medical officers due to the particular interest expressed by provincial management in full-time employees. The result of this was a list consisting of 20 hospitals. The Medical Superintendent at each hospital was asked to nominate a

medical officer to be interviewed. The latter was necessary as it was impossible to predict which practitioner would be available at the time of the site visit. The research assistant obtained informed consent from each interviewee before the interview. Community service doctors were not included in the interview sample as they were not the focus of the study.

There was a concern about the fact that Medical Superintendents were asked to nominate the medical officer for the interview which could have introduced some bias into the sampling. However, this was found to allow balanced views to be expressed, as negative aspects highlighted by supposedly positive interviewees would invariably be closer to the truth.

Copies of hospital reports were collected for three months (i.e. March, April, May 2001). Copies of theatre records for the same three months were requested from all the hospitals. Copies of casualty records were asked for from all hospitals for one month only (i.e. May 2001). Some of the hospitals experienced difficulties in submitting the large volume of data for a three-month period due to the high numbers of casualty patients seen and theatre procedures performed. The time period for the collection of casualty records was, therefore, selectively reduced to a seven-day period in May and one month (May 2001) for theatre records.

3.1.4   FIELD WORK

Because of the importance of achieving a high response rate to the questionnaire, the accuracy and timing of the delivery and recovery of these documents were crucial. A courier system was used to ensure safe, documented distribution and receipt.

At each district hospital, a contact person was identified and contracted by telephone to receive and distribute the research instruments. A package with instructions and research documents was collated for each hospital and couriered to the contact person. The contact person was responsible for the distribution of the questionnaires, the

collection of the information requested from hospital records and the completion of the hospital definition questionnaire.

The 20 district hospitals selected for interviews were visited by the research assistant, accompanied by the principal researcher on four of the site visits to achieve a deeper understanding of the issues and to exercise quality control. The research assistant collected the completed questionnaires, the information from the hospital records and conducted the interviews.

Considerable time and effort was required to set up the visits to the hospital sites throughout the Western Cape. Timing, co-ordination and co-operation by Medical Superintendents, Matrons and medical officers were vital. Although this required a complex administrative process, the task was achieved with minimum costs by combining visits sequentially in geographical areas.

The site visits were extremely interesting and proved an invaluable part of the information collection process. Data could be collected personally and observations and professional contacts could be made. The visits themselves were a major logistical exercise. Despite the distances involved and the rural nature of the venues, all the interactions turned out to be pleasurable experiences with hospitality and full co-operation being given freely by all the hospital personnel. At most of the sites, the researcher was taken on a tour of the hospital and had informal interviews with the Medical Superintendent or other persons interested in the study. Only one hospital initially refused to participate in the study, but was persuaded by the research assistant during the site visit to co-operate and a full interview was completed.

Despite considerable effort to dispatch the research instruments and instructions timeously, as well as to set up the site visits, some information was still unavailable at the time of the site visit. Outstanding documents, as well as data from district hospitals which were not visited, were returned by post or collected by courier. The response rate was improved by telephone, faxed or e-mail reminders, repeated personal calls to the district hospital's contact person and couriers being dispatched to

collect the outstanding information. Although this increased costs, it made a significant contribution to the response rate and ultimately to the validity of the study.

3.1.5   THE IN-DEPTH INTERVIEWS

In-depth interviews using the free-attitude technique were conducted. The key question used to initiate the interview was "What is your experience of the professional skills you have to perform in a district hospital?" During the rest of the interview no further questions were asked and the interviewee was allowed to comment in-depth on issues that were of importance to him or her. Discussions were facilitated by probing, clarification, questioning, as well as non-verbal facilitative techniques (Mash 2002:41).

3.1.6   DATA ANALYSIS

a.   The quantitative data

The information on the Hospital Throughput and Capacity forms was captured, using Microsoft Excel spreadsheets and analysed by the Statistical Analysis Systems (SAS) package.

The entries in the column on "presenting problem" in the Casualty Registers were coded according to the International Classification of Primary Care-2 (ICPC-2) (WONCA ICPC-2 1998). These codes were grouped together according to systems (as per the ICPC-2), and the numbers per code for each hospital were then counted and captured onto a Microsoft Excel spreadsheet. In some of the systems, subdivision into categories was done to allow for the more common conditions to be reported individually. The Excel spreadsheets were thereafter transferred to the SAS package for analysis.

The procedures on the Theatre Registers were analysed by using a coding system which was developed by initially recording the procedures from three typical hospitals and identifying trends in procedures performed. From this data, categories of surgery and anaesthetics performed were identified (e.g. general surgery, orthopaedic surgery, obstetric and gynaecological surgery) and the individual procedures were then grouped according to the categories which were derived. The numbers of procedures and categories were recorded on Microsoft Excel spreadsheets which were thereafter transferred to the SAS package for analysis.

All the questionnaires which were returned, were checked on receipt, cleaned and coded. The quantitative data in the questionnaires was captured onto a spreadsheet, specifically designed for the study and analysed by the SAS package. Depending on whether the data was demonstrating a normal or abnormal distribution curve, parametric or nonparametric statistical testing was utilised in the analysis. Correlations were drawn between a number of variables including age, gender, years of experience, categories of medical officers, and differences in the knowledge and skills competencies between different categories of medical officers. P-values were determined for the various variables and a p-value of 0.05 was considered statistically significant for this study. Bias was minimised by including all the district hospitals and medical officers in the quantitative survey and by obtaining a statistically significant response rate. The possibility of systematic errors was addressed by the combination of a range of quantitative and qualitative data. External validity was ensured by the collection of data from a large geographical area (the whole of the Western Cape province). The statistical analysis was conducted by the Medical Research Council.

b.   The qualitative data

The interviews were audio-taped and transcribed. The qualitative responses from the questionnaire were captured onto Microsoft Word documents. The data was analysed in two phases, initially by treating the data sources as documents in their own right

and later by juxtaposing various data sources with each other. The following six steps of probing depth analysis were used (Meulenberg-Buskens 1996):

➢ Read and reread text to familiarise the content.

➢ Identify main issues emerging from the text.

➢ Formulate themes on the basis of the emerging issues.

➢ Reformulate the themes in order to do justice to the text, while excluding prejudice and bias.

➢ Develop a conceptual or theoretical framework to provide new meaning to and understanding of the theme.

➢ Continue the process until the text is exhausted.

In keeping with the first step of qualitative analysis, the researcher read and reread the transcriptions refraining from commenting on or categorising the data to minimise prejudice in the analyses. Deliberately holding the data lightly in a non-structured and amorphous way favoured the development of fresh themes and reduced the influence of the researcher's personal theoretical framework on the data.

During the next phase of the analysis, the researcher reread the transcriptions, simultaneously labeling sentences and paragraphs. The labeling used was based on concrete headings describing the issues and content in that part of the text. The labels used became repetitive after a few interviews and a minimal number of new headings were introduced subsequently.

The text of the interviews was cut into strips according to the labeling of the text. The text extracts were then pasted on large newsprint sheets. Grouping the labels on the newsprint sheets, organised a number of the smaller areas together which subsequently formed coherent categories. These categories represented bigger functional groupings which were used to analyse the data into emerging themes and sub-themes.

On completion of the labeling process of the final transcriptions of the full-time medical officer interviews, a conceptual framework describing the experience of full-time medical officers crystallised from the data. This process linked many of the influences in a flowing, logical and coherent manner into a new theoretical model which provided insight into the interrelationship of the many issues which surfaced during the interviews. This diagram was further refined into a theoretical framework during the next stage of the analysis. Other conceptual models were ultimately formulated from the data. Thus, after initially decontextualising the data in the earlier phases of the analysis, it was recontextualised within conceptual frameworks ensuring that the patterns agreed with the context from which they were collected.

One of the interviews with a part-timer was deemed to be "deviant" as the format differed slightly from the others. The medical personnel had initially refused to participate in the study because they felt that senior management might use the results of the study against them, but eventually agreed to participate after discussion with the research assistant. When the taping for the interview started, there was another doctor in the room and the research assistant felt he could not be asked to leave due to the already hostile situation. The second doctor contributed only a few paragraphs at the beginning of the interview before leaving. These paragraphs were disregarded during the analysis. It was decided to include this interview in the analyses as it might raise interesting points. In the end it was found that the outcome of this interview did not differ significantly from the other interviews, except for a stronger focus on the medico-legal risks posed to part-time medical officers in district hospitals.

The material became repetitive after analysing about 15 interviews which indicated that the information had become saturated at that stage. Nevertheless, the remaining

transcriptions were analysed similarly to the initial set. As the analysis progressed, it became clear that the interviews needed to be analysed in two subgroups, namely the full-time and the part-time medical officers respectively, as issues specific to each category emerged from the respective transcriptions. The themes were written up utilising appropriate quotes for each theme and sub-theme. The quotes assisted in assuring that the results remained true to the text.

The maintenance of quality in the analysis of the qualitative data was important. Reflexivity was introduced into the analysis by an awareness of the preconceptions brought into the project by the researcher, identifying and recording the researcher's frame of reference and theoretical framework before initiating analyses and looking at the data for competing conclusions (Malterud 2001:485).

Choosing the in-depth interview technique enhanced the internal validity of the qualitative work. It was important in this study to explore individual views for which other methods such as focus group discussions would not have been suitable. The stepwise manner of the sampling assisted in answering the research questions more effectively and supported the external validity of incorporating the whole province. Differences in health service delivery amongst the nine provinces in South Africa, however, limit the wider generalisability of the study.

Validation of the results was performed by ensuring coherence through contextualising, as well as triangulation of the results using different quantitative and qualitative research methods. Credibility was improved by the strict application of the free-attitude interview technique without introducing the researcher's agenda, critical self-awareness and adhering to the trustworthiness principle throughout the study (Malterud 2001:486; Hamberg *et al* 1994:177). The quality trail for the in-depth interviews is attached as Appendix C.

3.1.7 ETHICAL CONSIDERATIONS

The study protocol was approved by the University of Stellenbosch Research Committee and registered as project number 2001/C040.

Permission was granted by the PGWC to conduct the study and a letter to this effect from the PGWC was delivered to all the hospitals. Additionally, permission to collect the information was obtained from the Medical Superintendent at each hospital.

Participating medical officers provided informed consent after receiving a letter outlining the objectives of the research project and assuring them of the anonymity of the data. The questionnaires were completed and analysed anonymously with an identification system for follow-up of outstanding questionnaires only known to the research assistant. The interviews were analysed anonymously. The information obtained from district hospital records was anonymous, as it did not reveal the identity of any patient or personnel member.

The Health Systems Trust awarded a research grant to facilitate the study, registered as grant number 272/01.

3.2 PHASE TWO: FEEDBACK TO STAKEHOLDERS

Phase Two consisted of a process of discussion and feedback on the findings of Phase One. The aim of Phase Two was to obtain input from a variety of interested parties on the results and recommendations formulated in Phase One, so that these could be used to advise provincial managers on a human resources plan for district hospitals.

The results were presented to a large number of stakeholders on provincial, national and international levels comprising policy makers, educators, statutory councils, professional bodies, service managers, district hospital personnel and the private

sector. This was done by means of formal presentations of the findings and distribution of the report (see Table 3 for the categories of stakeholders and list of consultations).

TABLE 3: PHASE TWO CONSULTATIONS

Category	Consultation
Policy makers	Member of Executive Committee (MEC) for Health, Western Cape province
	Associated Academic Hospitals' Meeting (Deans, PGWC management)
	National Director-General: Health
	National Deputy Director-General: Health
	National Director: Human Resource Development: Health
	National District Health System Development Committee
	WONCA Working Party for Rural Practice
Statutory bodies	Health Professions Council of South Africa (HPCSA)
	Medical and Dental Professions Board (MDB)
	Subcommittee for Internship Training (MDB)
	Subcommittee for Undergraduate Education and Training (MDB)
	Technical Committee to Determine Requirements for Specific Procedures (Medical) (MDB)
Service Managers	Top management, PGWC
	Regional Directors, PGWC
	Senior Medical Superintendents, Regional Hospitals, PGWC
	Medical Superintendents, District Hospitals, PGWC

Conferences	Ottawa International Conference on Medical Education: 2002
	6th RuDASA Congress: 2002
	Academic Year Day, Faculty of Health Sciences (FHS), University of Stellenbosch: 2002
	Public Health Association of South Africa (PHASA), Public Health Conference: 2003
	12th National Family Practitioners' Congress: 2003
Medical educators	Health Science Educationalists, University of Cape Town
	MBChB Programme Committee, University of Stellenbosch
	Dean and MBChB Module Leaders, University of the Free State

A two-day workshop, organised by the Western Cape Rural Hospital Services planning group, was held specifically to use the results of Phase One as the basis of planning rural district hospital services. The aim was to develop a rural hospital service plan that was aligned to the *Western Cape Strategic Position Statement* (SPS), which provides a 10-15 year vision for the reshaping of health services in the province. The workshop was attended by the Chief Director: Mental and Rural Regional Health, Regional Directors, Senior Medical Superintendents at regional hospitals, Medical Superintendents of district hospitals, Deputy Director: Nursing Services, Deputy Director: Human Resource Management, Deputy Director-general: Operations, an educational expert and the researcher.

The workshop used the following frameworks for debate:

➢ Agreement on the role and functions of hospitals, including in-service delivery, specifically defined service packages; outreach and support to drainage areas; teaching and training; and research.

➢ Consensus on specific issues such as the service platform, service package, and a human resource plan with specific reference to the clinical component.

➢ Discussion of issues concerning the level of care for district hospitals, the defined service platform and the role of community health centres versus out-patient departments; key issues of service packages, for instance in providing of forensic services; and finally a human resource plan for medical practitioners in terms of personnel mix, appropriate skills mix, and recruitment and retention strategies.

3.3   PHASE THREE: EXPERT CONSENSUS

Phase Three utilised the Delphi technique to formulate ways on how to address the district hospitals' medical officers' identified knowledge and skills gap by engaging a panel of experts in an iterative process of consensus forming.

3.3.1   SELECTION OF THE EXPERT PANEL

The expert panel for the Delphi technique used in this study was purposefully compiled using the following categories:

➢ Experts in rural health education and training

Defined as persons appointed in rural health academic positions at universities or others involved with training of medical practitioners for rural practice. Furthermore, individuals involved in policy formulation and curriculum planning for rural health education in South Africa was included.

> Experts in managing rural health services

Defined as persons involved in managing rural health services. This included Regional Directors, Medical Superintendents of district and regional hospitals, and provincial Directors of rural health services.

> Experts in rural health service delivery

Defined as senior practitioners involved in service delivery in district or regional hospitals with extensive experience of clinical work in these services.

A letter requesting participation in the study was sent to persons identified in the above-mentioned categories (a total of 42). The letter explained the aim and format of the study, stipulated time frames and emphasised the need of availability for all the rounds. Thirty-three persons agreed to participate in the study. The first questionnaire was dispatched to the participants using e-mail or fax, depending on the preference of the participant, together with clear instructions on how to complete the questionnaire and providing a return date. Respondents' queries were answered by e-mail or telephone. The response rate was improved by repeated telephone, faxed and e-mail reminders. Eventually 24 persons replied.

The second questionnaire was sent to the 23 Round 1 respondents, using the same method as before. (One person requested not to be included in Round 2.) Summarised feedback on the results of the first round was sent with the Round 2 questionnaire. The complete Round 1 report was offered to all and sent to those requesting it. The response rate was improved using similar methods as during Round 1.

The Round 3 questionnaire was sent to the 20 experts who completed Round 2, together with summarised feedback and trends from the Round 2 results. Follow-up methods were similar to those in the previous rounds.

3.3.2 QUESTIONNAIRE DEVELOPMENT

The first questionnaire for the Delphi technique used in Phase 3 was developed and based on (a) the results of Phase 1; (b) the input obtained from Phase 2; and (c) a planning meeting with a medical education and rural health expert. It was felt that knowledge and skills categories identified in Phase 1 should be used as a basis for the questionnaire, as opposed to attempting to list all the knowledge and skills which a medical practitioner in a district hospital should have. Such a listing would have been impractical. It was also an important consideration to link the knowledge and skills gap identified in Phase One to consensus seeking on methods to bridge the gap in Phase Three.

Firstly, a list of 55 knowledge and skills areas was identified and categorised as follows:

- ➢ Knowledge and skills areas that were commonly encountered or performed in district hospitals in the Western Cape.

- ➢ Knowledge and skills areas in which gaps were identified amongst Western Cape district hospitals' medical practitioners.

- ➢ Knowledge and skills areas defined as special needs for Western Cape district hospitals and the medical practitioners who were staffing those hospitals.

Secondly, a list of methods to update knowledge and skills areas was drafted. The most appropriate method for updating (generally a choice of three methods) a particular knowledge or skills area was identified in consultation with a medical education expert. Prioritisation of educational methods for each area was necessary to limit the size of the questionnaire.

Respondents were asked to rate their agreement with the *necessity to update* the knowledge or skills area, the optimal *frequency of updating* and the usefulness of

updating methods, using a four-point Likert scale. The Likert scale offered the options *strongly disagree, disagree, agree, and strongly agree*. A neutral middle point was deliberately excluded in order to encourage respondents to commit themselves to a choice. Respondents were, furthermore, invited to make comments on each of the knowledge or skills areas and the proposed educational method. Qualitative feedback at the end of each section and in a general feedback section at the end of the questionnaire was asked for.

It was important to include demographic information in order to perform relevant statistical analyses. The demographic data for Round 1 included age, gender, year of qualification, nature of current employment, postgraduate qualifications, and defining of own expertise in rural health. The Round 1 questionnaire is attached as <u>Appendix D</u>.

The Round 2 questionnaire was developed after analysis of the Round 1 results. The demographic information for Round 2 was reduced to include only gender, age, current employment and defining of own expertise in rural health. The latter was necessary to draw inferences needed between demographical variables and the other variables. Only the questions on which consensus was <u>not</u> reached in Round 1 were included in the second questionnaire, totaling 27 knowledge or skills areas. Two additional sections of questions were formulated following the trends that emerged from the results of Round 1. These additional sections attempted to define terms and issues related to updating of knowledge and skills areas, frequency of updating, and suitable updating methods. The Round 2 questionnaire is attached as <u>Appendix E</u>.

The Round 3 questionnaire was developed after having completed the Round 2 analysis. The demographic information for Round 3 was further reduced to include only age, gender, and expertise in rural health. This information was necessary for the same reason as in the case of Round 2. Questions on which consensus was <u>not</u> reached in the second round were included in Round 3. Some questions were rephrased to clarify outstanding issues. A section was added to explore the usefulness of the range of educational methods suggested in the study using a five-point Likert

scale. A qualitative question to explore lack of consensus was added. The Round 3 questionnaire is attached as <u>Appendix F</u>.

3.3.3 ANALYSIS

The qualitative responses were transcribed onto a Microsoft Word document, labeled and grouped together in similar categories. The data was then examined for emerging themes. The completed questionnaire datasets were cleaned, coded and the quantitative responses captured onto an Excel spreadsheet. The Excel spreadsheets were thereafter converted to STATISTICA data sheets and analysed by the Centre for Statistical Consultation at the University of Stellenbosch using STATISTICA 6.

In Round 1, responses to the Likert scale questions were grouped into two categories, namely agreements and disagreements. Consensus was defined as 70% or more of the respondents being in agreement with a statement (i.e. the total of responses to "strongly agree" and "agree"), or 30% or less of the respondents being in agreement (i.e. the total of responses to "strongly disagree" and "disagree"). The latter was defined as indicating consensus on disagreement with the statement.

➢ Means and standard deviations (SD) were calculated for all the responses. In Rounds 2 and 3, the mean was used to provide a numerical indication of the overall support for a statement and to differentiate between similar percentage responses. Using a Likert scale from 1-4, a mean of more than 3 or less than 2 was taken as agreement. Values between 2 and 3 thus indicated uncertainty. The SD was used to provide a measure of dispersion of the responses and as such indicating the degree of consensus. Although this was a precise way of calculating consensus, using percentage agreement as consensus in Round 1 was a more practical way to deal with the large number of variables in the initial round. In Rounds 2 and 3 the mean became more useful as it could indicate numerical differences in similar percentages of consensus found, whereas the SD provided a good measure of certainty of responses. In Round 1, the mean was used to examine which of the methods suggested for updating in all three

categories received the most support overall. This was done by calculating the average for each suggested method.

Categorical data analysis was done on variables where differences were expected when comparing demographic characteristics with other variables. From these analyses using the Pearson Chi-square test, statistically significant differences were investigated, using a p-value of equal to or less than 0.05. Finally, a common principal component factor analysis was performed on the variables to detect the nature of the underlying unobserved common factors, which were used in explaining the correlations between the observed variables. These factors were given names for identification purposes and for improved understanding.

3.3.4   ETHICAL CONSIDERATIONS

The study protocol was approved by the Postgraduate Education Committee of the Faculty of Health Sciences, University of Stellenbosch. Informed consent was obtained from all the participants. Anonymity was ensured, as respondent's codes were only known to the data typist. Furthermore, the data was analysed and reported anonymously.

Funding for the study was received from the Faculty of Health Sciences, University of Stellenbosch, fund number K839.

CHAPTER 4

ANALYSIS OF RESULTS

SECTION ONE

4.1   DISTRICT HOSPITALS

4.1.1   NUMBER AND SIZE OF DISTRICT HOSPITALS

There were 27 district hospitals in the Western Cape Province at the time of the study, with a total number of 1528 beds. The biggest district hospital in the Western Cape was at Oudtshoorn with 146 beds and the smallest at Porterville with 15 beds. Table 4 lists the hospitals and their number of beds.

TABLE 4:   LIST OF DISTRICT HOSPITALS AND NUMBER OF BEDS

HOSPITAL	BEDS	HOSPITAL	BEDS
Oudtshoorn	146	Montagu	49
Knysna	98	Robertson	46
Swartland, Malmesbury	98	Otto du Plessis, Bredasdorp	46
Stellenbosch	97	Hermanus	37
Mossel Bay	90	Prince Albert	35
Vredendal	84	Ladismith	35
Ceres	80	Citrusdal	34
False Bay	65	Laingsburg	28
Caledon	65	Westfleur, Atlantis	28
Riversdale	60	Uniondale	26
Beaufort West	60	Radie Kotze, Piketberg	22
Swellendam	57	Murraysburg	22
Vredenburg	53	Lapa Munnik, Porterville	15
Clanwilliam	52		
TOTAL BEDS			**1528**

All 27 hospitals returned the District Hospital Definition Sheet. All of the hospitals provided a 24-hour casualty and emergency service. All but two (Laingsburg and Murraysburg) had a theatre service while the theatre at Westfleur Hospital was not functioning during the time of the study due to renovations. All hospitals indicated that they received referrals from primary care level facilities. Eleven hospitals indicated that they did not take part in outreach and support services to primary health care (PHC) facilities. The hospitals were staffed by 147 medical officers (MOs) (n=27) and 1202 nurses (n=26) at the time of the study.

The mean distance to secondary referral hospitals was 117.5 kilometers (SD 69.3; n = 26) with Vredendal Hospital the furthest away from a referral hospital at 300 kilometres. Secondary hospitals used for referral were Somerset Hospital (2), Paarl Hospital (7), Hottentots Holland Hospital (3), Eben Dönges Hospital (6), George Hospital (8) and Victoria Hospital (1). The mean distance to another district hospital was 76.1 kilometres (SD 80; n = 26). Population sizes served by district hospitals varied greatly with Murraysburg having the smallest population (5000 persons), while False Bay Hospital served a population of 370 000 persons.

4.1.2   HOSPITAL REPORTS

The hospital reports (Hospital Throughput and Capacity Statistics Sheets) for three months were received from 23 hospitals. One hospital refused to submit this information, while efforts to collect the information from the three remaining hospitals were unsuccessful, despite numerous follow-up actions. Table 5 specifies the average workload of Western Cape district hospitals. Westfleur Hospital in Atlantis managed the most casualties and out-patient cases per month, while Oudtshoorn Hospital performed the most operations, deliveries and had the highest number of in-patient days. Some of the district hospitals did not have an outpatient department (OPD) as out-patients were managed by Community Health Centres (CHCs) or district surgeons in the same town.

TABLE 5:   PATIENT THROUGHPUT PER MONTH: WESTERN CAPE DISTRICT HOSPITALS (n=23)

SERVICE	MEAN	SD	MINIMUM	MAXIMUM
Casualties	773	574	48 (Swellendam)	2002 (Atlantis)
Deliveries	65	38	13 (Porterville)	187 (Oudtshoorn)
Operations	70	63	4 (Citrusdal)	238 (Oudtshoorn)
Out-patients	1690	1702	22 (Porterville)	6410 (Atlantis)
In-patient days*	1231	708	66 (Atlantis)	3246 (Oudtshoorn)

*   The number of in-patient days is the number of days spent in the institution for all in-patients. A day is measured at midnight. Day cases are, therefore, not included (PGWC 2002:79).

4.1.3   CASUALTY RECORDS

A total of 20 district hospitals submitted copies of their casualty registers. Information from 18 hospitals was suitable for analysis. Exclusions were necessitated by incomplete records and lack of dates. A total of 3297 patient encounters were recorded for a seven-day period in May 2001. The hospitals in Atlantis (14%, 461 encounters) and Oudtshoorn (11.4%, 377 encounters) topped the list for encounters, with Porterville (1.1%, 37 encounters) and Citrusdal Hospitals (1%, 33 encounters) having the lowest number of cases during this period. Table 6 lists the number of encounters and relative percentages for each hospital.

**TABLE 6:   NUMBER OF ENCOUNTERS IN DISTRICT HOSPITALS'
CASUALTY DEPARTMENTS OVER A SEVEN-DAY
PERIOD**

HOSPITAL	PATIENTS	%
Citrusdal	33	1.0
Porterville	37	1.1
Ladismith	79	2.4
Bredasdorp	89	2.7
Vredendal	95	2.9
Swellendam	107	3.2
Caledon	127	3.8
Riversdale	128	3.9
Montagu	139	4.2
Beaufort West	150	4.5
Malmesbury	192	5.8
Knysna	224	6.8
Robertson	232	7.0
Mossel Bay	269	8.1
Ceres	270	8.2
False Bay	288	8.7
Oudtshoorn	377	11.4
Atlantis	461	14.0
TOTAL	**3297**	**100**

The presenting complaints for these 3297 encounters were classified and analysed
according to the ICPC 2 (WONCA 1998). Musculo-skeletal problems, including
complaints related to joints, muscles, injuries to limbs (excluding fractures) were most
frequently encountered (399), followed by lacerations, bites and bruises (388).
Assaults (294) and diarrhoea, vomiting and gastro-enteritis (264) were also high on
the list. Table 7 shows the nature of the complaints, the mean and SD, as well as the
hospitals which recorded the highest incidence. The value of reporting the mean, SD
as well as the maximum in the table is its usefulness in estimating the learning
opportunities for students at various district hospitals.

TABLE 7: **REASONS FOR ENCOUNTER IN DISTRICT HOSPITALS'**
CASUALTY DEPARTMENTS OVER A SEVEN-DAY
PERIOD

REASONS FOR ENCOUNTER	TOTAL	%	MEAN	SD	MAXIMUM	HOSPITAL
Musculoskeletal problems	399	12.1	22	14	50	Atlantis
Lacerations, bites, bruises	388	11.8	21	12	38	Atlantis
Assaults	294	8.9	16	15	55	Atlantis
Diarrhoea, vomiting, gastroenteritis	264	8	15	14	59	Oudtshoorn
Tight chest, asthma	211	6.4	11	16	70	Atlantis
Chest problems (excluding asthma)	165	5	9	10	40	Oudtshoorn
Upper respiratory tract problems	156	4.7	9	8	28	Atlantis
Neurological complaints & headaches	147	4.5	8	7	29	Atlantis
Abdominal pain (general or localised)	118	3.6	6	6	21	Oudtshoorn
X-ray, Electrocardiograph (ECG)	90	2.7	5	6	19	Ladismith
General complaints (fever, weakness)	87	2.6	5	6	26	Atlantis
Procedures: POP, stitches, drainage	83	2.5	5	4	12	Robertson
Bandages, dressings	76	2.3	4	7	23	Malmesbury
Skin infections (abscess, impetigo)	65	2	4	3	12	False Bay
Psychiatric problems	65	2	4	3	8	Knysna
Cardiovascular problems	57	1.7	3	3	9	Atlantis
Poisonings, drug overdose or reactions	55	1.7	3	4	17	Ceres
Urological & male genital problems	48	1.5	3	2	9	Mossel Bay
Motor vehicle accidents (MVA)	47	1.4	3	3	8	Caledon
Examination, follow-up visits	42	1.3	2	6	24	False Bay
Other abdominal complaints	41	1.2	2	2	7	Mossel Bay
General skin problems	41	1.2	2	2	7	Robertson
Laboratory tests	40	1.2	2	3	9	Ceres
Endocrine problems (diabetes, gout)	39	1.2	2	2	5	Mossel Bay
Eye problems	37	1.1	2	2	7	Ceres
Gynaecological problems	36	1.1	2	3	13	Atlantis
Mouth & teeth disorders	33	1	2	2	8	False Bay
Ear problems	27	1	1	2	5	Robertson
Fractures	27	1	1	2	6	Robertson
Medicine, injections, prescriptions	26	1	1	3	12	Ceres
Pregnancy complaints, complications	25	0.8	1	2	7	Ceres
Unknown	21	0.6	1	1	3	Oudtshoorn
Death	16	0.5	1	1	5	Atlantis
Children's diseases	16	0.5	1	1	4	Knysna
Administrative procedures	11	0.3	1	2	7	Ceres
Coma, unconscious	4	0.1	1	1	2	Bredasdorp
TOTAL	**3297**					

4.1.4 THEATRE RECORDS

Fifteen hospitals submitted copies of theatre records for three months (total
procedures 3074), while 22 submitted records for one month only (total procedures

1770). Figures C and D demonstrate the groups of procedures performed over a one-month (n=22) and three-month period (n=15) respectively. In both instances obstetrical and gynaecological procedures were performed most frequently, followed by general surgical procedures. Cataracts were performed at two district hospitals during the course of the study as part of a public-private initiative.

FIGURE C: PROCEDURES PER DISCIPLINE IN DISTRICT HOSPITALS OVER A ONE-MONTH PERIOD (N=22)
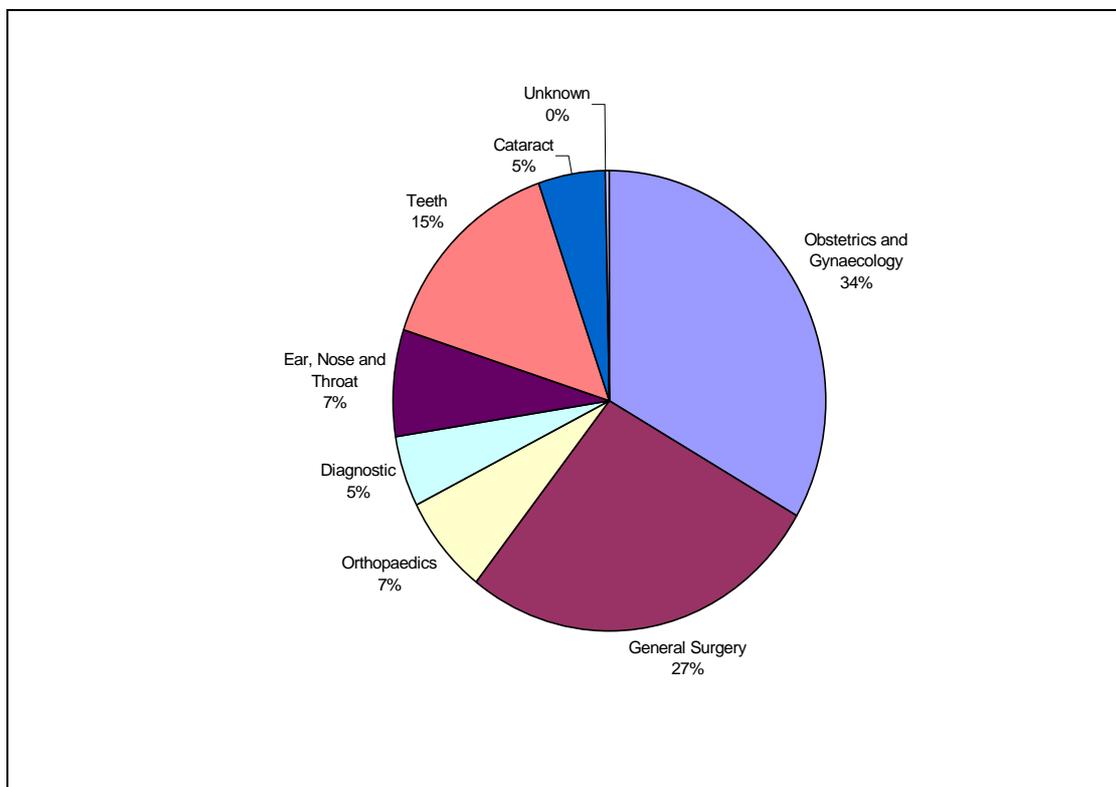
FIGURE D: PROCEDURES PER DISCIPLINE IN DISTRICT HOSPITALS OVER A THREE-MONTH PERIOD (N=15)
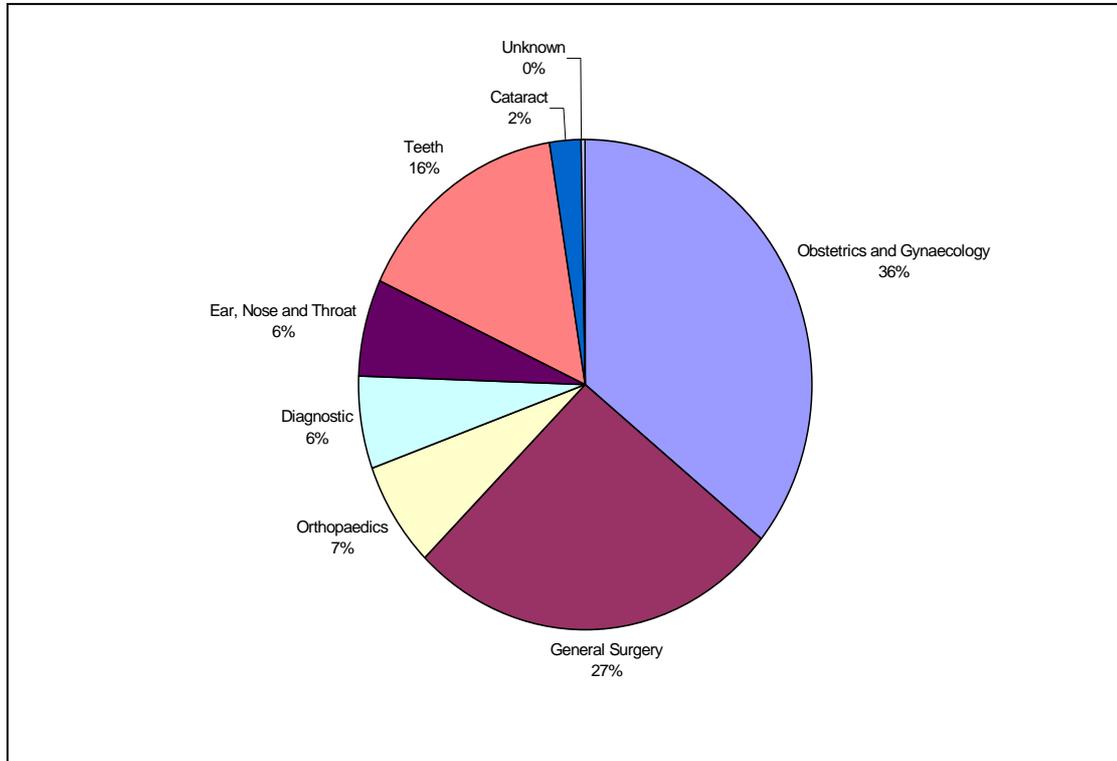
Overall, dental extractions were the most commonly performed procedure in district hospital theatres. Female sterilisations and secondly caesarean sections were the most frequently performed surgical procedures in Western Cape district hospitals. Table 8 shows the number and percentages of all the theatre procedures performed in Western Cape district hospitals over a one month period (n=22).

TABLE 8:   THEATRE PROCEDURES PERFORMED AT DISTRICT HOSPITALS (N=22)

PROCEDURE	TOTAL	PERCENTAGE
Dental extractions	264	15
Female sterilisation	210	11.9
Caesarean section	196	11.1
Excision lumps, bumps	174	9.8
Tonsillectomy	112	9.6
Evacuation uterus, D & C	104	5.9
Diagnostic	93	5.2
Cataract removal	86	4.8
Incision and drainage	82	4.6
Other O & G procedures	61	3.4
Closed reductions	59	3.3
Urological procedures	44	2.5
Open reductions	31	1.7
Appendicectomy	30	1.7
Hernia repair	27	1.5
Debridement	27	1.5
Suturing (major or minor)	26	1.5
Other surgical procedures	21	1.2
Other ENT procedures	19	1.1
Other orthopaedic procedures	15	0.7
Amputation	15	0.7
Skin transplant	13	0.7
Hysterectomy	13	0.7
Laparotomy	13	0.7
Haemoroidectomy	13	0.7
Anal dilatation	9	0.5
Ectopic pregnancy	7	0.4

Table 9 lists the obstetrical and gynaecological (O&G) procedures, number and percentages performed in Western Cape district hospitals. Evacuation of the uterus or dilatation and curettage was performed most frequently, after female sterilisations and caesarean sections.

TABLE 9: **OBSTETRIC AND GYNAECOLOGICAL PROCEDURES PERFORMED AT DISTRICT HOSPITALS (N=22)**

PROCEDURE	TOTAL	PERCENTAGE
Sterilisation	210	11.9
Caesarean section	196	11.1
Evacuation uterus, D&C	104	5.9
Other*	61	3.4
Hysterectomy	13	0.7
Ectopic pregnancy	7	0.4

* Other included repair of 3rd degree tears, drainage Bartholin cysts, Shirodkar sutures and a few uncommonly performed procedures.

In the general surgery category, excision or removal of lumps and bumps were performed most frequently, followed by incision and drainage of various types of lesions. Laparotomy was performed infrequently. The numbers and percentages of general surgical procedures performed are reflected in Table 10.

TABLE 10: **GENERAL SURGERY PROCEDURES PERFORMED AT DISTRICT HOSPITALS (N=22)**

PROCEDURE	TOTAL	PERCENTAGE
Excision or removal lumps, bumps	174	9.8
Incision and drainage	82	4.6
Urological procedures	44	2.5
Appendicectomy	30	1.7
Hernia repair	27	1.5
Debridement	27	1.5
Suturing (major or minor)	26	1.5
Other*	21	1.2
Skin transplant	13	0.7
Laparotomy	13	0.7
Haemoroidectomy	13	0.7
Anal dilatation	9	0.5

* Other included gastrectomy, colostomy, Trendelenburg, mastectomy, thyroidectomy, cholisystectomy, abdominoplasty, all of which were generally performed by visiting specialists.

Orthopaedic procedures were performed infrequently. See Table 11 for the list, number and percentages of orthopaedic procedures performed.

TABLE 11: ORTHOPAEDIC PROCEDURES PERFORMED AT DISTRICT HOSPITALS (N=22)

PROCEDURE	TOTAL	PERCENTAGE
Closed reductions of fractures and dislocations	59	3.3
Open reductions, removal/insertion pins, screws	31	1.7
Various other*	15	0.7

*   Other included patellectomy, bunionectomy, carpal tunnel release, hallux valgus repair, De Quervain's repair, acromioplasty, neurolysis, arthroscopy, all generally performed by visiting specialists.

Tonsillectomy, with or without adenoidectomy, was performed relatively frequently in Western Cape district hospitals. Cataract operations were performed during the study period at Knysna and False Bay Hospitals. This was not a procedure normally performed at district hospital level and was part of a public-private initiative to reduce blindness caused by cataracts. Qualified personnel from outside the hospital performed these operations, using the district hospital's facilities. Table 12 shows the list and frequencies of various other surgical procedures performed.

TABLE 12:   VARIOUS OTHER SURGICAL PROCEDURES PERFORMED AT DISTRICT HOSPITALS (N=22)

PROCEDURE	TOTAL	PERCENTAGE
Dental extractions	264	15
Tonsillectomy	112	9.6
Cataract removal	86	4.8
Other ENT procedures	19	1.1

The predominantly used method of anaesthesia in Western Cape district hospitals was general anaesthetics. Figure E shows the frequency of the use of various types of

anaesthesia during the study period, comparing one month (n=22) to three months (n=15).

FIGURE E: TYPES OF ANAESTHETICS USED IN DISTRICT HOSPITALS
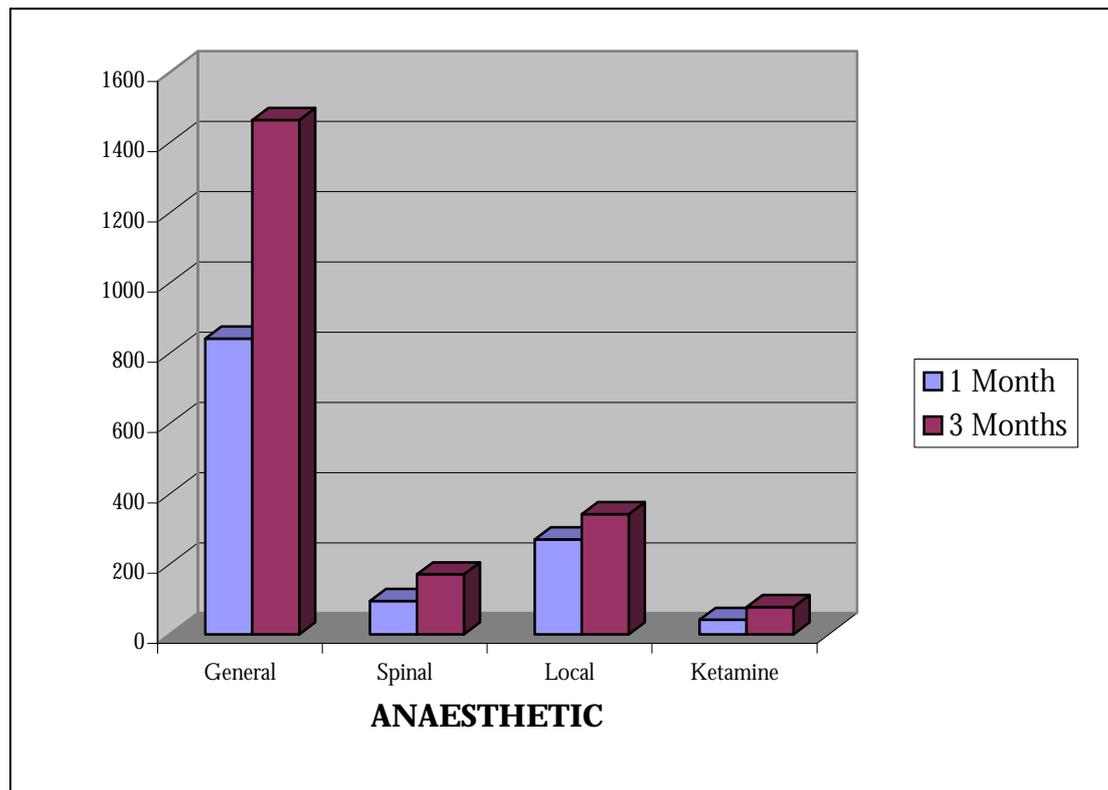
The district hospitals were furthermore grouped according to size (>80 beds; 40-80 beds; <40 beds) to compare variances in the performance of theatre procedures between similar sized hospitals.

Amongst the hospitals with more than 80 beds, Stellenbosch Hospital performed the highest number of obstetrical and gynaecological procedures. Ceres and Vredendal Hospitals were doing on average less obstetrical and gynaecological procedures than the others (both had only part-time practitioners in their employ). Ceres Hospital was also performing fewer general surgical procedures compared to the other hospitals,

but performed a high rate of dental extractions. Mossel Bay Hospital topped the list for ear, nose and throat (ENT) procedures performed. The hospitals in Oudtshoorn and Knysna performed the most procedures in the category general surgery. Figure F shows the distribution of theatre procedures performed in district hospitals with 80 or more beds.

FIGURE F: COMPARISON OF PROCEDURES PERFORMED AT DISTRICT HOSPITALS WITH MORE THAN 80 BEDS
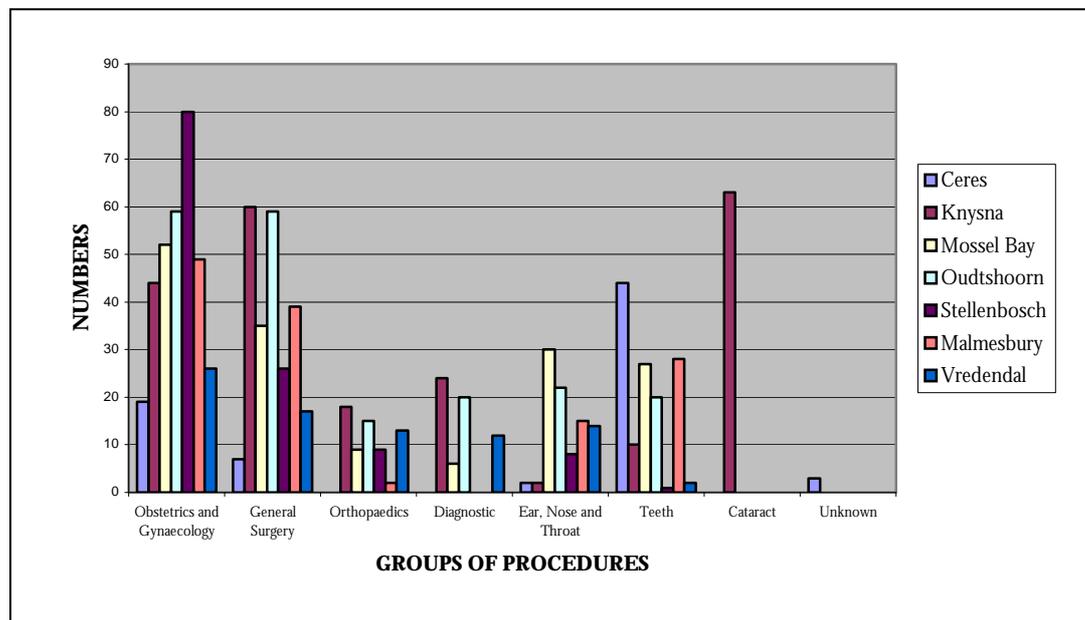
In the Beaufort West Hospital a higher rate of general surgical procedures was performed in comparison to the others in the 40-80 bed hospital categories. Mainly obstetrical and gynaecological procedures were performed at Vredenburg Hospital with only a few other procedures. Very few obstetrical and gynaecological procedures were performed at False Bay Hospital during the study period. Most of the hospitals in this category frequently performed dental extractions.

Figure G reflects the comparison of procedures performed between hospitals with 40 – 80 beds.

FIGURE G: COMPARISON OF PROCEDURES PERFORMED AT DISTRICT HOSPITALS WITH 40-80 BEDS
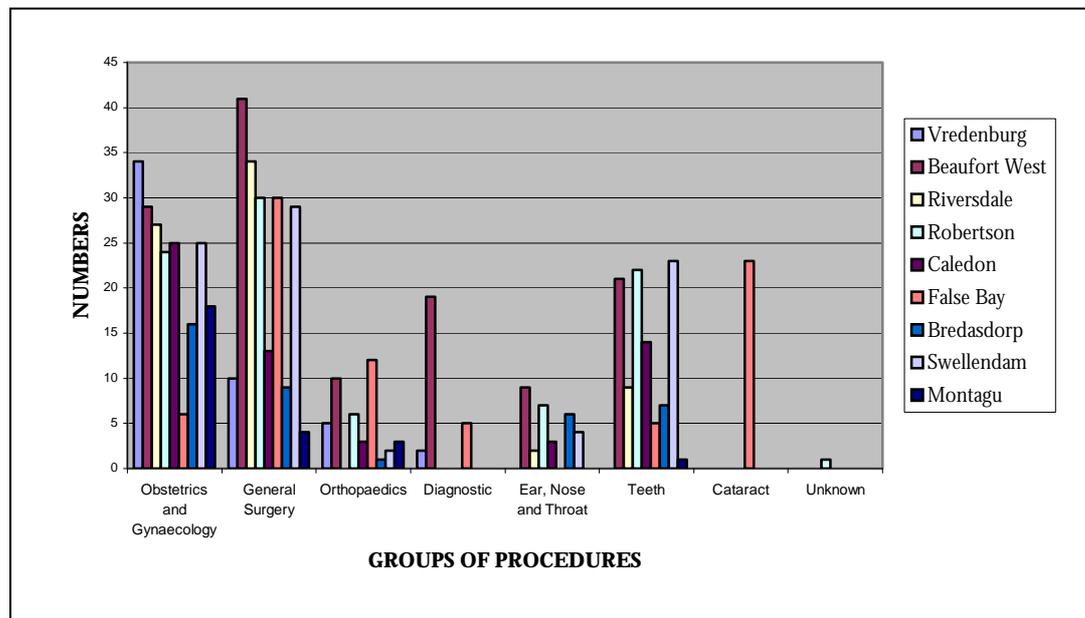
In the category of hospitals with less than 40 beds, it was noteworthy that the hospital in Hermanus outperformed the others in this group. The greater Hermanus area was experiencing a high population growth at the time. Figure H demonstrates the comparison of theatre procedures performed at hospitals with less than 40 beds.

FIGURE H: COMPARISON OF PROCEDURES PERFORMED AT DISTRICT HOSPITALS WITH LESS THAN 40 BEDS
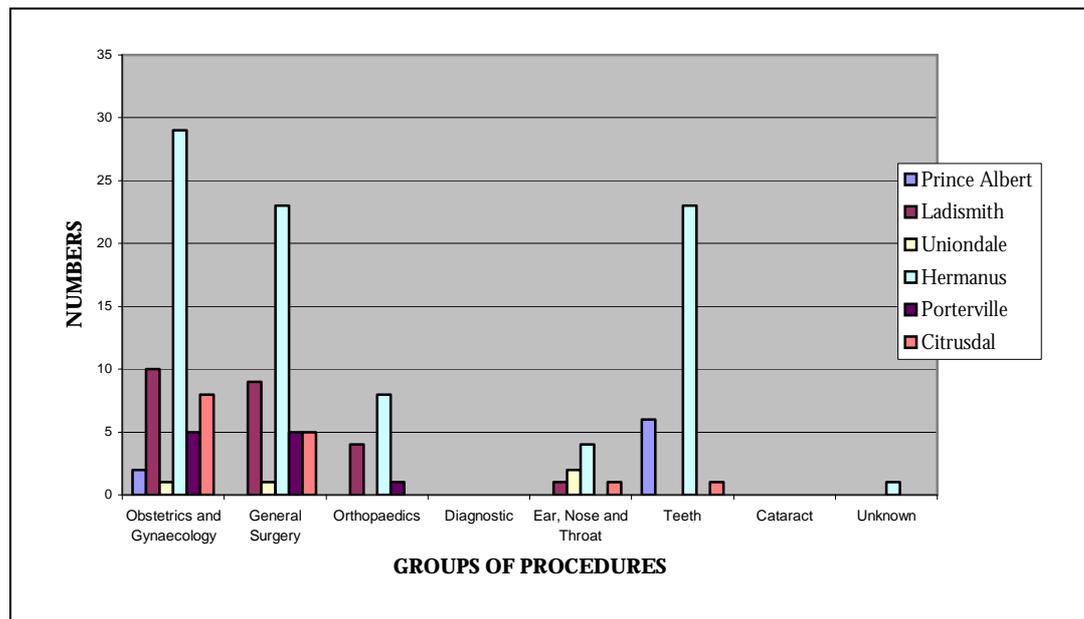
Finally, comparisons were drawn between theatre procedures performed amongst hospitals of various sizes to detect possible trends. It was expected that larger hospitals would in general perform more theatre procedures than smaller hospitals. The graph in Figure I confirms this trend with the exception of orthopaedic and general surgical procedures, as well as dental extractions which were performed almost as frequently at medium-sized hospital than at the larger hospitals.

FIGURE I: COMPARISON OF PROCEDURES PERFORMED (LARGE, MEDIUM AND SMALL DISTRICT HOSPITALS)
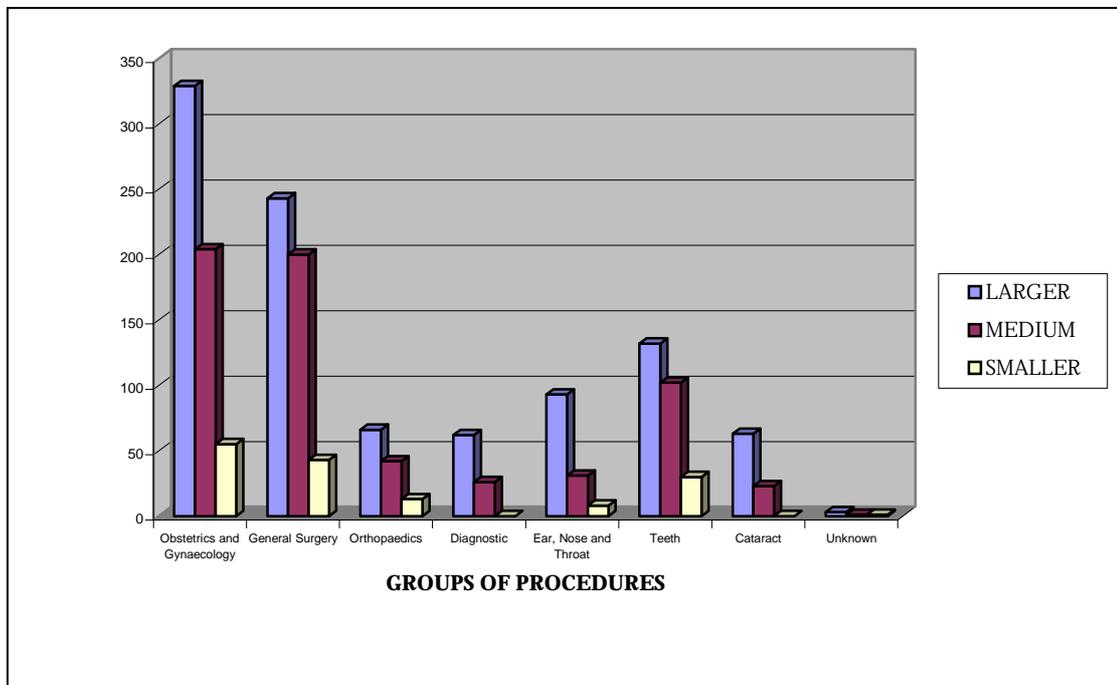
SECTION TWO

4.2 MEDICAL OFFICER QUESTIONNAIRE

This questionnaire was sent to all 147 medical officers (full-time, part-time and community service doctors) staffing the 27 Western Cape district hospitals at the time of the study. A response rate of 75% was achieved by the return of 110 of the 147 questionnaires. Sixty-nine (62.7%) of the respondents were employed as part-time medical officers, 24 (21.8%) as full-time medical officers and 17 (15.5%) were community service doctors. The representation of the respondents' employment categories were compared with those of the total population of medical officers. Table 13 shows that the proportional percentages of medical officers amongst the respondents were similar to the proportions of the medical officers in the total personnel complement, indicating that the respondents were a representative sample of the total population.

TABLE 13: COMPARISON OF QUESTIONNAIRE RESPONDENTS WITH TOTAL MEDICAL OFFICER COMPLEMENT

MEDICAL OFFICER CATEGORY	FULL-TIME		PART-TIME		COMMUNITY SERVICE		TOTAL	
	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%
Total medical officers	32	22	95	65	20	14	147	100
Respondents	24	22	69	63	17	16	110	100

4.2.1 DEMOGRAPHIC CHARACTERISTICS

Twenty eight of the respondents were female (25.5%) and 82 (74.5%) were male. Seven (41.2%) of the community service doctors were female, 11 (45.8%) of the full-

time medical officers were female, while only 10 (14.5%) part-timers were female doctors. These differences were statistically significant ($p<0.05$) according to the Chi-Square test.

The average age of the respondents was 40.3 years (SD 11.6) with the eldest 69 and the youngest 25 years of age. Figure J demonstrates the age distribution per gender. There was a statistically significant difference between the genders in relation to age (females younger than males) according to the Wilcoxon test ($p<0.05$).

FIGURE J: AGE DISTRIBUTION OF MALE AND FEMALE RESPONDENTS
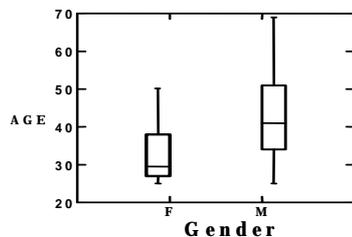
Ninety seven percent (107) of the respondents were South Africa citizens. Two practitioners were Bulgarian citizens and one respondent held dual citizenship of the Netherlands and South Africa. The country in which the respondents acquired their basic medical degree was similar to that of their nationality. The respondents' mean period of time in practice since qualification was 15.6 years (SD 11.1; range 2-48 years). Ninety-three respondents were registered in the category Independent Practice (General Practitioner) with the Health Professions Council of South Africa (HPCSA). Seventeen of the respondents held registration in the category Public Service (General Practitioner) with the HPCSA, which included those performing community service and those practising full-time in the public sector.

Figure K compares the years of experience between male and female respondents. According to the Wilcoxon test, females had statistically significantly fewer years of experience than males ($p<0.05$), in keeping with the age distribution per gender as demonstrated above.

FIGURE K: YEARS OF EXPERIENCE OF MALE AND FEMALE RESPONDENTS
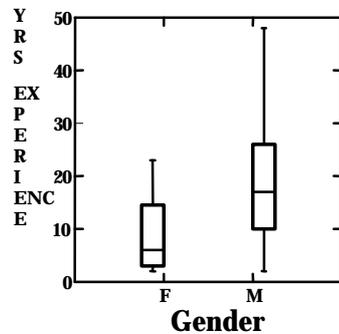
Figure L shows the age distribution of the different categories of medical officers. There was a statistically significant difference ($p<0.05$) in ages between the categories using the Kruskal-Wallis test. The part-time medical officers were older, the full-time medical officers younger than the part-timers and the community service doctors the youngest of the three medical officer categories.

FIGURE L: AGE DISTRIBUTION OF CATEGORIES OF MEDICAL OFFICERS (MO)
(CS = community service; FT = full-time medical officers; PT = part-time medical officers)
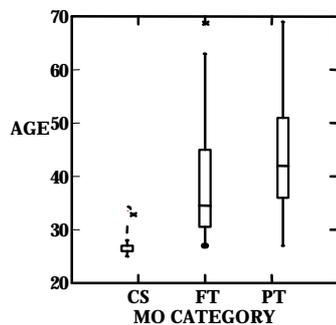
Figure M demonstrates that the years of experience in the different medical officer categories followed the same pattern as the age distribution. When looking at years'

experience, there was a statistically significant difference (p<0.05) between the three categories of medical officers according to the Kruskal-Wallis test.

FIGURE M: YEARS OF EXPERIENCE ACCORDING TO CATEGORY OF MEDICAL OFFICER (MO)

(CS = community service; FT = full-time; PT = part-time)
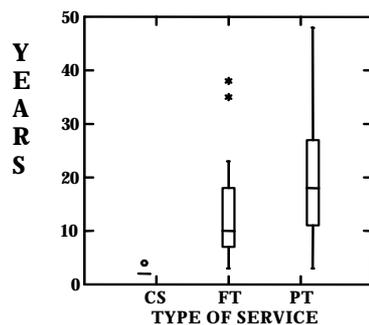
Table 14 demonstrates the 95% confidence intervals for age and years of experience for various categories of respondents.

TABLE 14: NINETY-FIVE PERCENT CONFIDENCE INTERVALS (CI) FOR AGE AND YEARS OF EXPERIENCE PER THE DIFFERENT CATEGORIES OF RESPONDENTS

RESPONDENTS	AGE		YEARS EXPERIENCE	
	MEAN	95% CI	MEAN	95% CI
All	40.3	38.1-42.5	15.6	13.5-17.7
Female	32.5	29.7-35.3	8.6	5.9-11.2
Male	43	40.4-45.6	18.0	15.1-20.5
Part-time MOs	44.4	41.8-46.9	19.8	17.3-22.2
Full-time MOs	38.3	33.7-42.9	13.1	9.2-17
Com service MOs	26.9	25.7-28	2.2	1.0-2.6

On average the respondents had worked in district hospitals for 96.3 months (SD 100.8) ranging from 1 month to 38 years. The respondents' previous work experiences were, firstly, in general practice and, secondly, in district hospitals. Wide standard deviations were recorded in this category, indicating the varying types of previous work experiences amongst the respondents. The type and duration of work experience which medical officers had acquired are reflected in Figure N.

FIGURE N: PREVIOUS TYPES AND DURATION OF WORK EXPERIENCE (IN MONTHS)
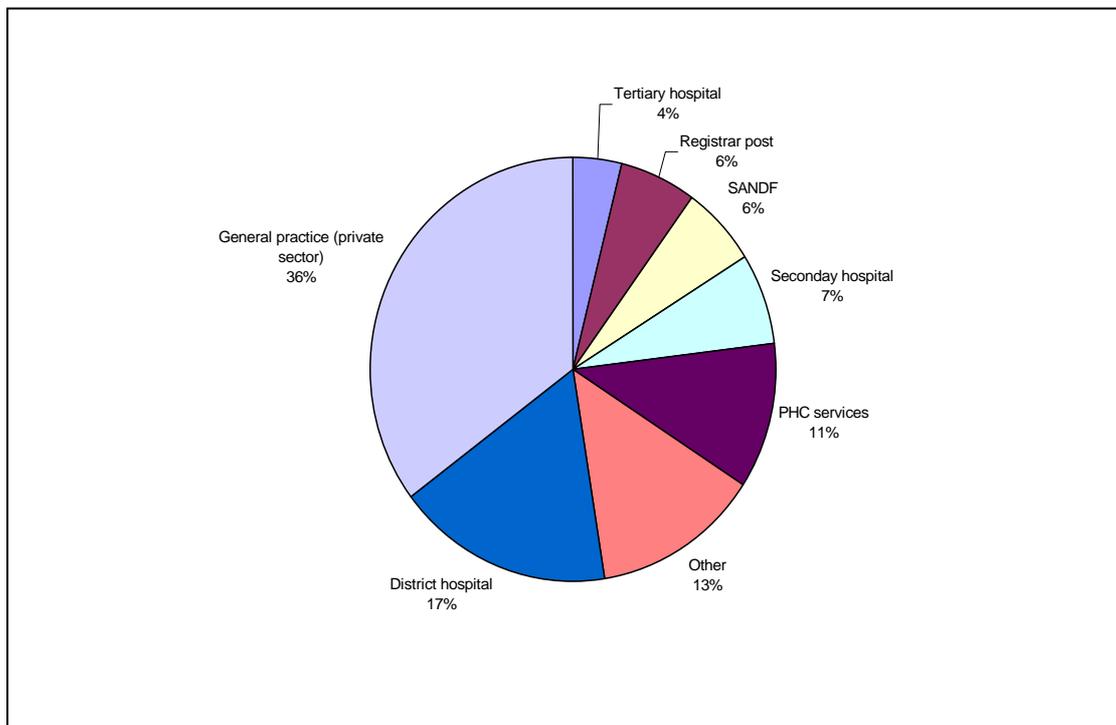
Other experience included part-time district surgeon work, part-time district hospital superintendent and "16 months in the United Kingdom (UK)". Countries outside South Africa in which these experiences were gained included Bulgaria, the UK, Namibia, the Netherlands, Malawi, Canada, New Zealand, Australia and Botswana.

Diplomas awarded by the Colleges of Medicine of South Africa (CMSA) were the most commonly acquired postgraduate qualifications. Only 5% of the respondents were qualified family physicians. ATLS, ACLS and APLS courses were the most commonly attended postgraduate courses. See Figure O for the broad categories of postgraduate qualifications.

FIGURE O: POSTGRADUATE QUALIFICATIONS OF DISTRICT HOSPITAL MEDICAL OFFICERS ACCORDING TO BROAD CATEGORIES
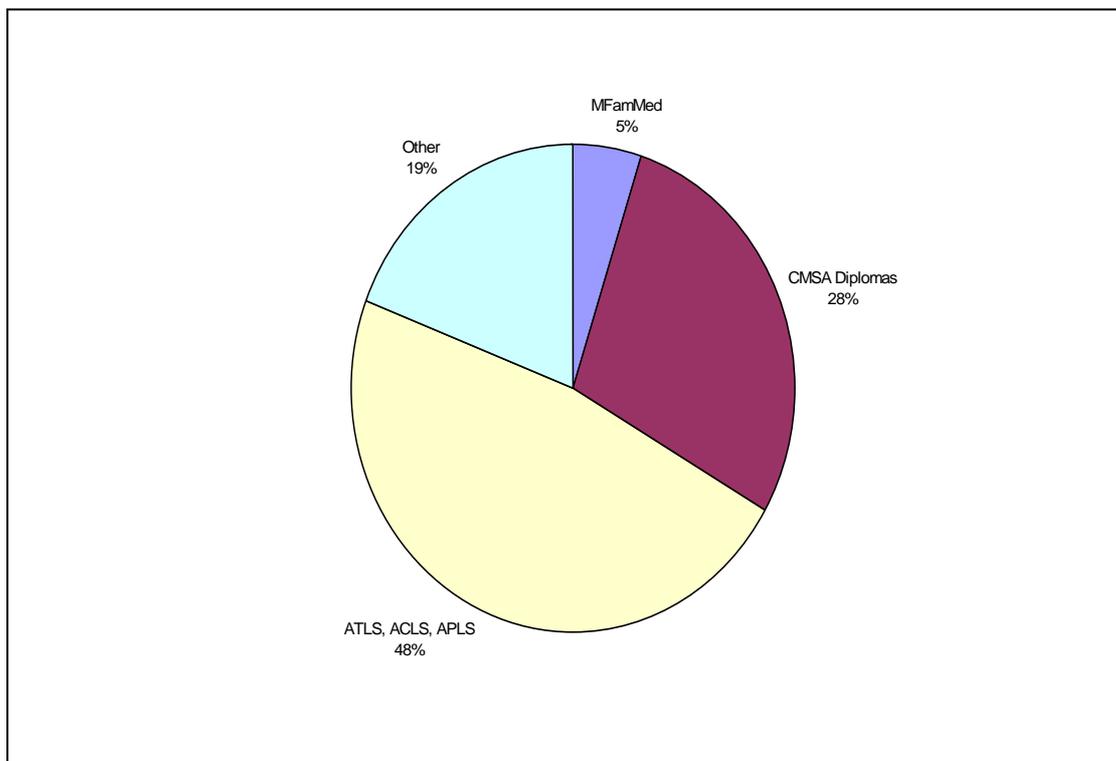
The detailed list of the respondents' postgraduate qualifications is given in Table 15. Other qualifications included Diving Medicine (4); BSc and MSc (4); FCS(SA) and MMed (Surgery) (1); Aviation Medicine (1); MMedSc (Physiolology) (1); Dip Ophthalmology (1); BA Psychology (1); LLB (1); MRCS (Ed) (1); BHons (Reproductive Biology) (1); Dip Family Medicine (2).

TABLE 15:   POSTGRADUATE QUALIFICATIONS OF DISTRICT HOSPITAL MEDICAL OFFICERS (N=110)

QUALIFICATION	NUMBER	%
ATLS	30	27.3
Various other	19	17.3
Dip Occupational Health	14	12.7
APLS	9	8.2
ACLS	8	7.3
MFamMed	5	4.5
Dip Obstetrics	5	4.5
Dip Child Health	4	3.6
Dip Emergency Medicine	2	1.8
Dip Internal Medicine	1	0.9
Dip Anaesthetics	1	0.9
Dip Public Health	1	0.9

The three most commonly performed continuing professional development (CPD) activities which the respondents used to keep up to date with district hospital practice, were journal reading (85.4%), working with colleagues (77.3%) and attending pharmaceutical industry CPD meetings (72.7%). Table 16 provides the list and percentages of CPD activities used.

TABLE 16: METHODS USED BY DISTRICT HOSPTIAL MEDICAL OFFICERS TO UPDATE THEIR PROFESSIONAL KNOWLEDGE AND SKILLS (N=110)

METHOD	NUMBER	%
Journal reading	94	85.4
Work with colleagues	85	77.3
Pharmaceutical company CPD meetings	80	72.7
Handbooks	74	67.3
Refresher courses	71	64.5
Pharmaceutical representatives	64	58.2
District hospital academic meetings	50	45.4
Evidence-based medicine material	38	34.5
Postgraduate diplomas, degrees	29	26.4
Other*	8	7.3
E-mail groups	7	6.4

*   Other included congresses (2); Internet (1); consulting specialists (2);
    local GP meetings (1); journal clubs (1); and *"Work"* (1).

4.2.2 MANAGING PROBLEMS OR PERFORMING SKILLS RELATED TO IN-PATIENT SERVICES

Autopsies (50%) were the least frequently performed procedure in this section, most commonly due to inadequate training or because they were done by practitioners employed specifically for that purpose. Only 33.6% of medical officers were able to do an autopsy independently or to teach the procedure. Termination of pregnancy (TOP) was second on the list of least performed skills (42.7%), most commonly because of moral or ethical objections to TOP. Of the medical officers, 49.1% were able to do a TOP independently or to teach the procedure. Laparatomies were performed by only 31.2% of the medical officers. Patients in need of a laparotomy were mostly referred for specialist care, while medical officers also felt that they were not sufficiently trained to carry out this procedure. Only 31.2% of medical officers could do a laparotomy independently or teach someone else to perform the procedure. Twenty-eight percent of the respondents did not perform a tonsillectomy or a Ketamine anaesthetic. Of the total, 24.5% did not do a spinal block and 23.8% did not perform an appendicectomy. All of these procedures were not performed because of a lack of training. Reduction of a dislocated shoulder was not done by only 1.8% of the respondents, and all the practitioners were able to manage a child with severe pneumonia and meningitis in the ward. Only 0.9% could not perform neonatal resuscitations.

Surprisingly, 21.8% of the respondents indicated that they needed assistance when managing a malnourished child in the ward, and 20.9% were in need of supervision when carrying out a neonatal resuscitation. Furthermore, 19.3% and 19.1% needed supervision to perform an appendicectomy and administer a general anaesthetic respectively. Table 17 shows the competency ratings for managing problems or performing procedures related to in-patient services.

**TABLE 17:   COMPETENCY RATINGS RELATED TO IN-PATIENT
               SERVICES**

PROCEDURE OR PROBLEM	SCORE - FREQUENCY (%)				
	N	Do not perform	Need supervision	Do independently or teach	Other
Autopsy	110	55 (50)	16 (14.5)	37 (33.6)	2 (1.8)
Termination of pregnancy	110	47 (42.7)	7 (6.7)	54 (49.1)	2 (1.8)
Laparotomy	109	34 (31.2)	41 (37.6)	34 (31.2)	0
Tonsillectomy	110	31 (28.2)	10 (9.1)	68 (61.8)	1 (0.9)
Ketamine anaesthetic	110	31 (28.2)	17 (15.4)	62 (56.4)	0
Spinal block	110	27 (24.5)	19 (17.3)	64 (58.2)	0
Appendicectomy	109	26 (23.8)	21 (19.3)	61 (56)	1 (0.9)
General anaesthetic	110	18 (16.4)	21 (19.1)	71 (64.5)	0
Skin graft	110	17 (15.4)	14 (12.7)	78 (70.9)	1 (0.9)
Caesarean section	110	11 (10)	10 (9.1)	88 (80)	1 (0.9)
Vaginal breech delivery	110	10 (9.1)	13 (11.8)	85 (77.3)	2 (1.8)
Female sterilisation	110	8 (7.3)	10 (9.1)	91 (82.7)	1 (0.9)
Reduction of dislocated shoulder	110	2 (1.8)	2 (1.8)	105 (95.4)	1 (0.9)
Lumbar puncture (child)	110	2 (1.8)	1 (0.9)	107 (97.3)	0
Closed reduction & POP application	110	2 (1.8)	8 (7.3)	99 (90)	1 (0.9)
Managing malnourished child	110	1 (0.9)	24 (21.8)	84 (76.4)	1 (0.9)
Neonatal resuscitation	110	1 (0.9)	23 (20.9)	85 (77.3)	1 (0.9)
Managing child with pneumonia	110	0	0	109 (99.1)	1 (0.9)
Managing child with meningitis	110	0	9 (8.2)	100 (90.9)	1 (0.9)
Managing diabetic control	110	0	10 (9.1)	99 (90)	1 (0.9)

Table 18 lists the reasons for not performing procedures or managing problems
related to in-patient services.

TABLE 18: REASONS FOR NOT PERFORMING PROCEDURES RELATED TO IN-PATIENT SERVICES*

PROCEDURE	REASONS - FREQUENCY (%)						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Autopsy	37 (33.6%)	18 (16.4%)	6 (5.4%)	5 (4.5%)	1 (0.9%)	2 (1.8%)	6 (5.4%)
TOP	7 (6.4%)	7 (6.4%)	4 (3.6%)	5 (4.5%)	1 (0.9%)	2 (1.8%)	17 (15.4%)
Laparotomy	18 (16.4%)	0	22 (20%)	8 (7.3%)	7 (6.4%)	0	1 (0.9%)
Tonsillectomy	20 (18.2%)	0	10 (9.1%)	3 (2.7%)	5 (4.5%)	4 (3.6%)	6 (5.4%)
Ketamine anaesth	18 (16.4%)	3 (2.7%)	5 (4.5%)	2 (1.8%)	1 (0.9%)	1 (0.9%)	1 (11.8%)
Spinal block	17 (15.4%)	2 (1.8%)	6 (5.4%)	4 (3.6%)	2 (1.8%)	1 (0.9%)	5 (4.5%)
Appendicectomy	16 (14.5%)	0	8 (7.3%)	5 (4.5%)	6 (5.4%)	4 (3.6%)	1 (0.9%)
General anaesthetic	12 (10.9%)	1 (0.9%)	7 (6.4%)	1 (0.9%)	3 (2.7%)	3 (2.7%)	5 (4.5%)
Skin graft	13 (11.8%)	0	8 (7.3%)	3 (2.7%)	4 (3.6%)	2 (1.8%)	0
Caesarean section	6 (5.4%)	0	4 (3.6%)	3 (2.7%)	1 (0.9%)	1 (0.9%)	2 (1.8%)

*REASONS KEY:

1 =	*Not trained for the procedure*
2 =	*Did not see patients who needed the procedure*
3 =	*Needed specialist care*
4 =	*Equipment / infrastructure inadequate*
5 =	*Not enough personnel available*
6 =	*Work load did not allow time to perform procedure*
7 =	*Other*

The data for the six surgical procedures which were most commonly not performed was compared with one another in Figure P. The pattern of competence ratings for TOP and laparotomy differed from the others in that the ratings for not performing and being able to teach these two procedures were similar. This indicated that, although the respondents thought themselves competent to perform these procedures, they did in fact not do so. Also, despite the fact that caesarean section was found to be the second most frequently performed theatre procedure in district hospitals, 10% of the medical officers indicated that they did not perform caesarean sections and a further 9.1% needed supervision in performing this procedure.

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FIGURE P: COMPARISON OF COMPETENCY RATINGS FOR THE SURGICAL PROCEDURES MOST COMMONLY NOT PERFORMED
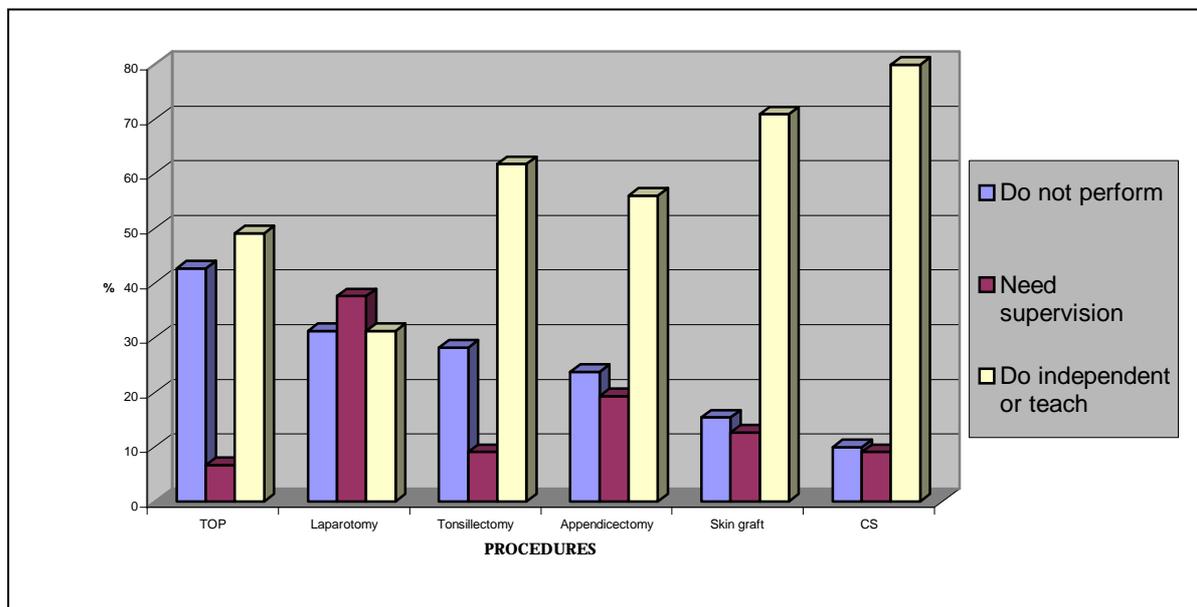
In response to the question as to whether they had referred any patient that needed in-patient services, 79.6% (87) of the respondents answered positively, 14.5% (16) said no and 6.4% (7) had no comment or did not respond. The reasons for referring were explored in an open question from which the following responses were identified:

➢ Patients in need of a laparotomy were referred as facilities and personnel were inadequate for aftercare, the diagnosis was uncertain, the doctor lacked experience, and there was a risk of complications.

➢ There was insufficient nursing and medical personnel to manage patients needing in-patient services, especially after-hours.

➢ The patient's condition was serious, including complications and required special investigations, intensive care, or specialist care.

> The medical officer was not competent to deliver the particular in-patient service due to lack of expertise, experience, confidence, or exposure.

Other reasons were inadequate infrastructure such as insufficient equipment; inadequate pre-, intra- and post-operative facilities; insufficient resources (laboratory, medication); excessive workload; and inadequate remuneration.

4.2.3 MANAGING PROBLEMS OR PERFORMING SKILLS RELATED TO EMERGENCY AND TRAUMA SERVICES

Tracheotomy (20.7%), intravenous (IV) tdown (18.9%) and putting up an intraosseous line in a child (17.4%) were the skills most commonly not performed. These skills were deemed to be rarely necessary in a district hospital setting. Cardio-pulmonary resuscitation (CPR) with intubation, as well as the insertion of an intercostal drain was performed by 100% of the practitioners with high competency ratings. Only 2.8% did not undertake seclusion and sedation of acutely confused psychiatric patients. In terms of needing supervision, 26.4% indicated that they would need assistance in managing an acutely suicidal patient, 21.7% in managing serious head injuries or acute poisonings and 19% needed supervision in managing severe burns. The competency levels for managing problems or performing skills related to emergency and trauma services are reflected in Table 19.

**TABLE 19:   COMPETENCY RATINGS RELATED TO EMERGENCY
            AND TRAUMA SERVICES**

PROCEDURE	SCORE - FREQUENCY (%)				
	N	Do not perform	Need supervision	Do independently or teach skill	Other
Tracheotomy	106	22 (20.7)	55 (51.9)	29 (27.4)	0
IV cutdown	106	20 (18.9)	27 (25.5)	59 (55.7)	0
Intraosseous line in a child	105	18 (17.4)	33 (31.4)	53 (50.5)	1 (0.9)
Management of rape survivor	106	8 (7.5)	14 (13.2)	84 (79.2)	0
Management of drunken driver	106	7 (6.6)	4 (3.8)	95 (89.6)	0
Reduction paraphemosis	106	7 (6.6)	4 (3.8)	100 (94.3)	1 (0.9)
Streptokinase in acute infarction	106	6 (5.7)	23 (21.7)	77 (72.6)	0
Injury on duty	106	5 (4.7)	4 (3.8)	97 (91.5)	0
Seclusion and sedation	106	3 (2.8)	18 (17.0)	84 (79.2)	1 (0.9)
Head injury: Glasgow 3 scale	106	2 (1.9)	23 (21.7)	81 (76.4)	0
Acute severe burns	106	2 (1.9)	20 (18.9)	84 (79.2)	0
Acute poisoning	106	2 (1.9)	23 (21.7)	81 (76.4)	0
Shocked patient with acute abdomen	106	2 (1.9)	17 (16)	87 (82.1)	0
Acutely suicidal patient	106	0	28 (26.4)	78 (73.6)	0
Full CPR with intubation	106	0	11 (10.4)	95 (89.6)	0
Chest tube drainage	106	0	1 (0.9)	104 (98.1)	1 (0.9)

The reasons for not managing these problems are reflected in Table 20. The main
reason for not performing a tracheotomy was lack of training. Others included that
some of the procedures were rarely required, and that other doctors were responsible
for forensic work.

**TABLE 20:   REASONS FOR NOT MANAGING PROBLEMS OR
            PERFORMING SKILLS RELATED TO EMERGENCY
            AND TRAUMA SERVICES***

PROCEDURE	REASONS - FREQUENCY (%)						
	1	2	3	4	5	6	7
Tracheotomy	7 (6.4%)	4 (3.6%)	2 (1.8%)	2 (1.0%)	0	0	0
IV cutdown	4 (3.6%)	5 (4.5%)	0	1 (0.9%)	0	0	0
Intraossesous line	4 (3.6%)	7 (6.4%)	0	1 (0.9%)	0	0	0
Managing rape survivor	3 (2.7%)	5 (4.5%)	1 (0.9%)	1 (0.9%)	0	1 (0.9%)	1 (0.9%)
Managing drunken driver	4 (3.6%)	8 (7.3%)	1 (0.9%)	0	0	0	1 (0.9%)

* See p120

On the question of whether the medical officer had referred any patients needing emergency and trauma services, 53.6% (59) responded positively, 28.2% (31) said no and 18.2% (20) had no comment or did not respond.

Reasons for referral were explored in an open question, from which the following responses were identified:

➢ The patient's condition was serious, needed special investigations or a higher level of care.

➢ Lack of infrastructure and equipment such as laboratory services, after care, critical care, and seclusion facilities for psychiatric patients.

➢ Lack of nursing and medical personnel, especially after-hours.

Other reasons less frequently mentioned were that the medical officers did not have enough practical experience, there was not enough time to get involved in lengthy procedures due to the excessive workload, non-availability of drugs, medico-legal risks and inadequate remuneration.

4.2.4   MANAGING PROBLEMS RELATED TO OUT-PATIENT SERVICES

The respondents indicated high levels of competency in most of the problems related to out-patient services. However, substantial need for supervision was expressed in a

number of areas such as dealing with amputee problems (33.3%); family violence (30.2%); dementia in the elderly (27.4%); managing a child with resistant asthma (23.8%); counseling for HIV/AIDS (23.8%) and for tobacco cessation (19.2%). Only 0.9% of the respondents indicated that they did not use the syndromic approach to sexually transmitted infections (STIs).

Of the practitioners, 37.7% indicated that they were not doing consultations related to TOP requests mainly due to moral, ethical and religious objections. Anti-retroviral (ARV) treatment for HIV/AIDS patients was not available at district hospital level at the time of the study, as was infertility treatment. Immunisations were done at PHC clinics. Table 21 shows the competency ratings for managing problems related to out-patient services. Reasons for not managing these problems are reflected in Table 22.

TABLE 21: COMPETENCY RATINGS RELATED TO GENERAL OUT-PATIENT SERVICES

DEALING WITH	SCORE - FREQUENCY (%)				
	N	Do not perform	Need supervision	Do independently or teach	Others
TOP request	106	40 (37.7)	11 (10.4)	52 (49.1)	3 (2.8)
ARV for HIV/AIDS	106	22 (20.7)	49 (46.2)	34 (32.1)	1 (0.9)
Infertility	106	19 (17.9)	40 (37.7)	46 (43.4)	1 (0.9)
Immunisation	106	16 (15.1)	12 (11.3)	77 (72.6)	1 (0.9)
Disability grant review	106	10 (9.4)	7 (6.6)	88 (83)	1 (0.9)
HIV/AIDS counseling	105	8 (7.6)	25 (23.8)	71 (67.6)	1 (0.9)
Amputee problems	105	7 (6.7)	35 (33.3)	62 (59)	1 (0.9)
HIV/AIDS confidentiality	105	7 (6.7)	20 (19.0)	76 (72.4)	2 (1.9)
Major depressive episode	103	6 (5.8)	18 (17.5)	78 (75.7)	1 (0.9)
Chronic tiredness in adult	105	5 (4.8)	17 (16.2)	82 (78.1)	1 (0.9)
Antepartum haemorrage	105	5 (4.8)	7 (6.7)	92 (87.6)	1 (0.9)
Family violence	106	4 (3.8)	32 (30.2)	69 (65.1)	1 (0.9)
Dementia in the elderly	106	4 (3.8)	29 (27.4)	72 (67.9)	1 (0.9)
Resistant UTIs	105	3 (2.8)	7 (6.7)	94 (89.5)	1 (0.9)
Generalised body or joint pains	106	3 (2.8)	10 (9.4)	92 (86.9)	1 (0.9)
Counseling tobacco cessation	104	3 (2.8)	20 (19.2)	80 (76.9)	1 (0.9)
End-of-life decision in resuscitation	105	3 (2.1)	17 (16.2)	83 (79)	2 (1.9)
Child with resistant asthma	105	2 (1.9)	25 (23.8)	77 (73.3)	1 (0.9)
Syndromic approach to STD's	105	1 (0.9)	8 (7.6)	95 (90.5)	1 (0.9)
Pain control in terminal patient	105	1 (0.9)	10 (9.5)	93 (88.6)	1 (0.9)
Insulin diabetic from higher level	105	1 (0.9)	5 (4.8)	98 (93.3)	1 (0.9)
Injury with HIV/AIDS body fluids	106	1 (0.9)	28 (26.7)	75 (71.4)	1 (0.9)
Breaking bad news	105	1 (0.9)	9 (8.6)	94 (89.5)	1 (0.9)

TABLE 22:   REASONS FOR NOT MANAGING PROBLEMS RELATED TO OUT-PATIENT SERVICES*

DEALING WITH	REASONS - FREQUENCY (%)						
	1	**2**	**3**	**4**	**5**	**6**	**7**
TOP request	2 (1.8%)	8 (7.3%)	6 (5.4%)	2 (1.8%)	0	1 (0.9%)	22 (20%)
ARV for HIV/AIDS	5 (4.5%)	3 (2.7%)	4 (3.6%)	9 (8.2%)	0	0	5 (4.5%)
Infertility treatment	1 (0.9%)	3 (2.7%)	11(10%)	5 (4.5%)	0	1 (0.9%)	4 (3.6%)
Immunisations	1 (0.9%)	6 (5.4%)	0	0	0	2 (1.8%)	4 (3.6%)
Disability grant review	3 (2.7%)	4 (3.6%)	0	1 (0.9%)	0	0	4 (3.6%)
HIV/AIDS counseling	4 (3.6%)	3 (2.7%)	1 (0.9%)	0	1 (0.9%)	2 (1.8%)	3 (2.7%)

*REASONS KEY:

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1 =   Not trained for the skill
2 =   Did not see patients who needed the skill
3 =   Needed specialist care
4 =   Equipment / infrastructure inadequate
5 =   Not enough personnel available
6 =   Work load did not allow time to perform skill
7 =   Other
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In reply to the question whether medical officers had referred any patient presenting with an out-patient problem, 55.4% (61) responded positively, 16.4% (18) negatively and 28.2% (31) had no comment or did not respond.

The reasons for referral were explored in an open question from which the following responses were identified:

➢ The patient's condition or problem was complicated and problematic, needing specialist care or hospitalisation at a higher level of care.

➢ Unavailability of drugs such as anti-depressants, antibiotics for resistant urinary tract infections (UTI's), and anti-retrovirals.

➢ Unavailability of special investigations such as ultrasound and infertility tests.

Less frequent reasons included insufficient infrastructure and equipment, lack of personnel, excessive workload, and insufficient training.

4.2.5 MANAGING PROBLEMS OR PERFORMING SKILLS RELATED TO OUTREACH AND SUPPORT OF PRIMARY HEALTH CARE (PHC) SERVICES

Overall, the respondents indicated low competency ratings in this category. Most medical officers (73.6%) were not involved in formal in-service training or *ad hoc* CPD activities (62.3%) for other personnel. Reasons for this were personnel shortages, inadequate infrastructure and a lack of training.

Of the respondents, 36.2% did not participate in PHC support services because of personnel shortages, lack of infrastructure and inadequate training. The respondents also said that they were not asked to participate in such activities and that there was no need for such support services. Table 23 demonstrates the competency ratings in managing problems related to outreach to and support of PHC services, while Table 24 reflects the reasons for not performing the related skills.

TABLE 23: COMPETENCY RATINGS RELATED TO OUTREACH TO AND SUPPORT OF PHC SERVICES

DEALING WITH	SCORE - FREQUENCY (%)			
	N	Do not perform	Need supervision	Do independently or teach
In-service training	106	78 (73.6%)	9 (8.5%)	19 (17.9%)
CPD for PHC personnel	106	66 (62.3%)	15 (14.1%)	25 (23.6%)
Health care team personnel meetings	106	42 (39.6%)	24 (22.6%)	39 (36.8%)
Support services to PHC personnel	105	38 (36.2%)	12 (11.4%)	55 (52.4%)

TABLE 24:   REASONS FOR NOT PERFORMING SKILLS RELATED TO OUTREACH AND SUPPORT SERVICES *

DEALING WITH	REASONS - FREQUENCY (%)					
	1	**2**	**3**	**4**	**5**	**6**
In-service training	26 (23.6%)	4 (3.6%)	8 (7.3%)	27 (24.5%)	34 (30.9%)	7 (6.4%)
CPD for PHC personnel	17 (15.4%)	2 (1.8%)	11 (10%)	32 (29.1%)	32 (29.1%)	7 (6.4%)
Support services to PHC	14 (12.7%)	2 (1.8%)	10 (9.1%)	18 (16.4%)	22 (20%)	4 (3.6%)
Health care team meetings	16 (14.5%)	2 (1.8%)	4 (3.6%)	15 (13.6%)	25 (22.7%)	7 (6.4%)

*REASONS KEY:

1 = Not trained for the skill
2 = Equipment / infrastructure inadequate
3 = Not enough personnel available
4 = Work load did not allow time to perform skill
5 = Opportunity to perform skill did not arise
6 = Other

4.2.6   MANAGING PROBLEMS RELATED TO HOSPITAL MANAGEMENT AND PUBLIC HEALTH ISSUES

As in the previous section, competency ratings for managing problems of performing skills related to district hospital management and public health issues were low. The respondents indicated that they did not perform most of the items listed in this category, mainly because of excessive clinical workloads. Also, these duties were perceived to be the duty of administrative personnel or of the Medical Superintendent. Research activities (78.9%) topped the list for those that were not performed, followed by drawing up a budget (77.7%), participation in quality improvement processes (76.7%), and personnel training (70.5%). Competency ratings related to hospital management and public health issues, and explanations for non-performance are reflected in Table 25 and Table 26 respectively.

TABLE 25: COMPETENCY RATINGS RELATED TO DISTRICT HOSPITAL MANAGEMENT AND PUBLIC HEALTH ISSUES

DEALING WITH	N	SCORE - FREQUENCY (%)		
		Do not perform	Need supervision	Do independently or teach
Conducting research	104	82 (78.9%)	8 (7.7%)	14 (13.5%)
Drawing up budget	103	80 (77.7%)	14 (13.6%)	9 (8.7%)
Quality improvement cycle	103	79 (76.7%)	11 (10.7%)	13 (12.6%)
Formal personnel training	105	74 (70.5%)	12 (11.4%)	19 (18.1%)
Hospital strategic planning	104	72 (69.2%)	12 (11.5%)	20 (19.2%)
Community participation	103	70 (68%)	10 (9.7%)	23 (22.3%)
Managing labour conflict	103	70 (68%)	14 (13.6%)	19 (18.4%)
Drawing up duty rosters	103	69 (67%)	4 (3.9%)	30 (29.1%)

TABLE 26: REASONS FOR NOT MANAGING PROBLEMS RELATED TO DISTRICT HOSPITAL MANAGEMENT AND PUBLIC HEALTH ISSUES*

DEALING WITH	REASONS - FREQUENCY (%)					
	1	2	3	4	5	6
Drawing up duty rosters	13 (11.8%)	2 (1.8%)	2 (1.8%)	11 (10%)	35 (31.8%)	20 (18.2%)
Managing labour conflict	20 (18.2%)	2 (1.8%)	2 (1.8%)	11 (10%)	36 (32.7%)	19 (17.3%)
Drawing up budget	26 (23.4%)	2 (1.8%)	2 (1.8%)	10 (9.1%)	37 (33.6%)	22 (20%)
Strategic planning	21 (19.1%)	2 (1.8%)	2 (1.8%)	11 (10%)	38 (34.5%)	19 (17.3%)
Quality improvement	25 (22.7%)	2 (1.8%)	2 (1.8%)	13 (11.8%)	40 (36.7%)	20 (18.2%)
Personnel training	20 (18.2%)	3 (2.7%)	2 (1.8%)	16 (14.5%)	39 (35.4%)	15 (13.6%)
Community participation	14 (12.7%)	1 (0.9%)	1 (0.9%)	18 (16.4%)	38 (34.5%)	19 (17.3%)
Conducting research	17 (15.4%)	3 (2.7%)	2 (1.8%)	17 (15.4%)	43 (39.1%)	19 (17.3%)

*REASONS KEY:

1 = *Not trained for the skill*
2 = *Equipment / infrastructure inadequate*
3 = *Not enough personnel available*
4 = *Work load did not allow time to perform skill*
5 = *Opportunity to perform skill did not arise*
6 = *Other*

4.2.7   ASSOCIATIONS BETWEEN VARIABLES

The dataset was examined, using Fischer's Exact Test for association between the following variables, namely (a) medical officer category; (b) gender of medical officer; (c) medical officer years of experience (1-5 yrs, 5-10 yrs, >10yrs); and knowledge and skills in the five different categories used in the questionnaire. A p-value of <0.05 was taken as a statistically significant association between the variables.

a.   Autopsy

Full-time and community service medical officers were less likely to perform an autopsy than part-timers, while the latter were more likely to be able to do the procedure independently or to teach the procedure ($p<0.5$). Female doctors were less likely to carry out autopsies and needed more supervision ($p<0.05$). Medical officers with the most experience (more than 10 years) were more likely to do the procedure independently, and medical officers with the least experience (1-5 yrs) were least likely to do the procedure ($p<0.05$). This picture fits in with the associations reported in the demographic results between gender and years of experience. It suggests that the ability to perform an autopsy developed with experience. The fact that many of the part-time medical officers worked as district surgeons with the responsibility of performing autopsies also influenced the finding.

b.   Termination of pregnancy

The full-time medical officers were the most likely group to perform TOPs or carry out a TOP request, while the community service doctors were less likely to perform the procedure independently ($p<0.05$). Despite the fact that male doctors were more competent in performing a TOP, female doctors were more likely to actually do a TOP ($p<0.05$). Furthermore, the group with 5–10 years' experience was more likely to

do the procedure, while those with more than 10 years' experience stated they could do or teach the procedure ($p<0.05$). In summary, female practitioners with lower competency ratings were more likely to carry out a TOP than male practitioners with higher competency ratings.

c.   *Laparotomy*

The part-time medical officers were more likely to have a higher competency rating in performing a laparotomy, community service respondents were more likely to need supervision, and full-time and community service doctors were least likely to undertake a laparotomy ($p<0.05$). Females and those with the least experience (1-5 yrs) were least likely to perform the procedure or were in need of supervision, in contrast with those with the most experience who were more likely to perform a laparotomy independently or be able to teach the procedure ($p<0.05$). All categories of experience were similar in not performing a laparotomy. These results suggest that, while the more experienced doctors were competent to undertake a laparotomy, in practice they were not performing the procedure.

d.   *Tonsillectomy*

Part-timers were more likely to do a tonsillectomy and had higher competency ratings ($p<0.05$). Females were least likely to do the procedure and needed supervision, whereas those with more experience were more likely to do the procedure independently than those with the least experience ($p<0.05$). This confirmed the association between gender and years of experience.

e.   *Spinal anaesthetic*

Community service doctors were the most likely to do the procedure, followed by part-timers, and lastly full-time medical officers (p<0.05). Furthermore, those with the least experience were more likely to perform a spinal anaesthetic independently and those with the most experience (>10 yrs) were least likely to do so (p<0.05). These results differed from most of the others in that the younger doctors were rating higher competency levels than those with more experience.

f.   *Ketamine anaesthetic*

Part-time medical officers, male practitioners and those with between 5–10 years' experience were more likely to use this type of anaesthetic and to indicate higher competency ratings. (p<0.05).

g.   *General anaesthetic*

The community service doctors were more likely to indicate low competency ratings for performing general anaesthetics. The part-timers were more likely to do a general anaesthetic, and the full-time medical officers less likely than the other categories (p<0.05). Males and those with more than five years experience were more likely to have higher competency ratings (p<0.05).

h.   *Tracheotomy*

Community service and full-time medical officers, females and those with less than 10 years experience were less likely to do a tracheotomy than part-time medical

officers (p<0.05). This follows the trend of the association between gender, experience and competency.

i.   *Cardio-pulmonary-resuscitation (CPR) with intubation*

There were no statistical differences between all the variables and this skill (p>0.05), suggesting evenly balanced competencies in performing CPR for all the categories of practitioners.

j.   *Clinical forensic duties*

Community service medical officers and those with less than five years experience were less likely to manage a rape survivor and were also more likely to need supervision (p<0.05). Community service and full-time doctors were more likely not to manage an alleged drunken driver (p<0.05). There were no statistical differences in the competencies to perform clinical forensic duties between males and females (p>0.05).

k.   *HIV/AIDS counseling*

Community service doctors and practitioners with more than 10 years' experience were more likely to rate lower competency in providing HIV/AIDS counselling. The group with 5–10 years of experience was more likely to have higher competency ratings in this regard than the others (p<0.05). This indicated a need for training in HIV/AIDS for practitioners who qualified more than ten years ago.

l. *Outreach and support to Primary Health Care (PHC) services*

Medical officers with the least experience were least likely to perform these skills, and those with the most experience, were most likely to do in-service training of personnel and to conduct personnel meetings ($p < 0.05$). Furthermore, male doctors were more likely to provide support services to PHC and to conduct personnel meetings ($p < 0.05$), indicating that outreach and support skills develop over time and with experience.

m. *District hospital management and public health issues*

Full-time medical officers were the most likely to rate higher competency in management activities such as drawing up duty rosters ($p < 0.05$). Community service doctors were less likely to perform any of the skills in this category, and those with the least experience (less than five years) were least likely to be involved with personnel training, drawing up duty rosters, and community participation ($p < 0.05$). Those with more than 10 years' experience were most likely to take part in research, quality improvement, drawing up budgets and strategic planning for the hospital ($p < 0.05$). There were no statistical differences between males and females in performing skills related to hospital management ($p > 0.05$). The fact that Medical Superintendents were mostly full-time medical officers influenced the outcome of this section.

4.2.8 EXPLORING THE SKILLS GAP QUALITATIVELY IN THE QUESTIONNAIRE

The qualitative part of the questionnaire posed a number of open questions to respondents. The following themes were identified from the responses:

a.   *Perceived knowledge and skills gap*

The respondents' perception of the gap between their current knowledge and skills, and those needed to function in a district hospital were explored. Responses centered around actual knowledge and skills deficiencies, as well as difficulties experienced in performing district hospital duties. A lack of managerial and administrative skills was frequently mentioned. A gap in anaesthetic, obstetric, orthopaedic, casualty, HIV/AIDS, paediatric, forensic and endoscopic knowledge and skills, as well as in a few procedures such as tracheotomy, central venous line, appendicectomy and tonsillectomy were identified. Lack of training was seen as a problem.

> *"In all my years working in a tertiary and various district hospitals, I never received any formal in-service training in practical skills – only occasional lectures and tutoring. Such skills as IC drains, paraphymosis reduction, fracture reductions and LPs, were learnt on a hit and miss basis. They were painful and sometimes deleterious to the patient and very stressful and demoralising to me."*

b.   *Barriers to performing skills*

The main barriers identified had to do with district hospital resources such as limited personnel, shortage and breakages of equipment, excessive workload, restrictions on the use of medicines, budgetary constraints, and a lack of insight on the part of managers.

> *"Absolute frustration with lack of insight by employers who make bureaucratic decisions at higher levels without having enough information from the ground level."*

> *"I am attempting to balance quality of care with absolute breakdown of infrastructure."*

c. ***Proposals on how to address the knowledge and skills gap***

The respondents had various approaches on how to address the knowledge and skills gap. Better use of personnel, additional personnel - especially after-hours, trained theatre personnel, and the use of PHC nurses to manage PHC complaints. Visits by specialists for academic rounds, in-service training and supervision of services were regarded as useful. Dedicated time for in-service training was seen as essential. The most popular methods for maintenance and updating of knowledge and skills were rotations in secondary or tertiary hospitals, practical skills workshops, various courses, academic meetings and regular meetings with hospital management. Other ideas were a help line at tertiary hospitals, e-mail support, and faxed ECGs for specialist comment.

"Such training should be formalised and not an occasional ad hoc *affair dependent on the mood, temperament, generosity and interest of senior colleagues."*

d. ***Intention to leave the district hospital***

On the question whether the medical officer planned to terminate his or her services at the hospital in the near future, 40 (36.4%) responded positively, 66 (60%) negatively and 4 (3.6%) did not respond. The reasons for wishing to leave included the following:

➢ Workload, especially after-hours – too many patients, too little time, too much pressure, unpleasant work, e.g. drunk, abusive and violent patients.

➢ Financial consideration, including inadequate remuneration, study loans.

➤ Poor relations with management, "shabby" treatment by management and perceived management deficiencies.

➤ The desire to go overseas.

➤ Contract at district hospital expiring without the possibility of continued employment at the hospital for community service doctors or medical superintendent.

➤ Family reasons.

e. *Working conditions*

In exploring working conditions at the district hospital, the respondents painted a picture of serious work frustration leading to increased risk, pressure, stress and in some cases burnout. The main source of frustration for medical officers was the excessive workload, especially after-hours. Unpleasant working conditions and having to deal with drunk and aggressive patients, plus the effect of violence lead to a lack of meaning and belief in their work. The overload was exacerbated by the fact that many patients were presenting with minor PHC complaints that could have been resolved by a well-functioning PHC system. The workload was furthermore increased by a lack of personnel and, on the other hand, demotivated personnel. Management was perceived as unsupportive, unco-operative, non-communicative, arrogant and authoritarian, while playing politics with district hospitals. Inappropriate remuneration for expertise, insufficient facilities, equipment and limited medication completed the picture of stressed and frustrated medical officers in Western Cape district hospitals.

> *"The district hospital has become a clinic where everybody who has some or other complaint at night or over weekends can go and then I have to sort out month old problems on a Sunday afternoon at R75-00 per hour!"*

"Overload of patients inappropriate for medical officer care instead of PHC. The result is that the selected in-patients are often neglected at a cost of seeing stable out-patients who need to be seen only because they arrived at the hospital and cannot be turned away. These patients should be screened and only appropriate cases referred to medical officers, as there are too many patients per doctor who has numerous other responsibilities beside out-patients."

f.   *General comment*

A number of respondents said that they were happy at the district hospital and that it was a potentially satisfying job. Most pleaded that something drastic needed to be done to retain the services of highly skilled and dedicated district hospital medical practitioners. The study was seen as "much needed" and the medical officers were looking forward to the outcome of the study.

SECTION THREE

4.3   RESULTS OF IN-DEPTH INTERVIEWS

In-depth interviews were conducted with 20 medical officers. The demographic profile of the interviewees is shown in Table 27.

TABLE 27: DEMOGRAPHIC PROFILE OF INTERVIEWEES

	Total	Female	Male	Years qualified
Full-time	8	4	4	1 - 11
Part-time	12	2	10	5 - 26

During the analysis, it became clear that most issues were common to both the full-time and part-time groups, and these are reported on simultaneously. A few themes which are unique to each of the groups were identified and are reported on separately. These differences were caused, amongst others, by differing service conditions, as well as the statistically significant difference in years of experience between the groups. Table 28 lists the themes and sub-themes for both the full-time and part-time groups.

TABLE 28: LIST OF IDENTIFIED THEMES AND SUB-THEMES

FULL-TIME PRACTITIONERS	PART-TIME PRACTITIONERS
Knowledge and skills	**Knowledge and skills**
Scope of knowledge and skills	Scope of knowledge and skills
Knowledge and skills gap	Knowledge and skills gap
Knowledge and skills development	Knowledge and skills development
Situational factors	**Situational factors**
Job satisfaction	Job satisfaction
Job frustrations	Job frustrations
Work-related stress	Relations with management
Support structures	**Support structures**
Specialist support	Specialist support
Regional and tertiary hospitals	Regional and tertiary hospitals
Nursing personnel	Nursing personnel
Support services	Support services
Community service doctors	Community service doctors
Public-private partnerships	Public-private partnerships, private practice issues
Community issues	Community issues
	DHS and PHC

4.3.1   KNOWLEDGE AND SKILLS

a.   *Scope of knowledge and skills*

The interviews revealed that medical officers were dealing with a wide variety of problems requiring a broad range of knowledge and skills, ranging from minor PHC complaints to multiple trauma cases. There were recurrent references to the importance of being a "good generalist". Trauma skills, general surgical, obstetric, as well as anaesthetic skills had to be practised frequently. In addition, language and communication skills were important.

> *"It's surprising how broad reaching your skills need to be. Whatever medical,*
> *surgical, orthopaedic training and experience is available, it is all applicable.*

It is such a general job that you never know from one minute to the next where your next challenge is going to be."

"Any skill that you have – doesn't matter what skill – is useful. Unexpectedly useful! I did French at school – I haven't used French for 30 years – I now use French frequently because we have an immigrant community of Congolese patients."

"I also have some language skills and I do quite a lot of my own counseling. I speak Xhosa – it's a great help."

"The main thing to work on is surgical skills. Obstetric surgery primarily. And then second to that are anaesthetic skills because you always need that in the rural areas."

"Well, most of what we see as emergencies is in fact trauma related. A lot of it is obviously drunken behaviour; knife wounds - that sort of thing. We drain about 60 – 100 km of the N1 (highway), so we sometimes get major MVAs."

b. *Knowledge and skills gap*

The interviewees described a wide range of areas where they believed a knowledge and skills gap existed. Explanations for the existence of the gap included lack of education, training or experience, inadequate equipment, skills attrition due to limited exposure, and new developments in the management of some conditions. These perceived "missing knowledge or skills" were a source of common concern. Being less competent in certain areas was a source of severe stress, especially to the full-time practitioners. The part-time interviewees saw the lack of backup, inadequate remuneration for complex procedures, and medico-legal risks as barriers to the performance of some procedures.

"I had two anaesthetic lectures in fourth year and not much before I came here and started to do gas this year for the first time because I was too terrified to do them before."

"Neonates make me very anxious. And also neonatal resus – I don't like that."

"That's where the problem comes in. We give the work to the people who know the work because it saves time, saves energy. And then you fall into the trap where you say 'I'll do the clinic work, because I like doing the clinic work – you do the surgery' and don't get the experience and vice versa.*"*

"The stress or the uncertainty if you want to make a diagnosis, but you can't because you either don't have the skills or the technology or, for that matter, you physically just don't know what's going on and you can't always refer immediately to get an answer."

"I think I have enough experience, but just sometimes feel that you don't have all the back-up you should have."

"So, I think, when you go into surgery nowadays, it's better not to do anything that you think might give you a problem because everything is now medico-legally with a label about that."

"I am not always certain about the medication and interactions with each other. I do not think that on psychiatric level, I am always delivering the best service to the patient."

"But because, if you do something wrong here and it goes seriously wrong, it's too far from town B (secondary hospital) to take the risk. And then you slowly unlearn some of the skills that you did know."

"Cardiac is one because I know that the drugs we used to use when I was a student - now they are clearly not using them."

"And maternity skills, to do a breech delivery once a year – it is scary every time you do it."

"I've got no skills as far as (hospital) management goes."

"For instance, if you want to do skin grafts, you need proper equipment to do a proper skin graft and we haven't got that, because it's expensive to buy and there isn't enough money to buy equipment."

"When I get (a patient) with a stab in the abdomen – I did it for three years, I feel I can do it well, but why should I do it if I am not compensated for it. So there are two reasons why I am not doing it: The one is salary and the other the risk of complication and the queries why you have not referred the patient."

"We are not equipped for psychotic patients."

"You know you get people that can't do basic emergency treatment for a patient who has been involved in an accident. They never teach you that at (tertiary) Hospital C."

c.   *Knowledge and skills development*

The need for knowledge updating and skills development was expressed during the interviews together with suggestions as to how this could be achieved. Generally, knowledge and skills acquisition took place through in-service learning from more

experienced colleagues and, to a lesser extent, from visiting experts. Rotations, especially through secondary and, to a lesser extent, tertiary hospitals, were highly regarded as means for updating skills. Working with visiting specialists was also considered a useful way to develop knowledge and skills. Practical hands-on training was preferred above lectures. Lack of time, lack of locums, excessive workloads, remoteness and expenses were identified as barriers which discourage training.

"But, yes we do have opportunities and you have to be disciplined with yourself to go and practise those opportunities - getting up early to do your ward work so that you can go to theatre and be an extra hand."

"X is our secondary hospital and we had a stage when one of our doctors goes through weekly for the orthopaedics list so we can get a little bit more experienced in that. But then again someone else has to cover his round that day. "

"And we would like to do refresher courses. There's really no time to go to these things and no money to pay to attend these courses."

"I think I am honest if I say that there is simply not an hour or two to give to CPD."

"I need to work in a trauma situation where you are doing basic resuscitation and management at that level. Because it happens irregularly and fairly wide apart here."

"Another thing that I am very keen on is to get the doctors to move around and do regular visits to us – the physicians or the paediatricians or the surgeons. Not necessarily to come and perform certain procedures, but to have one-on-one lecturing on certain problems so that at least we have another way to judge our own capability and to learn from experience or mistakes you've made."

"You see doctors that live in bigger areas, it's no problem for them to attend a lecture of an hour. But CPD points are quite a problem for the rural doctor to get the points."

"We get the pharmaceutical companies coming and bringing speakers up. Now every time they speak on the same subject. They talk on the same topic every time because it's the company that wants to promote its products."

"With regard to developing skills, I don't think one can really do that with courses and things – it's got to be hands-on."

4.3.2   SITUATIONAL FACTORS

a.   *Job satisfaction*

Despite the Western Cape being thought of as a province with less remote areas than other parts of the country, the medical officers perceived isolation as a problem. This problem was, however, counteracted by job satisfaction based on the generalist nature of their work, getting to know the local population, benefiting the community, the financial security of employment in the public sector, plus the opportunity to perform procedures not usually carried out by general practitioners in urban settings. On the other hand, concerns about low personnel motivation levels were expressed.

"We are right at the end of the world here. That is an immense problem in its own right - logistically, geographically, time wise, life saving wise, everything."

"You feel like you are benefiting your community. There are people who are needy and you see them."

"I am happy at the place where I work. I am happy with the people I am working with and it's very important to enjoy your work. And I enjoy the type of work I do."

"That's nice about working here – I know about 50% of the patients by name. That's what's nice – you know your patients and you know their problems."

"From a financial point of view, working in a state hospital is, I think, very good. You will get a salary regardless of the time and the patient loads you see. It's not like in private - if you only see two patients you just get two patients' money."

"Basically I do feel that I have gained a lot of experience being at a district hospital. There are a few areas that I have been very scared about performing, because I don't feel that I have got all the training or the practise to do. But at (district hospital) X, I do get a lot of support in doing it and don't get pushed into doing things that I am scared of doing."

"On the other hand, saying that we have a very good hospital and that makes rural work worthwhile. I think of locums where they haven't got a hospital and that's absolutely horrendous."

"Years ago you would do a lot of things although you didn't get paid for it, but you would just do it. Nowadays people just look at what's on their contract and, if they say they are not supposed to clean anything up, they will not clean it."

b.   *Job frustrations*

The interviewees elaborated on conditions in district hospitals which cause frustrations and hinder optimal service delivery. The lack of resources such as

equipment, an adequate budget and lack of specialist back-up emerged as sub-themes of job frustration. For the full-time medical officers this formed a major theme. They felt that the excessive workload, especially after-hour duties and having to cope with large numbers of PHC problems, assaults and trauma were problematic. They identified situations beyond their control that impinged on their work satisfaction. For full-timers these were the lack of a career path in district hospital services. For part-timers medico-legal risks were a cause of concern, as well as appropriate remuneration for performing advanced skills.

"And then being on call the whole weekend is quite difficult, because if you have worked the whole Saturday night and go home on the Sunday morning. If there are procedures, then you have to come back. It doesn't sound so bad until you try and do it – it's relentless and it's exhausting and it's frustrating. And I think it's unhealthy – people who say its OK should try it."

"There are a lot of negatives to the whole thing as well. I find what really irritates me are the weekend duties. We find we need three people to cover a weekend. So the very best we are ever going to do is one in two weekends. My wife gets quite resentful of the fact that I can't do things when my friends are doing things, when I want to do things."

"What we basically do here is a lot of PHC, because our clinic system at X is not functioning optimally. As a matter of fact, 90% of my work is PHC because the clinic is not functioning that well."

"But hospital funds are so limited at the moment that, to spend over one's budget in order to save money somewhere else – it's difficult actually to motivate it."

"The problem with the district hospital is that there are only certain medicines allocated on our code."

"My biggest frustration in this hospital is that I am already working here for 10 years and there is no possibility of a rank increase."

"I think the other thing that people don't really understand is - really it's not about the money. There isn't actually enough money in the world to pay me to work in these conditions for years. It's about getting my time off or having fun or satisfaction from my work."

"At the moment we are taking risks every day. Firstly you must stay within the law or within medico-legal risks – it must be acceptable. And secondly the medical officers are also human beings – they must have a choice. Maybe they don't like anaesthetics."

"To expect me to leave my private practice and do that sort of work without being paid for it would be unrealistic. The willingness is there – if the remuneration and the incentive were there."

Inappropriate undergraduate education and training and internship training may have negatively influenced the attitudes of young doctors towards district hospitals. Newly qualified practitioners arrived at district hospitals with the expectation of doing "real medicine" such as performing operating procedures. Such persons are further disappointed when ending up dealing with the psychosocial problems of patients, PHC and violent trauma.

"The two medical officers that came here wanted to cut. They ended up in casualty – stitching. And they say they are not casualty doctors. They are not PHC doctors. They are real doctors – not interested in just casualty."

"They come here and they think they are going to be water-skiing and walking in the forest and mountain biking – and then they spend a lot of time in casualty on a Saturday night with drunk, aggressive, assaulted patients."

"Well, I think there's a problem between what people consider to be real medicine and what doctors are supposed to do in these kind of places."

"It very much depends on what experience they have had in their house job year. Some have worked in mission hospitals, whereas others, for example people who have gone through their house job year in Groote Schuur Hospital, tend to be far less practically capable."

c. Work-related stress

Work-related stress caused by excessive workload, especially after-hours and other unfavourable working conditions, was a substantial problem for full-time practitioners. Social problems, poverty and violence in the community burden district hospital services and impact on the morale of medical officers. They felt that they had not been sufficiently trained to deal with such factors, which lead to a sense of despondency and helplessness.

"I don't get frustrated by the fact that we don't have a blood gas machine. People don't always make it and that's not necessarily something I can change. That doesn't drive me crazy like it does a lot of people who come from a tertiary hospital – it does drive them mad. A lot of the people who leave here have problems with this hospital, which cannot be changed."

"There are major limitations to the system. There are major irritations and major frustration. We've all had our times when we blow up and say 'I've had enough."

"The people that work here feel that it is not worth it working here any longer, because we have been trying, especially myself, for 10 years. I like to work in this hospital, but for so long - we have taken so much. We have written letters.

It is as if nobody listens to you. This is not about the higher post or the money - it's about working conditions in this hospital."

d. *Management*

The relationship with management was an important issue for the part-time interviewees. They felt that they were marginalised and not consulted on issues regarding the district hospital. In their opinion, management was prejudiced and took decisions in a top-down approach without considering information on local conditions.

"The general feeling is that, what we have in the rural areas, is that a lot of decisions are taken about medical services in rural areas without talking to the people who really work in the rural areas. And this is a very big problem for us. We have guys that sit in government or in positions who are so-called knowledgeable on these things."

"For instance, increasing a ward by one and a half meters by breaking out one wall and the whole sewage system, plumbing and everything just to make it a metre bigger so that it can accommodate a new size bed or something. It's things like this that happen where we feel that this is being done by guys who sit in Cape Town and they come and talk to us but they don't listen to what we say – so that it actually gets to a stage where the guys that are locally involved in the service, are not interested anymore."

4.3.3   SUPPORT STRUCTURES

a.   *Specialist support*

Support provided by specialists formed a substantial theme for the full-time interviewees. Outreach visits by specialists were regarded as helpful in managing problem cases and offering learning opportunities, provided these were co-ordinated with medical officers' learning needs. Specialists rendering services at a district hospital were, however, also causing strain.

> *"For me it's been absolutely fantastic. Every now and again I am desperate. And I phone the surgeon and he comes, sorts it out and he goes away. And that's exactly what I need."*

> *"I found at some of the hospitals that the support was there, but the person who was supposed to support you either has your level of experience or just a year or so more than you. So you sort of feel like you actually need a little bit more than that."*

> *"On a Tuesday morning the private consultant for maternity comes in specifically and we have a discussion on our problem cases where we didn't know what to do."*

> *"The paediatrician visits us every last Wednesday. So we stack up a few problems for him. So, we get quite nice support from him."*

> *"When we have a surgeon working here on a weekend it's a nightmare on call. Sometimes there can be two lap's, an ectopic and Caesar in one night and you've worked the whole day or whole night and they keep whatever they can until the morning and then you go to theatre."*

"The specialist comes at times which are difficult for us in that we've got a private practice that we have to run as well. So this guy pitches up here at ten, half past ten in the mornings and then he talks to the community service doctors at the ward round and that's it."

b. Regional and tertiary hospitals

The relationship with higher levels of care, especially secondary hospitals, was regarded as important. Communication with referral centers had a significant impact on skills performed by medical officers in district hospitals.

"Also about referring to (secondary) hospital X – it's like sending stuff into the Bermuda triangle. They never come back with summaries, we never found out what happened to them, there's no inter-connection between the two."

"I think there is not enough connection between hospitals that work closely together. I feel we are a team together and we have our place and they have their place. But they treat us like an outside clinic which is a little annoying."

"It also depends largely on the people at the other end. If they are new and don't understand the system, they can sometimes be very difficult. The people who are familiar with us, who actually worked here as medical officers - they obviously understand our limitations and referring patients to them is a pleasure."

"What is a big problem are head injuries. You get a patient with a head injury - it's impossible – if the scale is below 8, they (two tertiary hospitals and a secondary hospital) won't take the patient. And we sit here with a seriously injured patient whom we can't handle and they don't want."

"He would argue whether to accept the patient or not - because he hasn't got a bed. And he hasn't got enough staff. So, he shifts the blame to us and says – 'well, why don't you do a debridement of the open fracture'. We haven't been trained to do it which I think is not expected of us to do."

c. Nursing personnel

The procedures which medical officers performed depended to an extent on the skills of the nursing personnel. A commonly recurring theme involved the lack of nursing personnel, their training and motivation. The interviewees felt that the use of PHC nurses would be a solution to the primary care overload, especially after-hours.

"We try to provide a good service, but I think the nurses are dispirited most of the time and they can't observe most of the patients. Sometimes we even have to refer patients just for observation."

"The problem is that your staff is not really organised. Resuscitations are a problem at night. They tried training sessions, but now the staff changes such a lot that there is no fixed personnel as everybody has to rotate through the hospital."

"You have to work as a team because there is no point in saying 'I'm alone', because there are times when you need help and, of course, if you've got an attitude, they don't like you and they are not going to help you."

"I think it is sometimes dangerous – especially at night when we have one nurse and one sister to look after all the children, gastros, and female and male adult wards. They just can't cope with the work."

"Nursing specifically is a problem – the quality and the sort of 'can't worry' attitude. It looks as if they are not feeling guilty anymore. If the order is to

turn the patient two-hourly and then the patient never gets turned and if you talk about it, it looks as if it does not matter either."

"The theatre staff – we don't actually have trained theatre staff."

"A lot of the things (skills) we don't do, is because we only have one or two nurses or three and sometimes it actually becomes a problem of hands. We can do one operation, but if you have two C-sections, then you already have problems to monitor."

"We have PHC sisters who work there (casualty) during the day and at night which really helps a lot because they take away a heavy load of patients and we only get to see the in-patients."

d. Support services

The overall availability or not of support services also influenced the procedures performed. Laboratory tests were often done off-site, causing delays and limited after-hour availability. Special investigations had to be kept to an absolute minimum due to budgetary constraints, and patients who need urgent and repeated laboratory tests were better off by being referred to a higher level of care. X-ray services were frequently not available after-hours. The ambulance services drew widespread criticism, as did the lack of social support services. The lack of involvement of hospital Medical Superintendents in clinical work was problematic.

"Laboratory investigations are sometimes a problem in that if you miss the courier today, you wait until 24 hours later before you've got results. So things like lumbar punctures, any critical investigations can be difficult. One often has to treat things and get the results in retrospect."

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"It takes two days to get a full blood count and U and E's back. And then the blood has been sitting somewhere for a whole day so that the potassium is in any case through the roof."

"X-rays were stopped three months ago because they were taken by the matron and one or two of the sisters. They did it for us for years. Then it was stopped because the Nursing Council said it was not part of their duties. And the Radiology Department said they are not adequately trained, they haven't got a license for it. We advertised for a radiographer every second day – not even one reply."

"There is no social worker in town (A) at the moment. It's shocking."

"Social workers resort under the Department of Social Services. So we don't have any direct contact or liaison with them as such."

"The one big problem with the ambulances at this stage is that they cannot refuse to go and fetch a patient right up in the Bokkeveld – a 170 kilometre trip. They get there - then the patient has a cough that's been there for a week. That wastes a lot of ambulance time."

"Some of the weakest links in our whole chain of supplying good medical services to the inhabitants of this area, at this point in time is the ambulance service. I don't want to comment and say why it is like that – I think lack of money will always be number one, but I think it is also not properly managed. My personal opinion is that it should go back to PGWC."

"We have very little contact with the Medical Superintendent. He is very busy with courses and labour union activities. He is not at all involved in clinical work which is a problem for us."

e.   *Community service doctors*

The introduction of compulsory services for doctors had positive effects, but the frequent rotations and inappropriate training of these newly qualified doctors placed a further burden on especially the full-time personnel.

> *"They are definitely helpful. Most of them were very good and they were very eager to learn and work hard."*

> *"The problem is they change people after six months – you just get used to one then another lot comes. It's very disruptive for us as a hospital service, because you keep having new people. Every January you end up with people who are very inexperienced and by the end of the year, they have so much more experience and they are so much more capable - and then you get new people coming in and - back to square one."*

> *"There was conflict between senior and junior doctors - conflict in the sense that the junior doctors come out of an academic situation and it is necessary for them to adapt to a rural hospital where you have to carry the responsibility yourself. At the moment their attitude is that they are contract workers and they are not supposed to carry responsibility themselves - that is where the conflict situation comes in."*

> *"One negative point is the budget all of a sudden went a bit haywire because these newly qualified doctors tend to request an enormous amount of laboratory tests."*

f.   *Public-private partnerships and private practice issues*

Some public-private partnerships were reported as successful, but concern was expressed that the authorities appeared not to support these ventures. For most of the

part-time practitioners, their private practices were their main source of income, needing time to be managed properly. The private work provided a different practice profile, making the work more varied and lucrative and enabling these doctors to remain in a rural community. The part-time practitioners felt that they were delivering an important service to the community through their private practices. They thought that employing private practitioners on a part-time basis in the district hospital was a cost-effective way of providing services by experienced practitioners.

"We work reasonably close with the GPs here. A lot of our patients we share with the clinics, we know the doctors who work in the clinics and we can phone each other and discuss things."

"It's expensive to keep your private practice running. That's very important because that's our main source of income. We've got to look after that."

"If I would only do hospital medicine as it is at the moment, I would find it extremely unstimulating, in view of the patient load and the limitation of what you can actually do because of the financial constraints."

"There is a very big percentage of people who are being seen at the moment by GPs all over the country that relieves the pressure on the hospitals tremendously. And if you are going to stop GPs dispensing, those patients won't be able to afford GPs any more and they will all end up on the door step of the hospital."

"... A partnership between state and private. But the provincial government is absolutely against it."

g.   *Community issues*

Communities were also influencing the functioning of the district hospital and the full-time interviewees in particular. Many of the hospitals had well functioning

hospital boards and received support from various community organisations. Social problems in the community placed a burden on the district hospital, as were demanding and abusive patients.

> *"For instance, all the curtains in the hospital we've replaced. They paid for a lot of the paint. They pay for cancer patients who have to be transported by ambulances and who otherwise can't afford to go where they have to go."*

> *"You know these stabbers and drunks who exploit everything and demand everything and never pay their accounts and give us all trouble and swear at the sisters and are very rude in the hospital every day."*

> *"Alcohol abuse is a big problem in this area – really a big problem. We sometimes have up to a hundred assault cases per weekend."*

> *"There is a lot of alcoholism, lots of domestic violence, child neglect – a lot of big problems in this town."*

> *"We do in fact enjoy considerable support from the community. Our hospital board is very supportive. People like the Lions run an eye clinic and various organisations do a lot of work."*

g.   *District Health System and Primary Health Care*

Interaction with primary health care facilities within the district was an important theme for part-timers as they were also involved in health delivery outside of the hospital. Fragmentation of services and governance within the DHS was a concern and caused problems with service delivery. The fact that PHC services were not available after-hours placed an inappropriate load on the district hospital.

"You see, what is happening is that the district hospital casualty department is overflowing with PHC problems after-hours. That is the crux *of the matter. The PHC centres all over this district close at 4 o'clock in the afternoon. Then the hospitals get flooded with PHC problems. So, now what happens is the staff that is enough to service the hospital are pulled out of the wards to function as a PHC system in the casualty department."*

"You see what happened over the years is that the workload of this hospital has been getting more and more and more and more. Especially the unsorted PHC problems. I think one of the reasons, I hope I may say, is because there is the idea that medical treatment at provincial or whatever hospital is now free of charge."

"Where we have this fragmented system now - where half is under the municipal control and the other half is semi-provincial, semi-local, semi-emergency services. The ambulance service is another fragment - and then obviously the hospital itself."

"I think the end result would probably be somebody who is in charge of the hospital and all the clinic systems - to get a medically knowledgeable person that takes charge of all the systems and gets them integrated."

"Communication with the clinics is the big problem everywhere. If you don't speak to people then it's always easy because they remain faceless. I actually saw that it's very beneficial to work in close relation with the community sisters."

4.3.4 CONCEPTUAL FRAMEWORKS

The following two conceptual models were developed, based on these themes, namely –

- the inverse performance spiral (see Figure Q); and

- the skills boat (see Figure R).

a.　　The inverse performance spiral

Figure Q assists in conceptualising the influence of conditions in a district hospital on the performance of the medical officers. The picture emerging from (especially) the full-time medical officer interviews can be compared to a downward spiral. The inverse performance spiral follows a downward movement in which the quality of skills progressively decreases as the spiral progresses. The medical officer enters the spiral when taking up a post at a district hospital, often with expectations of a rewarding time in a rural area and performing interesting procedures. The medical officer is then confronted with an unexpected patient profile which includes violence, social problems, abusive patients, as well as the inappropriate use of after-hour services for minor complaints. The workload and antisocial hours prevent the medical officer from engaging in "real medicine". The chronic lack of personnel aggravates the situation. Other setbacks include the malfunctioning of the ambulance system, and the refusal of referral hospitals to accept patients. Only basic procedures are performed which results in skills atrophy and little time to acquire or update knowledge and skills. Limited support from management further undermines morale.

As the skills gap widens, the quality of care decreases and medico-legal risks increase. Job satisfaction decreases and frustrations mount. Motivation to carry out procedures dwindles and the doctor becomes increasingly stressed, while burnout looms. Coping mechanisms develop, including callous attitudes, negativity and destructive criticism. The medical officer faces a decision on how to respond to the situation which often leads to resignation.

FIGURE Q: THE INVERSE PERFORMANCE SPIRAL

Enters spiral with expectations, against background of training and experience

Heavy after-hours workload, violence, PHC, limited staff

Little time to learn or practice, skills regression

Skills attrition

Knowledge and skills gap widens

Quality of care suffers; Medico-legal risks increase

Less job satisfaction; frustrated; stressed

Sick leave, negative attitudes, criticisms

Opts out; resigns

Exits spiral Moves on

b. *The skills boat: Opportunities, threats, restraining and driving forces which impact on professional skills of medical officers in district hospitals*

The conceptual model that emerged from the key question used in the interviews, namely "What is your experience of the professional skills you have to perform as a medical officer in a district hospital", was that of a skills boat. The boat could move forward, stall, move backward, sink, or, alternatively, its progress could be enhanced by a number of influences. These were grouped as restraining forces or threats, and driving forces or opportunities. Figure R demonstrates the influence of these factors on the boat. The key to developing and supporting medical officers in district hospitals, is to enhance the *driving forces* in this diagram and, at the same, limit the effect of the *threats or restraining* forces. This will enable district hospitals to provide an appropriate, cost-effective, equitable and quality service to the community.

FIGURE R: THE SKILLS BOAT
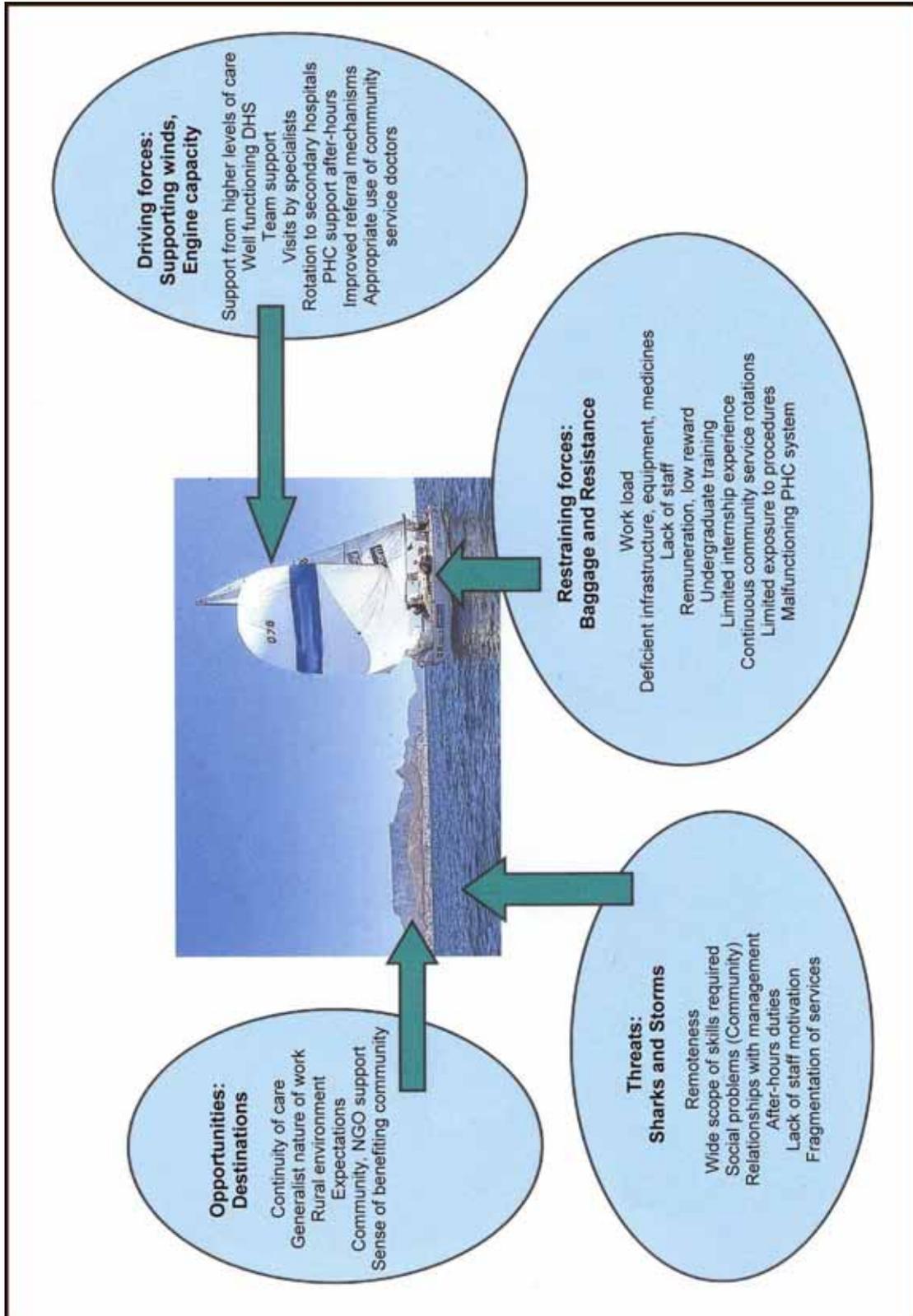
SECTION FOUR

4.4 DELPHI ROUND 1 RESULTS

4.4.1 DEMOGRAPHIC INFORMATION

Twenty-four out of 33 questionnaires were returned, representing a 73% response rate. Nineteen (79%) of the respondents were male, while five (21%) were female. The average age of the respondents was 49.5 years (range 32-75; SD 11.2). The average number of years since attaining their basic qualification in medicine was 28 years (1952-1993). Of the respondents, 87% indicated that they had obtained a postgraduate qualification. The average number of qualifications per person was two (range 1-6; SD 1.3), the most frequent qualification being a Master's in Family Medicine (13; 54.2%). Nine (37.5%) of the respondents had completed an ACLS, APLS or ATLS. Table 29 specifies the various postgraduate qualifications which the respondents held.

TABLE 29:   RESPONDENTS' POSTGRADUATE QUALIFICATIONS: DELPHI ROUND 1 (N=24)

QUALIFICATION	NUMBER	%
MFamMed	13	54.2
MCFP	4	16.7
M Med Community Health	1	4.2
Dip Anaesthesiology	3	12.5
Dip Child Health	2	8.3
Dip Obstretics	4	16.7
Dip Occupational Health	1	4.2
Dip Public Health	3	12.5
ATLS or equivalent	9	37.5
Various others	12	50.0

Other qualifications included FACRRM (2); MPhil (Pall Care) (1); DHSM (2); Dip PHC Ed (1); DTMA (1) and MBA (1).

Almost half of the respondents (11; 45.8%) were working in the public sector, 37.5% held a part-time academic position, 33.3% were involved in part-time clinical practice, and 29.2% were in full-time clinical practice. Table 30 shows the nature of the respondents' current employment.

TABLE 30:   RESPONDENTS' EMPLOYMENT STATUS: DELPHI ROUND 1 (N=24)

EMPLOYMENT CATEGORIES	NUMBER	%
Public sector	11	45.8
Part-time academic	9	37.5
Part-time clinician	8	33.3
Full-time clinician	7	29.2
Administration	7	29.2
Private sector	5	20.8
Hospital management	5	20.8
Full-time academic	3	12.5
Provincial manager	3	12.5
Retired	2	8.3

In response to the question on how the respondents' saw their own expertise in rural health, most (23; 95.8%) indicated they had expertise in clinical patient care, 83.3% in undergraduate education and training, 70.8% in service management and 62.5% in in-service training. Table 31 demonstrates the respondents' expertise in rural health.

TABLE 31:   RESPONDENTS' EXPERTISE: DELPHI ROUND 1 (N=24)

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

"Other" included PHC Nurse training (1); RuDASA (1), and Medical Superintendent urban teaching hospital (1).

4.4.2 UPDATING ON KNOWLEDGE OR SKILLS RELATED TO PROBLEM AREAS COMMONLY OCCURRING IN DISTRICT HOSPITALS

Consensus was defined as 70% or more of the respondents in agreement with the statement, or alternatively 30% or less of the respondents in agreement. The latter indicated consensus on disagreement with a particular statement.

a.   *Necessity of updating*

There was strong agreement (86% - 100%) that it is essential that all the knowledge, skills or problem areas in this section need to be updated. Updating for general anaesthetic and trauma skills was supported by all (100%). The need for the updating of ethical aspects pertaining to termination of pregnancy (TOP) drew 75% support. A number of respondents commented that they were opposed to TOP on moral and ethical grounds.

b.   *Suggested frequency of updating*

Ten-yearly updating was not supported for any of the knowledge and skills areas in this category. Yearly updating of two categories was strongly supported, namely general anaesthesia (95%) and common medical conditions (88%). The highest percentage support for five-yearly updating was for local anaesthetic techniques (70%) and minor surgical skills (70%). Consensus was reached in only two categories each in both the yearly and five-yearly frequencies. Table 32 specifies the percentage agreement on the frequencies of updating in this category.

TABLE 32:   PERCENTAGE AGREEMENT ON FREQUENCY OF UPDATING KNOWLEDGE AND SKILLS AREAS COMMONLY OCCURRING IN DISTRICT HOSPITALS (*INDICATES CONSENSUS)

KNOWLEDGE/SKILL AREA	YEARLY %	5-YEARLY %	10-YEARLY %
Caesarean section	41	63	0*
Female sterilisation	31	63	13*
Termination of pregnancy (TOP) (gynae)	44	60	0*
Termination of pregnancy (TOP) (ethics)	50	59	7*
Tonsillectomy	50	63	14*
Reduction closed fractures	53	58	7*
Minor surgical skills	50	70*	13*
Minor urological procedures	56	69	13*
General anaesthesia	95*	54	8*
Spinal anaesthesia	53	60	0*
Various forms of local anaesthesia	53	72*	7*
Trauma skills	67	65	0*
Common medical conditions	88*	47	4*

c.   Suggested methods of updating

Consensus was reached on 69.2% (27) of the 39 methods suggested for the updating of knowledge or skills areas commonly occurring in district hospitals. One hundred percent (100%) agreement was reached on special courses such as ACLS, APLS or ATLS for the updating of trauma skills; small group discussions for dealing with common medical conditions; practical workshops for learning various local anaesthetic techniques; and outreach visits by an expert for tonsillectomy skills. Seventy one percent (71%) of the respondents disagreed that a rotation through a tertiary hospital should be used for updating on tonsillectomies and 60% equally disagreed that this method should be used to update on general anaesthetic techniques.

In 8 of the 13 knowledge or skills areas listed in this category, consensus was not reached on one or more of the proposed methods of updating. The respondents' votes were divided equally on the suggested method of a practical workshop to update on ethical issues around TOP. Only 50% of the proposed rotations through secondary or tertiary hospitals achieved consensus, while all of the proposals for specialist working visits were supported.

Table 33 specifies the percentage agreement on suggested methods for updating knowledge and skills areas in this section.

TABLE 33: PERCENTAGE AGREEMENT ON SUGGESTED METHODS FOR UPDATING COMMONLY OCCURRING KNOWLEDGE AND SKILLS AREAS (*INDICATES CONSENSUS)#

SKILL	SecHs	TerHs	Visit	Wshop	Av	SmGrp	LcExp	Crse	Jrnl
Caesarean section	80*		85*	63					
Female sterilisation	58		91*	62					
TOP (gynae)	44			59	62				
TOP (ethics)				50		94*	58		
Tonsillectomy	80*	29	100*						
Reduction closed fractures	74*		84*	82*					
Minor surgical skills			80*	88*	88*				
Minor urological procedures	67			81*	94*				
General anaesthesia	90*	40	95*						
Spinal anaesthesia	63		83*	86*					
Various local anaesthesia	47		71*	100*					
Trauma skills	73*			87*				100*	
Common medical conditions						100*	70*		75*

#KEY: UPDATING METHODS

SecHs: Secondary hospital rotation
TerHs: Tertiary hospital rotation
Visit: Working visit by specialist
WShop: Practical workshop
AV: Audio-visual material
SmGrp: Small group discussion
LcExp: Lecture by expert
Crse: Special courses
Jrnl: Medical journals

4.4.3 UPDATING KNOWLEDGE OR SKILLS AREAS IN WHICH A GAP WAS IDENTIFIED IN WESTERN CAPE DISTRICT HOSPITALS

a.   Necessity of updating

There was general agreement ranging from 82% (team work; post-amputation problems) to 100% (neonatal resuscitation; dealing with childhood resistant asthma; dealing with acute and severe burns) that it is essential that all of the knowledge, skills or problem areas in this category needed to be updated. Respondents commented that this category dealt mainly with "soft skills" or "awareness" which were usually learnt over time and through trial and error, and which were aided by the existence of a mentoring system.

b.   Suggested frequency of updating

A ten-yearly updating cycle was supported only for quality improvement (92%) and dealing with a malnourished child (87%). Consensus was not reached on ten-yearly updating for managing post-amputation problems.

The responses were varied with regard to yearly and five-yearly frequencies. Five-yearly updating was strongly favoured for management skills (88%), and end-of-life decisions (86%). Consensus was reached on five-yearly updating in 13 of the 24 categories (54.2%). There was support for yearly updating on neonatal resuscitation (76%), dealing with resistant childhood asthma, and HIV/AIDS confidentiality (71%). Consensus was reached on yearly updating in only 7 of the 24 categories (29.1%). Table 34 shows the percentage agreement reached on the frequency for updating knowledge or skills areas in this category.

TABLE 34: PERCENTAGE AGREEMENT ON FREQUENCY FOR UPDATING THE IDENTIFIED GAPS (*INDICATES CONSENSUS)

KNOWLEDGE/SKILL AREA	YEARLY %	5-YEARLY %	10-YEARLY %
Autopsy	21*	84*	13*
Laparotomy	59	59	7%*
Skin graft	40	63	25*
Neonatal resuscitation	76*	47	0*
Malnourished child	40	71*	87*
Childhood resistant asthma	71*	56	7%
Tracheotomy	44	67	20*
Severe head injury	62	66	0*
Severe burns	53	75*	0*
Acute poisonings	67	59	7*
Acute abdomen	50	74*	7*
Suicidal patient	33	80*	22*
Major depression	40	78*	7*
HIV/AIDS confidentiality	71*	43	14*
End-of-life decisions	37	86*	14*
Domestic violence	33	82*	19*
Post-amputation problems	29*	63	33
Dementia in the elderly	21*	81*	20*
Motivational interviewing	27*	83*	13*
In-service training personnel	67	38	14*
Public health skills	36	80*	25*
Management skills	33	88*	13*
Team work	56	56	20*
Quality improvement	47	76*	92*

c.   *Suggested methods of updating*

Consensus was reached in 64 (86.5%) of the 74 methods suggested for updating knowledge or skills areas in this category. There was 100% agreement on the use of special courses such as APLS for updating on neonatal resuscitation; small group discussions for learning about how to deal with severe head injuries, acute poisonings, acutely suicidal patients, severe depression, and dementia in the elderly; and on the use of practical workshops to update management skills. The respondents did not support the use of rotations through a rehabilitation unit to learn about post-amputation problems (27%).

Consensus was not reached on proposed methods of updating in 11 of the 24 knowledge or skills areas listed in this category. Lectures by experts for learning about teamwork drew an evenly split vote. None of the proposed tertiary hospital rotations achieved consensus, while all the suggestions for small group discussions and workshops were agreed to. Table 35 indicates the percentage agreement on suggested methods for updating knowledge or skills areas in this category.

TABLE 35: PERCENTAGE AGREEMENT ON SUGGESTED METHODS FOR UPDATING KNOWLEDGE AND SKILLS AREAS IN WHICH GAPS WERE IDENTIFIED (*INDICATES CONSENSUS)#

SKILL	SecHs	TerHs	Visit	Wshop	AV	SmGrp	LcExp	Crse	Jrnl
Autopsy			78*	84*				90*	
Laparotomy	86*	40	83*						
Skin graft	59		76*		88*				
Neonatal resuscitation	60			88*				100*	
Malnourished child						95*	73*		84*
Childhood resistant asthma						94*	84*		83*
Tracheotomy		47		94*	95*				
Severe head injury		47				100*	94*		
Severe burns		40		90*			94*		
Acute poisonings						100*	82*		89*
Acute abdomen	79*					87*	71*		
Acutely suicidal patient						100*	89*		71*
Severe depression						100*	84*		88*
HIV/AIDS confidentiality				76*		87*	68		
End-of-life decisions						95*	75*		60
Domestic violence						95*	72*		71*
Post-amputation problems		27*	89*	82*					
Dementia in the elderly						100*	78*		96*
Motivational interviewing				88*	95*	84*			
In-service training personnel				89*	94*		76*	82*	
Public health skills						94*	82*	94*	
Management skills				100*			71*	95*	
Team work				95*		95*	50		
Quality improvement				90*		94*	67	83*	

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4.4.4 KNOWLEDGE, SKILLS OR PROBLEM AREAS DEFINED AS SPECIAL NEEDS FOR DISTRICT HOSPITALS AND THEIR MEDICAL PRACTITIONERS

a.   Necessity of updating

There was general agreement (70%-100%) that it is essential that most of the knowledge, skills or problem areas in this category need to be updated. All respondents supported updating on medico-legal issues. Consensus was not reached on dealing with transport issues (65%) and endoscopic skills (61%). Some respondents commented that dealing with transport issues was a management problem and that endoscopic skills did not fall within the domain of district hospitals.

b.   Suggested frequency of updating

A ten-yearly updating cycle was supported only for working without backup/in isolation (85%) and for personnel motivation (93%). The only category in which yearly updating was strongly supported, was that on medication interactions (88%). Consensus on yearly updating was reached in only three categories.

Personnel motivation (93%); working without backup/in isolation (86%); syndromic approach to STIs (79%) and clinical forensic work (76%) were supported for five-yearly updating. There was consensus in terms of five-yearly updates in only four of

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the categories in this section. The respondents were divided on five-yearly updating of knowledge and skills pertaining to community participation with 50% of respondents saying yes and 50% saying no. Table 36 shows the percentage agreement on yearly, five-yearly and ten-yearly updating of knowledge, skills, or problem areas defined as special needs in district hospitals and their medical practitioners.

TABLE 36: PERCENTAGE AGREEMENT ON FREQUENCY FOR UPDATING KNOWLEDGE, SKILLS OR PROBLEM AREAS DEFINED AS SPECIAL NEEDS (*INDICATES CONSENSUS)

KNOWLEDGE/ SKILL AREA	Yearly %	5–yearly%	10-yearly %
Disability grant review	29*	69	33
Clinical forensic work	50	76*	13*
Medico-legal issues	50	70*	20*
Syndromic approach to STIs	57	79*	15*
Medication interactions	88*	61	15*
Endoscopic skills	34	60	8*
Stress management	53	64	13*
Working without backup/in isolation	67	86*	85*
Personnel motivation	53	93*	93*
Referral skills	43	43	22*
Dealing with transport issues	29*	43	14*
Private-public initiatives	66	41	0*
Community participation	57	50	8*
Using community resources	57	60	8*
Social problems in the community	46	57	14*
Communication skills	69	46	13*
Interpersonal skills	56	59	13*
Interaction with other levels of care	50	57	21*

c.   Suggested method of updating

Agreement was reached on 42 (76.4%) of the 55 methods suggested for updating learning or skills areas defined as special needs for district hospitals. Agreement at 94% was reached on using small group discussions to update on medico-legal issues, personnel motivation, and on how to use community resources, as well as on the use of a visiting expert to learn about interaction with other levels of care. All the suggestions for updating by using practical workshops reached agreement, but none of the tertiary hospital rotation proposals were agreed on. Lectures by specialists

achieved consensus in about 50% of the proposals and small group discussions in all but two examples.

In 9 of the 18 knowledge or skills areas listed in this category, agreement was not reached on one or more of the proposed methods of updating. Lectures by an expert to learn about transport issues drew a 50-50 split vote. Table 37 shows the percentage agreement on suggested methods for updating knowledge and skills areas in this category.

TABLE 37: PERCENTAGE AGREEMENT ON SUGGESTED METHODS FOR UPDATING KNOWLEDGE AND SKILLS AREAS WHICH WERE IDENTIFIED AS SPECIAL NEEDS (*INDICATES CONSENSUS)#

KNOWLEDGE/SKILL AREA	SecHs	TerHs	Visit	Wshop	AV	SmGrp	LcExp	Crse	Jrnl
Disability grant review		41				88*	84*		
Clinical forensic work				90*		89*	89*		
Medico-legal issues						94*	89*		82*
Syndromic approach to STIs				84*		84*			88*
Medication interactions						83*	83*	80*	70*
Endoscopic skills		65		70*	71*			67	
Stress management				89*		89*	82*		
Working without backup			82*			88*			67
Personnel motivation				83*		94*		73*	
Referral skills			71*			79*			87*
Dealing with transport issues						53	50		
Private-public initiatives						65	69		
Community participation				75*		75*	56	60	
Using community resources						94*	73*	64	
Social problems in the community				75*		87*	67		
Communication skills				88*	94*	24*			
Interpersonal skills					83*	90*	47		
Interaction with other levels of care	78*		94*			88*			

See p170

#KEY: UPDATING METHODS

SecHs: Secondary hospital rotation
TerHs: Tertiary hospital rotation
Visit: Working visit by specialist
Wshop: Practical workshop
AV: Audio-visual material
SmGrp: Small group discussion
LcExp: Lecture by expert
Crse: Special courses
Jrnl: Medical journals

4.4.5   FURTHER STATISTICAL ANALYSIS

A categorical data analysis was done on variables where differences were expected. Variables on which consensus was achieved, were excluded. From this analysis and by using the Pearson Chi-square test, statistically significant differences were detected $(p<0.05)$.

The most frequently occurring statistically significant differences were about yearly updates. Respondents not holding academic appointments were statistically significantly more in favour of yearly updates than their counterparts who hold academic appointments, either on a full-time or part-time basis. Table 38 sets out the p-values of various knowledge and skills areas in terms of yearly updating between the respondent categories.

TABLE 38:   P-VALUES ON YEARLY UPDATING: RESPONDENTS HOLDING ACADEMIC APPOINTMENTS AND OTHER RESPONDENTS

KNOWLEDGE/SKILL AREA	ACADEMIC %	OTHERS %	P-VALUE
Minor surgical skills	22	86	0.01
Minor urological procedures	33	86	0.04
Laparotomy	33	88	0.02
Skin graft	0	86	0.003
Dealing with severe burns	25	86	0.04
Dealing with acute abdomen	13	86	0.009
Public health skills	0	71	0.02
Management skills	0	63	0.03
Quality improvement skills	0	86	0.003
Clinical forensic work	13	86	0.01
Medico-legal work	13	86	0.01
Syndromic approach to STIs	14	100	0.004
Stress management	22	86	0.02
Personnel motivation	25	78	0.05
Social problems in the community	14	83	0.03
Interpersonal skills	30	100	0.008

Academics favoured 10-yearly updating on performing of a spinal anaesthetic (p=0.002) and five-yearly updating of skills to reduce closed fractures (p=0.03) and performing a laparotomy (p=0.04). Five-yearly updating for common medical conditions was favoured by the non-academic respondents (p=0.04).

When comparing the responses of specific other demographic groups, it was found that service managers were statistically significantly more in favour than other respondents of yearly updating of knowledge or skills areas listed in Table 39.

TABLE 39:   **P-VALUES ON YEARLY UPDATING: RESPONDENTS HOLDING SERVICE MANAGEMENT APPOINTMENTS AND OTHER RESPONDENTS**

KNOWLEDGE/ SKILL AREA	MANAGERS %	OTHERS %	P-VALUE
TOP (gynae aspects)	100	33	0.05
Spinal anaesthesia	100	33	0.04
Major depression	100	33	0.02
Stress management	100	42	0.02
Community participation	100	55	0.04

In contrast to service managers, family physicians were significantly less in favour of yearly updates in the categories listed in Table 40.

TABLE 40:   **P-VALUES ON YEARLY UPDATING: FAMILY PHYSICIANS AND OTHER RESPONDENTS**

KNOWLEDGE/SKILL AREA	FAMILY PHYSICIAN %	OTHERS %	P-VALUE
Medico-legal issues	36	80	0.05
Syndromic approach to STIs	50	75	0.05
Social problems in the community	22	100	0.02

Family physicians were also more in favour of working visits by specialists to update caesarean section techniques (p=0.04), and ATLS courses to learn trauma skills (p=0.02).

Service managers significantly favoured rotation to a secondary hospital to learn about neonatal resuscitations (p=0.03) and rotation to a tertiary hospital to update knowledge on how to deal with severe head injury (p=0.0009). This is in contrast to respondents holding academic appointments who were not in favour of secondary hospital rotations for updating on female sterilisation (p=0.05); as were respondents who classified themselves as educational experts in rural health (p=0.04).

In terms of learning about community participation issues, educational experts were more in favour of special courses (p=0.06) as were service managers (p=0.05). Family physicians though did not support special courses to learn about community participation (p=0.02). Respondents with postgraduate qualifications were, statistically speaking, significantly more likely to think that endoscopic skills are essential for district hospital practice (p=0.02).

In order to establish which of the methods suggested for updating knowledge or skills in all three knowledge and skills categories was overall the most supported, the data was, furthermore, analysed by looking at the means for the questions to which Likert scales were added. Courses were the most popular in the commonly occurring categories, mainly due to the high score received in the usefulness of ATLS or similar courses for updating emergency and trauma skills. Small groups and outreach visits were also thought to be very useful as updating modalities in these categories.

Small groups were most valued to bridge areas in the identified knowledge and skills gap categories, followed by special courses. Outreach visits and small groups were the most supported updating modalities for knowledge and skills areas for which a special need existed in district hospitals. Overall, special courses, outreach visits and small groups scored the top mean values. Table 41 compares the usefulness of suggested updating methods.

TABLE 41: COMPARISON OF AGREEMENT ON USEFULNESS OF SUGGESTED UPDATING METHODS

KNOWLEDGE/ SKILL CATEGORY	SecHs	TerHs	Visit	Wshop	AV	SmGrp	LcExp	Crse	Jrnl
Commonly occurring/ performed	2.8	2.3	3.1	2.7	2.8	3.2	2.5	3.6	3.1
Existing knowledge/ skills gap	2.9	2.4	3	3	3	3.2	2.8	3.1	2.8
Special need/ problem area	2.9	2.6	3.1	2.9	2.9	3	2.7	2.8	2.6
Average over 3 categories	2.9	2.4	3.1	2.9	2.9	3.1	2.7	3.2	2.8

#KEY: UPDATING METHODS

SecHs: Secondary hospital rotation	*SmGrp: Small group discussion*
TerHs: Tertiary hospital rotation	*LcExp: Lecture by expert*
Visit: Working visit by specialist	*Crse: Special courses*
Wshop: Practical workshop	*Jrnl: Medical journals*
AV: Audio-visual material	

4.4.6 QUALITATIVE FEEDBACK

The panel was asked to comment on any strong feelings or suggestions for alternative methods which they might have had in terms of each of the categories in the questionnaire. The following themes emerged from the Round 1 qualitative feedback:

➢ The usefulness of updating methods taking place at the district hospital.

➢ The frequency of updating knowledge and skills areas for district hospital practice.

➢ The importance of initial learning.

➢ Ineffective methods for updating district hospital practitioners.

➢ Improvement of the questionnaire.

a.   ***The usefulness of updating methods taking place at district hospitals***

A substantial theme was what the panellists considered to be the best method for updating knowledge and skills areas for district hospitals. These generally included learning methods such as the following which could take place at the district hospital:

➢ Updating assisted by an experienced colleague or a mentor at the same district hospital, in combination with visiting experts who could be family medicine experts and need not necessarily be specialists.

➢ Regular practising under peer review.

➢ Audit and reflection on practices in district hospitals.

➢ Small group case discussions.

"Opportunities for peer review must be the strongest means of staying up to date."

b.   ***Frequency of updating knowledge and skills areas for district hospital practice***

A few respondents indicated that updating of knowledge and skills areas should perhaps not be quantified into periods of time as suggested in the questionnaire, but that the principles of outcome-based learning should rather be followed. Suggestions on how to address the problem were to maintain skills through practising and audit with the emphasis on maintaining skills rather than updating them at specified intervals. Some thought that skills which were not regularly performed, should be updated every one to five years.

"I am not comfortable with the semi-quantitative approach to programming reflected in the questionnaire (e.g. 1yr-5yr-10yr options). Progress in aspects of "procedures" will vary unforeseeably over time. Moreover, in line with what I understand is 'outcome-based' learning, and arising out of their personal approach to CPD, people's needs will differ."

"It seems more appropriate to think of what skills a practitioner should maintain and how they can be maintained, rather than updating at certain intervals."

"The frequency of update depends a lot on the frequency of performing the skills."

"In general, anything not done regularly becomes rusty and dangerous and needs updating from one to five years after the last time done."

c.   The importance of initial learning

The importance of initial learning was emphasised by a number of panellists. Respondents saw this as crucial and more important than maintaining or updating a skill. Some also questioned the notion of "de-skilling", i.e. the loss of a skill that is not being practised regularly.

"So, it is not only about updating the skills, but also about how to acquire them in the first place."

"De-skilling is probably a myth. Once acquired, skills are virtually permanent."

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"Generally I do not believe that the problem is so much updating skills as attaining and maintaining them."

d.   Ineffective methods for updating district hospital practitioners

Some of the methods suggested for updating knowledge or skills areas for district hospital practice such as rotations through secondary or tertiary hospitals did not draw support. Equally, the use of medical journals was thought to be ineffective in making a difference.

"*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.*"

"*Rotation through tertiary hospitals is impractical because of distance.*"

"There may not be cases to demonstrate on when a specialist comes visiting."

"*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.*"

e.   Improvement of the questionnaire

The motivation for the use of terminology and choice of updating methods was explained in the instructions for completing the questionnaire. Some of the respondents, however, said that they found the questionnaire difficult to complete. Reasons for this were the varying needs of different practitioners, district hospitals, as

well as individuals over time; that methods were not offered consistently throughout the questionnaire; and the term "skill" was used interchangeable for practical procedures, as well as knowledge of problem areas. This feedback was taken into account in the changes made to the Round 2 questionnaire.

> *"All of these skills are important to certain degrees, and are also dependent upon an individual's interest and the skills of other colleagues in the district hospital which complement each other."*

Respondents also remarked that the premise of "updating" needed to be redefined, meaning the relearning of skills and/or learning new things about a skill or problem. Many respondents commented that a doctor who used these skills on a regular basis, might not need updating in that particular area. The opinion was expressed that the problem is not so much one of updating a skill as, firstly, acquiring the skill and, subsequently, maintaining the skill in the absence of regular practise.

SECTION FIVE

4.5   DELPHI ROUND 2 RESULTS

4.5.1   DEMOGRAPHIC INFORMATION

Twenty out of 23 participants returned completed questionnaires, representing a response rate of 86.9%. Sixteen (80%) of the respondents were male, and four were female. The average age of the respondents was 48.8 years (33-74; SD 9.7).

Fifty-five percent of the respondents were working in the public sector, with 50% holding an academic appointment (either full-time or part-time). In Round 2, expertise in rural health was grouped in categories of mainly clinical, mainly academic, academic and clinical, or mainly service management, of which the respondents could only choose one option. The respondents' stated expertise in rural health is shown in Figure S. The majority of respondents were involved in clinical patient care with or without academic involvement.

FIGURE S: ROUND 2: PARTICIPANTS' EXPERTISE IN RURAL HEALTH
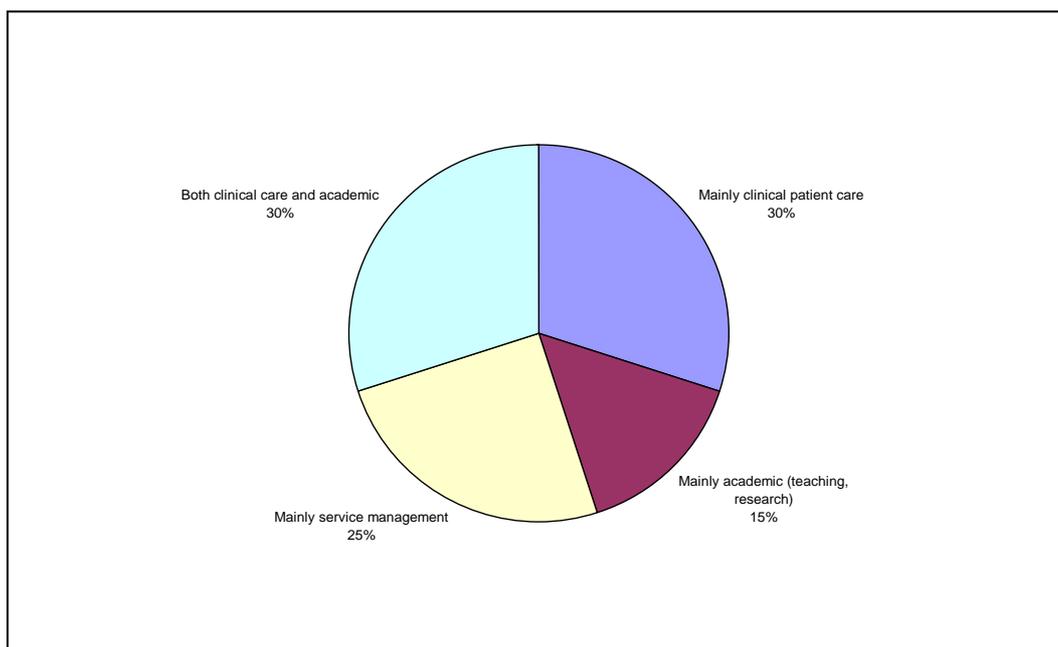
4.5.2 TERMS AND ISSUES RELATED TO THE UPDATING OF KNOWLEDGE AND SKILLS AREAS

A number of new questions were added to clarify terms and issues related to the updating of knowledge and skills areas. The panel agreed unanimously (100%) that updating meant learning new things about a knowledge or skills area. Of the respondents, 95% agreed that updating of knowledge and skills areas must be based on the need of the individual and not generalised to the group. The respondents disagreed (5%) that updating a skill meant the relearning of that skill and that once acquired, skills were permanent and did not need updating (10%). Consensus was reached on all items in this category, except on whether practitioners who carry out skills on a regular basis needed updating of those skills.

The data was furthermore analysed by looking at the mean and SD in questions linked to the Likert scale. The mean provided a numerical indication of the overall support for the statement, and differentiated between similar percentage responses. Using a Likert scale from 1-4, a mean of more than 3 or less than 2 was taken as agreement. Values between 2-3 thus indicated uncertainty of the panel on a particular issue. The SD was used to provide a measure of dispersion of the responses, as such indicating the degree of consensus. For example, using this analysis as a more precise way of measuring consensus, it appeared that, although 79% of the panel agreed that once a practitioner had acquired basic surgical skills, they can be applied to any new surgical procedure with the assistance of good surgical reference guide material, there was a degree of uncertainty, with a mean of 2.8, and a small SD (0.5), implying that the responses were centered around numbers 2 and 3 on the Likert scale (either disagreed or agreed, but not strongly so). One respondent commented that if this question were phrased, as "most" instead of "all" procedures, support would have been stronger. Table 42 demonstrates the results from this category.

TABLE 42: AGREEMENT ON ISSUES RELATED TO UPDATING KNOWLEDGE AND SKILLS AREAS FOR DISTRICT HOSPITAL PRACTICE

QUESTION	% AGREEMENT	MEAN	SD
Updating means learning <u>new things</u> about a knowledge or skill area	100	3.5	0.5
Updating of knowledge/skills areas must be based on individual need and not be generalised for the group	95	3.5	0.6
Once a practitioner has acquired basic surgical skills, they can be applied to any new surgical procedure with the assistance of good surgical reference guide material	79	2.8	0.5
The initial correct acquirement of a skill is more important than the updating thereof	74	3.1	0.8
Updating a skill in the absence of the regular practicing thereof is important	70	3.5	0.9
Practitioners who carry out skills on a regular basis do not need updating thereof	40	2.3	0.6
Once acquired, skills are permanent and do not need updating	10	1.5	0.7
Updating a skill means relearning that skill	5	1.8	0.5

4.5.3   FREQUENCY OF UPDATING

The panel reached consensus (30%) that in general, updating of knowledge and skills areas should **not** take place every year. The mean and SD for this variable, however, indicated that there was a measure of uncertainty. Furthermore, consensus was not reached on whether a time frequency of two to four years or every five years, should be used for updating knowledge and skills areas for district hospital practice. See Table 43 for the results on the frequency of updating.

TABLE 43:   ROUND 2: AGREEMENT ON FREQUENCY OF UPDATING

QUESTION	% AGREEMENT	MEAN	SD
In general, updating of knowledge/skills areas should take place every year	30	2.2	0.5
In general, updating of knowledge/skills areas should take place every five years	45	2.4	0.7
In general, updating of knowledge/skills areas should take place every 2-4 years	50	2.7	0.8

4.5.4 SUITABLE METHODS FOR UPDATING KNOWLEDGE AND SKILLS AREAS FOR DISTRICT HOSPITAL PRACTICE

Unanimous consensus was reached (100%) on the usefulness of three methods for updating knowledge and skills areas for district hospital practice, namely in-service learning from an experienced colleague, small group discussions, and rotations through secondary hospitals. In-service learning drew the top average response value (3.7). All three of these variables showed small standard deviations indicating a greater dispersion of consensus. Other methods were strongly supported, with the exception of rotations through tertiary hospitals. No consensus was reached on this method, with a wider SD indicating a wide distribution of opinions. Table 44 specifies the results of this section.

TABLE 44:   ROUND 2: AGREEMENT ON SUITABLE METHODS FOR UPDATING KNOWLEDGE AND SKILLS AREAS FOR DISTRICT HOSPITAL PRACTICE

QUESTION	% AGREEMENT	MEAN	SD
In-service clinical learning from an experienced colleague at the district hospital is useful as an updating method	100	3.7	0.5
Small group discussions at the district hospital is useful as an updating method	100	3.4	0.5
Rotation through secondary hospitals is generally a useful method of updating knowledge/skills areas needed for district hospital practice	100	3.3	0.5
Regular practising of a knowledge/ skill area under supervision at the district hospital is useful as a method of updating	95	3.4	0.6
Formal reflection on outcomes at the district hospital is useful as an updating method	95	3.3	0.5
Visits by specialists to the district hospital as a method for updating knowledge/skills areas is useful in updating district hospital doctors	95	3.2	0.5
Reading medical journals is a useful method for updating knowledge areas for district hospital practice	85	2.8	0.6
Rotations through tertiary hospitals is generally a useful method of updating knowledge/skills areas needed for district hospital practice	35	2.2	0.8

4.5.5   UPDATING KNOWLEDGE AND SKILLS AREAS THAT ARE COMMONLY PERFORMED OR MANAGED IN WESTERN CAPE DISTRICT HOSPITALS

Consensus was reached on secondary hospital rotations as a useful method for updating the outstanding knowledge and skills areas in this category. Consensus was again not reached on the remaining two methods for learning about the ethical issues involved in TOP and tertiary rotation for learning general anaesthesia. See Table 45 for the percentage agreement in this section.

TABLE 45: **ROUND 2: PERCENTAGE AGREEMENT ON SUGGESTED METHODS FOR UPDATING COMMONLY OCCURRING KNOWLEDGE AND SKILLS AREAS (*INDICATES CONSENSUS)#**

KNOWLEDGE/SKILL	SecHs	TerHs	Wshop	AV	LcExp
Caesarean section			60		
Female sterilisation	85*				
Termination of pregnancy (gynae)	78*		78*	68	
Termination of pregnancy (ethics)			68		53
Minor urological procedures	100*				
General anaesthesia		58			
Spinal anaesthesia	90*				
Various local anaesthesia	80*				

#KEY: UPDATING METHODS

SecHs: Secondary hospital rotation
TerHs: Tertiary hospital rotation
WShop: Practical workshop
AV: Audio-visual material
LcExp: Lecture by expert

4.5.6 UPDATING KNOWLEDGE AND SKILLS AREAS IN WHICH GAPS WERE IDENTIFIED IN MEDICAL OFFICERS OF WESTERN CAPE DISTRICT HOSPITALS

Consensus was reached on secondary hospital rotations for updating on neonatal resuscitations and skin grafts, and tertiary hospital rotations for dealing with severe burns, severe head injuries and performing a tracheotomy. Tertiary hospital rotations for updating laparotomy skills remained undecided, as were lectures by experts for two areas. Table 46 shows the results of this category.

TABLE 46: ROUND 2: PERCENTAGE AGREEMENT ON SUGGESTED METHODS FOR UPDATING THE IDENTIFIED GAPS (*INDICATING CONSENSUS)#

SKILL	SecHs	TerHs	LcExp	Jrnl
Laparotomy		55		
Skin graft	90*			
Neonatal resuscitation	95*			
Tracheotomy		70*		
Severe head injury		80*		
Severe burns		75*		
HIV/AIDS confidentiality			55	
End-of-life decisions				50
Team work			55	
Quality improvement			70*	

#KEY: UPDATING METHODS

SecHs: Secondary hospital rotation
TerHs: Tertiary hospital rotation
LcExp: Lecture by expert
Jrnl: Medical journals

4.5.7 UPDATING KNOWLEDGE AND SKILLS AREAS WHICH WERE IDENTIFIED AS SPECIAL NEEDS OF WESTERN CAPE DISTRICT HOSPITALS

Consensus was reached on using small groups and special courses to update some knowledge and skills areas identified as special needs of district hospitals.   Tertiary hospital rotations for the remaining two areas were again undecided. There was indecision on the use of lectures by experts to update all the areas investigated in this category. Table 47 indicates the percentage agreement obtained.

TABLE 47:   ROUND 2: PERCENTAGE AGREEMENT ON SUGGESTED METHODS FOR UPDATING SPECIAL NEEDS (*INDICATING CONSENSUS)#

LEARNING/SKILL AREA	TerHs	SmGrp	LcExp	Crse	Jrnl
Disability grant review	55				
Endoscopic skills	58			70*	
Working without backup/in isolation					58
Dealing with transport issues		95*	37		
Private-public initiatives		100*	69		
Community participation			56	84*	
Using community resources				79*	
Social problems in the community			58		
Interpersonal skills			47		

#KEY: UPDATING METHODS

TerHs: Tertiary hospital rotation
SmGrp: Small group discussion
LcExp: Lecture by expert
Crse: Special courses
Jrnl: Medical journals

4.5.8   FURTHER STATISTICAL ANALYSES

Categorical data analyses were done on variables where differences were expected. Variables where consensus was achieved were excluded. From these analyses and by using the Pearson Chi-square test, statistically significant differences were detected ($p < 0.05$).

Statistically significant differences were found between panelists holding academic appointments and those working as service managers on two occasions. Academics and service managers disagreed on whether a practitioner carrying out skills on a regular basis need updating with the managers significantly more in favour of the statement ($p = 0.004$). Furthermore, the service managers significantly supported rotations through a rehabilitation unit to update on disability grant reviews ($p = 0.08$). No other statistical significant differences were found on the updating frequency, tertiary hospital rotations or other variables tested in Round 2.

4.5.9 QUALITATIVE RESPONSES

The panel was asked to comment on any strong feelings or alternative suggestions they had in response to each of the sections in the questionnaire. The following themes emerged from the Round 2 qualitative feedback:

➢ Learning in and about one's own practice setting was superior.

➢ Individualised learning was best.

➢ Workload presented a substantial barrier to learning.

Suggestions were also made on how to clarify some of the issues in the questionnaire.

a. *Learning in and about one's own practice setting was superior*

It was clear from the data that the panellists held a strong opinion on the superiority of learning which took place in and which was contextualised to the doctor's own practice setting. They indicated that it was best for the practitioner to learn using methods such as peer and small group discussions at the local hospital, reflecting on problems contextualised to their current practice profile and setting. A learning cycle which starts off with the identification of a knowledge gap and learning need, continuing into learning the new theory, followed by discussion with colleagues and practising the new knowledge or skill and, finally, to reflect on experience and outcome, was deemed to be most effective. Other methods thought to be helpful for assisting in on-site learning were clinical protocols, skills videos, and handbooks or study material focused on local problems. Journals in general were found to be either too generic or specialised to fulfil the learning needs of district hospital practitioners.

"It is better to update skills in one's own, or in a similar setting, best to learn from an experienced colleague on site."

"Team work is also best learnt by understanding the theories, learning about culture, cross cultural differences, and sharing of experiences over a series of workshops. Learn a bit, try it out, analyse what happened, what worked and what didn't work, with a skilled facilitator over a series of meetings or mentoring encounters."

Methods which did not take place in the local setting such as rotations to secondary or tertiary hospitals, therefore, were not seen as the best way of learning as it generally did not take into consideration level-one hospital problems and provided a context different to that of the district hospital. Rotations to higher levels of care were found to be useful in certain instances where encountering a high caseload of less common problems (e.g. trauma skills) was needed.

"It's useless to go to a tertiary hospital, the anaethetists there are on a totally different planet to district hospitals."

"The trainee needs a place where there are many cases to be done and a friendly, talkative teacher. The volume of work makes the tertiary hospital the most likely for success in the short term."

b.   *Individualised learning was best*

The panellists saw individualised learning as crucial. Each individual doctor had varying levels of knowledge and skills, had learnt in different settings and circumstances, and had different levels of experience. In the same hospital there could be a practitioner who was actively practising a skill and keeping himself or herself up to date, but there could also be a practitioner who knows little about the same skill. The frequency of updating was felt to be dependent on the individual doctor, i.e. the more often the practitioner dealt with an issue, the less often refreshing would be required to take place. Therefore, updating methods such as rotations through hospitals offering higher levels of care were only seen to be useful if they were to take the learning needs of the individual into account. Lectures by experts were not supported and were seen as non-specific and not addressing individual learning needs.

> *"The needs of individual doctors vary so much that I wonder how helpful it is to make such generalisations about what is best. Learning takes place when the individual is aware of a need and is motivated to do something."*

> *"In general I do not think lectures by experts have much value."*

> *"Lectures don't work. A small group discussion/workshop facilitated by an expert, to develop local knowledge, is much better."*

> *"I have an inherent mistrust of "experts", particularly if they have an ivory tower mentality."*

c.   Workload presented a substantial barrier to learning

Several comments centered on the fact that excessive workloads presented an important barrier to learning. All efforts to address learning needs and knowledge or skills or gaps in district hospitals would be useless if specific attention is not focused on providing protected time for learning.

> *"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."*

d.   Suggestions to clarify issues

There was little comment on difficulties encountered with the Round 2 questionnaire. Feedback was focused on how to further clarify remaining issues. A useful suggestion was that the next round should provide a list of all the methods for knowledge and skills updating which had been identified for district hospital practice, and that the respondents should be given an opportunity to rank those in order of usefulness.

SECTION SIX

4.6   DELPHI ROUND 3 RESULTS

4.6.1   DEMOGRAPHIC INFORMATION

In Round 3, a 100% response rate was achieved as all 20 participants returned completed questionnaires. The gender distribution and expertise in rural health was similar to that in Round 2 as the group consisted of the same individuals.   The average age had increased marginally to 49.1 years (33-75; SD 9.9).

4.6.2   FREQUENCY OF UPDATING AND CLARIFICATION OF ISSUES RELATED TO THE UPDATING OF KNOWLEDGE AND SKILLS AREAS

The uncertainty around the frequency of updating displayed in the Round 1 and 2 results were further explored by phrasing a new question. The panel reached consensus (95%; mean = 3) that most knowledge and skills areas needed to be updated at intervals of between two to five years. The respondents also agreed that updating a skill meant refreshing that skill (95%; mean 2.9). Participants were still unsure whether a practitioner needed updating of a skill if he of she applied that skill regularly (65% agreement; mean 2.6).

The lack of consensus on issues pertaining to the updating of knowledge and skills on TOP was further investigated by exploring whether questions on TOP were problematic due to of people's differing views on the topic. The panel strongly agreed with this suggestion (95%; mean 3.2).

4.6.3 SUITABLE METHODS FOR UPDATING KNOWLEDGE AND SKILLS AREAS FOR DISTRICT HOSPITAL PRACTICE

There was consensus (22; mean 0.6) that a rotation through a tertiary hospital was not a useful method for updating procedural skills which were needed for district hospital practice. There was still uncertainty on whether a lecture by a specialist was a useful method (60%; mean 2.6); but consensus was reached that lectures relevant to district hospital practice were useful (85%; mean 3.3).

The participants were asked to prioritise the usefulness of educational methods for knowledge areas, as well as procedural skills for district hospital practice, using a five-point Likert scale where 1 indicated totally useless and 5 meant extremely useful. In-service learning under supervision received the highest average score in both categories (4.7; 4.3). Regular practice (4.1) and secondary hospital rotations (3.9) were also regarded as useful for updating procedural skills; while special courses (4.2), small group discussions (4) and workshops (4) were regarded as useful for updating knowledge areas. Learning from the Internet was regarded as the least useful for both knowledge (2.9) and skills (2.1) areas, while reading journals was regarded as not useful for procedural practice (2.3). Table 48 indicates the mean and SD of updating methods for procedural skills, while Table 49 specifies the mean and SD of updating methods for knowledge areas for district hospital practice. Teaching by peers, research, audits or using a quality improvement cycle were additional methods proposed by some of the respondents.

TABLE 48:   USEFULNESS OF UPDATING METHODS FOR PROCEDURAL SKILLS

UPDATING METHOD	USEFULNESS FOR UPDATING *PROCEDURAL SKILLS*	
	Mean	**SD**
In-service learning under supervision	4.7	0.5
Regular practice	4.1	1
Secondary hospital rotations	3.9	1.1
Specialist visits	3.8	0.9
Special courses	3.8	0.9
Small group discussions	3.4	1
Workshops	3.3	1
Audio-visual, e.g. CD, Video	3	0.8
Formal reflection on outcomes	3	1.2
Handbooks	2.8	0.8
Tertiary hospital rotations	2.7	1
Lectures by specialists	2.7	0.9
E-mail list discussions	2.4	0.9
Medical journals	2.3	0.6
Learning from the Internet	2.1	0.9

TABLE 49:   USEFULNESS OF UPDATING METHODS FOR KNOWLEDGE AREAS

UPDATING METHOD	USEFULNESS FOR UPDATING OF *KNOWLEDGE AREAS*	
	Mean	**SD**
In-service learning under supervision	4.3	0.7
Special courses	4.2	0.6
Small group discussions	4	0.8
Workshops	4	0.6
Audio-visual, e.g. CD, Video	3.9	0.8
Specialist visits	3.8	0.6
Secondary hospital rotations	3.6	0.7
Medical journals	3.6	0.8
Formal reflection on outcomes	3.6	0.9
Handbooks	3.6	0.6
Lectures by specialists	3.6	0.8
Regular practice	3.5	1.4
Tertiary hospital rotations	3.3	1
E-mail list discussions	3.3	1
Learning from the Internet	2.9	0.8

4.6.4 UPDATING COMMONLY OCCURRING KNOWLEDGE AND SKILLS AREAS

Consensus was reached on using practical workshops to update skills for caesarean section (70%) and the ethical aspects of TOP (79%). Consensus was not reached on using audio-visual material to learn about the technical aspects of a TOP, lecture by an expert on the ethical aspects of TOP, and rotation through tertiary hospitals for general anaesthesia. See Table 50 for percentage agreements in this category.

TABLE 50:   ROUND 3: PERCENTAGE AGREEMENT ON SUGGESTED METHODS FOR UPDATING COMMONLY OCCURRING KNOWLEDGE AND SKILLS AREAS (*INDICATES CONSENSUS)#

SKILL	TerHs	Wshop	AV	LcExp
Caesarean section		70*		
TOP (gynae)			63	
TOP (ethics)		79*		63
General anaesthesia	35			

#KEY: UPDATING METHODS

TerHs: Tertiary hospital rotation
WShop: Practical workshop
AV: Audio-visual material
LcExp: Lecture by expert

4.6.5 UPDATING KNOWLEDGE AND SKILLS AREAS IN WHICH GAPS WERE IDENTIFIED

Consensus was reached on using lectures by experts to learn about HIV/AIDS confidentiality (75%), but there was still disagreement on updating modalities for the remaining three knowledge and skills areas in this category. Table 51 shows the results from this category.

TABLE 51:   ROUND 3: PERCENTAGE AGREEMENT ON SUGGESTED METHODS FOR UPDATING THE IDENTIFIED GAPS (*INDICATES CONSENSUS)#

SKILL	TerHs	LcExp	Jrnl
Laparotomy	50		
Dealing with HIV/AIDS confidentiality		75*	
End-of-life decisions			40
Team work		45	

#KEY: UPDATING METHODS

TerHs: Tertiary hospital rotation
LcExp: Lecture by expert
Jrnl: Medical journals

4.6.6   UPDATING KNOWLEDGE AND SKILLS AREAS WHICH WERE IDENTIFIED AS SPECIAL NEEDS

Consensus was reached on the usefulness of journal reading for practitioners working in isolation (70%), and lectures by experts to learn about public-private initiatives (75%). There was consensus that a lecture by an expert is not useful to learn about transport issues. Consensus was not reached on the remaining areas in this category. Table 52 reflects the percentage agreements obtained.

TABLE 52:   ROUND 3: PERCENTAGE AGREEMENT ON SUGGESTED METHODS FOR UPDATING SPECIAL NEEDS (*INDICATES CONSENSUS)#

KNOWLEDGE/SKILL AREA	Essential	TerHs	LcExp	Jrnl
Disability grant review		64		
Endoscopic skills	60	68		
Working in isolation				70*
Dealing with transport issues			25*	
Private-public initiatives			75*	
Community participation			65	
Social problems			60	
Interpersonal skills			35	

#KEY: UPDATING METHODS

TerHs: Tertiary hospital rotation
LcExp: Lecture by expert
Jrnl: Medical journals

4.6.7   FURTHER STATISTICAL ANALYSES

Categorical data analyses were done on variables where differences were expected. Variables where consensus was achieved were excluded. From these analyses and by using the Pearson Chi-square test, statistically significant differences were detected $(p<0.05)$.

Statistically significant differences were found in Round 3 in only one variable, namely that practitioners needed updating even if they applied a skill regularly. The panelists who were mainly involved in clinical work, statistically speaking, significantly disagreed $(p=0.02)$ with the statement as compared to those who were also involved in academic and managerial capacities. No other statistically significant differences were found on the other variables tested in Round 3.

4.6.8   VARIANCES IN MEANS OVER ALL THREE ROUNDS

The variances in the means on the areas where consensus was not reached over the three rounds were tabulated. See Tables 53, 54 and 55 for the variance in means over the three categories of knowledge and skills areas.

These tables demonstrate how the mean in some examples moved towards consensus, while in others it remained very similar during all three rounds. It was also shown that rotations through tertiary hospitals, lectures by experts and, to a lesser extent, reading medical journals were the teaching and training modalities on which the panel could not reach consensus.

TABLE 53:   **VARIANCE IN CONSENSUS ON UPDATING METHODS FOR COMMONLY OCCURRING KNOWLEDGE AND SKILLS AREAS**

KNOWLEDGE/ SKILL AREA	UPDATING METHOD	MEAN ROUND 1	MEAN ROUND 2	MEAN ROUND 3
Caesarean section	Practical workshop	2.6	2.6	2.7
Female sterilisation	Secondary hospital rotation	2.6	3	
TOP (clinical aspects)	Secondary hospital rotation	2.2	2.6	
	AV material CD-ROM; video	2.4	2.6	2.5
	Practical workshop	2.5	2.7	
TOP (ethical aspects)	Lecture by expert	2.3	2.5	2.5
	Practical workshop	2.3	2.7	2.9
Minor urological procedures	Secondary hospital rotation	2.8	3.2	
General anaesthesia	Tertiary hospital rotation	2.4	2.7	
Spinal anaesthesia	Secondary hospital rotation	2.8	3.1	
Local anaesthetic techniques	Secondary hospital rotation	2.6	2.9	2.3

TABLE 54:   **VARIANCE IN CONSENSUS ON UPDATING METHODS FOR AREAS IN WHICH A KNOWLEDGE AND SKILLS GAP WAS IDENTIFIED**

KNOWLEDGE/ SKILL AREA	UPDATING METHOD	MEAN ROUND 1	MEAN ROUND 2	MEAN ROUND 3
Laparotomy	Tertiary hospital rotation	2.3	2.5	2.4
Skin graft	Secondary hospital rotation	2.7	3.1	
Neonatal resuscitation	Secondary hospital rotation	2.7	3.1	
Tracheotomy	Secondary hospital rotation	2.4	2.8	
Severe head injury	Tertiary hospital rotation	2.6	3	
Severe burns	Tertiary hospital rotation	2.4	2.9	
HIV/AIDS confidentiality	Lecture by expert	2.7	2.5	2.7
End-of-life decisions	Reading medical journals	2.8	2.5	2.3
Team work	Lecture by expert	2.5	2.4	2.2
Quality improvement	Lecture by expert	2.7	2.5	

TABLE 55:   VARIANCE IN CONSENSUS ON UPDATING METHODS FOR SPECIAL NEEDS AREAS

KNOWLEDGE/ SKILL AREA	UPDATING METHOD	MEAN ROUND 1	MEAN ROUND 2	MEAN ROUND 3
Disability grant review	Rehabilitation unit rotations	2.5	2.6	2.7
Endoscopic skills	Tertiary hospital rotation	2.7	2.8	2.6
	Special course participation	2.9	3	
Working without backup	Reading journals	2.6	2.5	2.7
Dealing with transport issues	Small group discussion	2.6	3	
	Lecture by expert	2.4	2.3	2
	Essential area for updating	2.7	3	
Private-public initiatives	Small group discussion	2.6	3.1	
	Lecture by expert	2.7	2.7	2.7
Community participation	Lecture by expert	2.6	2.4	2.5
	Special course participation	2.7	3	
Use community resources	Special course participation	2.7	3	
Social problems	Lecture by expert	2.6	2.5	2.5
Interpersonal skills	Lecture by expert	2.3	2.4	2.2

4.6.9   QUALITATIVE RESULTS

The panel was asked to comment on what the members thought the possible reasons for not achieving consensus in certain areas could be. The following four major influences on consensus-forming with regard to updating modalities for knowledge and skills areas at district hospitals were identified:

➢ Learner variances.

➢ Teaching modality variances.

➢ Panel differences.

➢ The complexity of learning.

a.   ***Learner variances***

Individual practitioners who practised in various settings under different circumstances, experienced differing learning needs, and held various attitudes towards learning, as well as on the usefulness of teaching modalities.

> *"Doctors are very individualistic and are practising under very different circumstances and, therefore, it is normal and healthy that we should disagree on many issues."*

b.   ***Teaching modality variances***

Teachers had various styles, attitudes and approaches, all of which influence the usefulness of updating modalities. Also, a teaching modality that might work for one group may not be suitable for another. The organisation and focus of hospital rotations and courses equally influenced the relevance and value of the experience.

> *"These are difficult things to give one-dimensional answers to, as there are so many other variables, e.g. if you say tertiary or secondary hospital, it depends on the department and how things happen there. I would go to some hospitals and avoid others completely."*

> *"Some decisions are arbitrary at best. Some understanding of what a rotation between different specialists might mean, would be essential. If a rotation were for one week and designed to teach you the needed skills, it would be different from a normal duty roster experience which may or may not contain what is necessary."*

c.   ***Panel differences***

The panellists had varying backgrounds and different experiences with CPD which influenced their views. They also interpreted questions differently.

> *"Yes, our responses are coloured by our views."*

> *"Each of us has different learning styles and learning needs. Consensus is thus going to be difficult. Our own past experiences are obviously going to influence us and our opinion of the usefulness of a particular activity."*

> *"Disagreement relates to perspectives. I am impressed with the amount of consensus you have obtained!"*

d.   ***The complexity of learning***

Various elements make up learning and any attempt to reach consensus on which learning activities are most useful, has to take this into account. In addition, there were a large number of variables that needed to be considered.

> *"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. Ideally, learning should take place in one's normal setting under the supervision of an already competent colleague."*

> *"The main stumbling block seems to be the value of input by (super) specialists - be it in the form of lectures or tertiary hospital rotations. It seems that some still have the perception that specialists are the "ultimate" source of information/skills, whilst others, like myself, feel that specialist*

knowledge/skills are often not appropriate for district hospitals. These knowledge/skills can be better gained by working under supervision in a more relevant setting or through discussion with expert input. I am very sceptical about lectures by experts as a method of gaining knowledge/skills as the learners are passive."

e.   Conceptual model on consensus forming

A conceptual model was developed from the data in order to graphically illustrate the influences on consensus throughout the three phases of the Delphi technique used in this study. Figure T demonstrates this model.

FIGURE T: INFLUENCES ON CONSENSUS FORMING
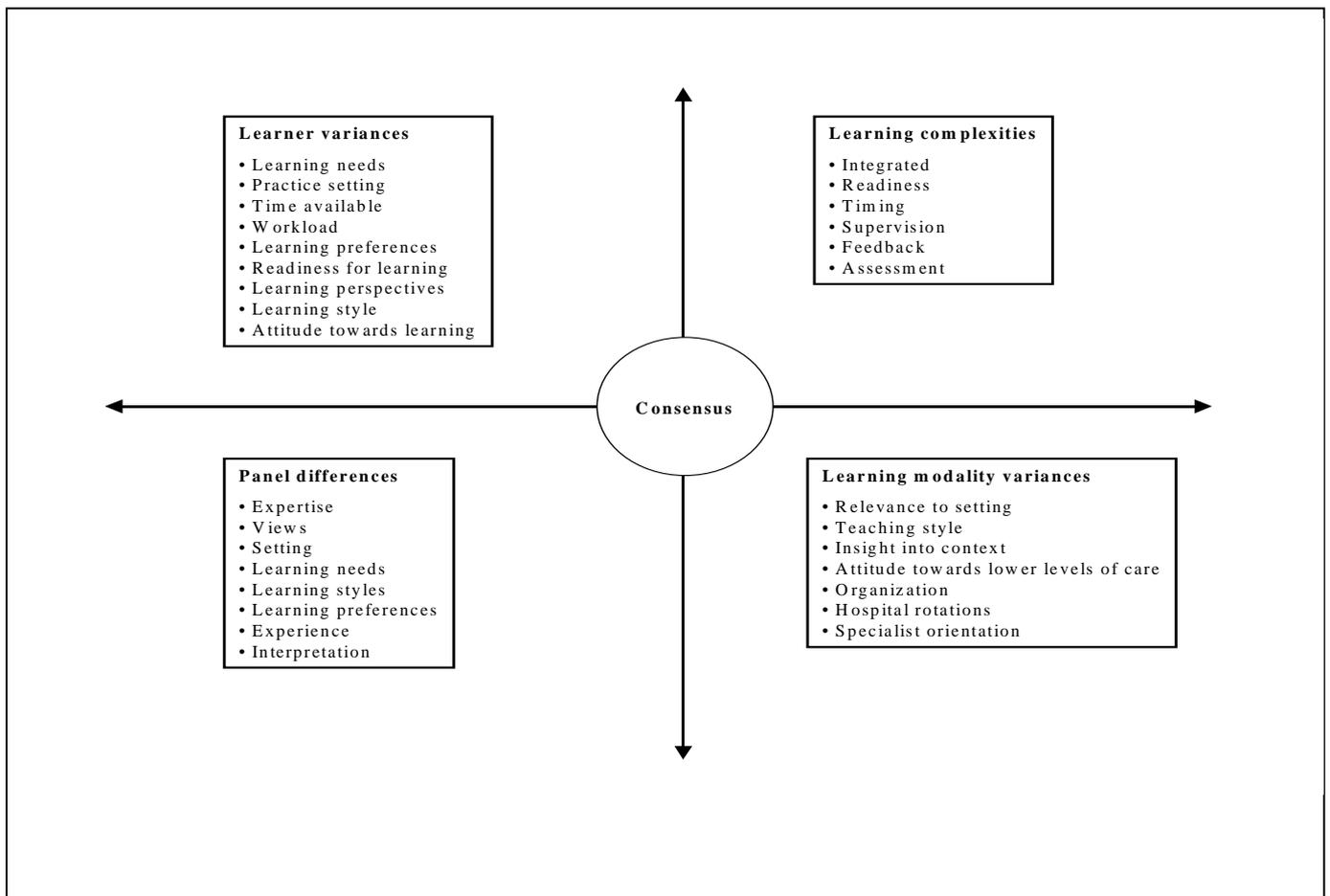
SECTION SEVEN

4.7   FACTOR ANALYSIS

A principal component factor analysis with Varimax rotation was done on the three groups of categories of knowledge and skills areas explored by the Delphi technique. Factor loadings of larger than 0.7 were used to identify factors that could explain the correlations among the variables. Descriptive names were given to these factors. In most cases, the first four factors explained a high percentage of the variation.

4.7.1   KNOWLEDGE AND SKILLS AREAS COMMONLY OCCURRING IN DISTRICT HOSPITALS

a.   Round 1

The first four factors explained 76% of the variations. These factors were, in descending order of importance –

- ➢ updating every five to ten years;

- ➢ updating modalities for obstetric and gynaecological skills;

- ➢ outreach visits; and

- ➢ updating frequency for procedures.

An updating frequency of five to ten years was the most important factor. Updating modalities for obstetric and gynaecological skills were visits by specialists and practical workshops. Furthermore, outreach visits were particularly useful to learn about minor surgical skills, spinal and local anaesthetics and lectures by experts were useful for updating common medical conditions and the ethical aspects of TOP. A

ten-year frequency of updating was favoured for procedures such as caesarean section, female sterilisation and tonsillectomy. Tonsillectomy measured a negative factor loading on being essential, indicating that it was not regarded as essential for district hospital services.

b.   *Round 2*

The first three factors explained 82% of the variation. These factors were, in descending order of importance –

  ➢ hospital rotations;

  ➢ termination of pregnancy; and

  ➢ workshops.

Rotations through secondary hospitals were useful for updating on female sterilisation, minor urological procedures, as well as spinal and local anaesthetics. Tertiary hospital rotations were useful to update general anaesthetics. Modalities for updating on TOP were secondary hospital rotations, audiovisual material, workshops and lectures by an expert on the ethics of TOP. Practical workshops were seen as being useful for updating on the skills needed for caesarean sections.

c.   *Round 3*

Only one factor was detected in Round 3 in this category, explaining 44% of the variation, namely lectures by experts, which were deemed useful for learning about the ethics of TOP.

4.7.2 KNOWLEDGE AND SKILLS AREAS IN WHICH A GAP WAS IDENTIFIED

a. *Round 1*

The first four factors explained 65% of the variations. These factors were, in descending order of importance -

- ➢ updating being essential;
- ➢ five to ten year updating frequency;
- ➢ journal reading knowledge areas; and
- ➢ expert lectures.

The most common factor which was identified, was that it was absolutely essential to update knowledge and skills of those areas in which knowledge and skills gaps had been identified. A five to ten year frequency for updating of these areas was seen as sufficient. Journal reading was useful to update knowledge areas such as management of acute poisonings, malnourished children and domestic violence, while workshops could update management topics. Dealing with malnourished children could also be updated by means of expert lectures.

b. *Round 2*

The first four factors explained 83% of the variations. These factors were, in descending order of importance –

- ➢ scarcely encountered problems;
- ➢ management training;

> ➢ laparotomy; and

> ➢ secondary hospital rotations.

Rotations in tertiary hospitals were useful for updating about problems that were rarely encountered at district and secondary hospital levels, or complex procedural skills such as a laparotomy. Lectures by experts were useful for management training, learning about teamwork and quality improvement. Rotations in secondary hospitals were useful in learning about neonatal resuscitation and skin grafts.

c. **Round 3**

Only one factor was detected in Round 3 in this category which explained 53% of the variations, namely lectures by experts which were found to be useful in updating skin grafts and tracheotomy.

4.7.3 KNOWLEDGE AND SKILLS AREAS IDENTIFIED AS SPECIAL NEEDS AT DISTRICT HOSPITALS

a. **Round 1**

The first four factors explained 76% of the variations. These factors were, in descending order of importance –

> ➢ updating every five to ten years;

> ➢ yearly updating not necessary;

> ➢ medico-legal issues; and

> ➢ medication interactions.

An updating frequency of five to ten years in this category was a strong common factor, as opposed to yearly updating which measured negative factor loadings. Endoscopic skills also measured negatively which indicated that these were not seen as essential for district hospital practice. Reading journals and lectures by experts were useful for updating medico-legal and forensic matters. Special courses and workshops were useful in learning about medication interactions.

b.   Round 2

The first four factors explained 78% of the variations. These factors were, in descending order of importance -

- ➢ working in isolation;

- ➢ endoscopic skills;

- ➢ community issues; and

- ➢ lectures by expert.

Journal reading was found to be useful for those practitioners working in isolation. Tertiary hospital rotations and special courses were most valuable in learning about endoscopic skills, and learning in special courses about community participation and utilising community resources. A lecture by an expert was thought to be useful in learning about public-private initiatives, transport issues, social problems in the community and interpersonal issues.

c.   Round 3

The first four factors explained 82% of the variations. These factors were, in descending order of importance –

- ➢ lectures by expert;

- ➤ endoscopic skills;

- ➤ rehabilitation updating; and

- ➤ expert lectures.

As was the case in Round 2, lectures by experts were found to be a good modality to learn about public-private initiatives, community participation, and social problems in the community, interpersonal skills and transport issues. Endoscopic skills again measured negatively, thus indicating that such skills were not essential for district hospital practice. A rotation through a specialised rehabilitation unit was supported to learn about disability grant reviews.

SECTION EIGHT

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4.8 THEORETICAL FRAMEWORK FOR MAINTENANCE OF COMPETENCE IN DISTRICT HOSPITAL PRACTICE

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At the completion of the analysis of the results from all three Delphi rounds, a theoretical framework was developed to explain how maintenance of competence for district hospital medical practitioners should be approached. This conceptual model describes the ideal learning cycle for district hospital practitioners. The cycle consists of a number of steps that flow into each other, while maintaining a continuous process. Ideally, the cycle starts with (a) the identification of learning needs, but entry into the cycle is also possible at any of the other points, as long as all the steps in the process are followed. Inclusion of all the steps is important to ensure that "deep learning" occurs which will make a difference to the quality of care provided in district hospitals. The other steps in the cycle are (b) the acquisition of new knowledge or skills; (c) integration of theory into practice; and finally (d) feedback, reflection and assessment.

Each of the steps in the cycle could be supported by a number of activities, actions, resource materials or teaching modalities. For instance, knowledge could be acquired by using a variety of resources such as journal reading and guidelines, or by attending various CPD activities such as workshops, lectures or conferences. The crucial step of integrating theory into practice is facilitated by activities such as case discussions, small group discussions, mortality and morbidity meetings or working with an experienced colleague. Feedback and reflection are achieved by activities such as small group discussions, peer review or working with an experienced colleague. It is essential to understand that learning is much more than the mere acquisition of knowledge. In fact, the whole cascade of events in the learning cycle is needed for district hospital practitioners to maintain their competence.

Central to the circle of learning activities are the underlying principles of the learning cycle. These principles are that learning must be needs driven; it must be contextualised and relevant to district hospitals, and it needs to be practice-based, i.e. most of the learning should preferably take place at the practice setting itself. Furthermore, there must be protected time for learning, while learning needs to be outcomes-based.

Figure U diagrammatically demonstrates the ideal learning cycle for district hospital practice, illustrating the complexity of the process and its interlinking factors.

FIGURE U: IDEAL LEARNING CYCLE FOR THE MAINTENANCE OF COMPETENCE
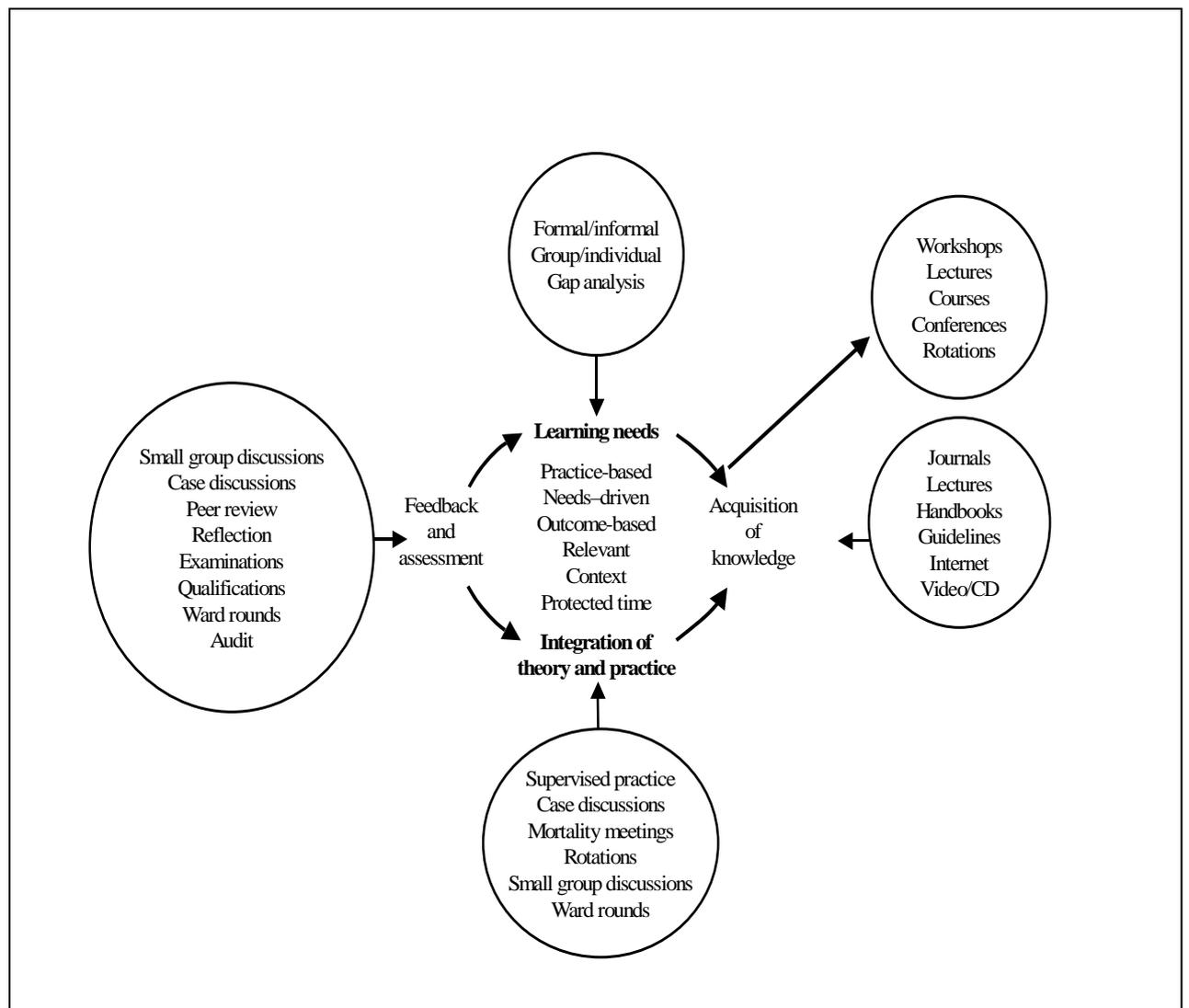
CHAPTER 5

DISCUSSION

5.1 DISTRICT HOSPITAL PRACTICE

5.1.1 SCOPE OF PRACTICE - IMPLICATIONS FOR EDUCATION AND TRAINING

Generalist doctors working in district hospitals in South Africa are reported to have an extremely wide role (Jacques & Reid *et al* 1998:16). This study clarified the scope required for a practitioner to practise successfully with the data supporting the importance for district hospital medical officers to be competent generalists. The district hospital practitioner must be able to manage the following (Reid 2002:9; Watts 1993:1475-1478; Kelly 1998:469-470; Wise *et al* 1994:314-318):

➢ All the problems usually presenting in a family practice setting such as simple PHC; common mental health problems; women and child health ailments; chronic disorders; ethical dilemmas; family problems and community-related issues such as violence and poverty.

➢ A range of elective and emergency surgical skills with special reference to obstetric and orthopaedic procedures.

➢ Anaesthetic and resuscitation skills, as well as dealing with any adult and paediatric emergencies.

> ➤ "Soft skills" such as teamwork, communication and language skills, and being able to make decisions without information.

> ➤ Management issues such as transport, laboratory and equipment concerns, medicine supplies, personnel issues.

> ➤ The development of appropriate learning and teaching skills.

This scope of practice for district hospital work has implications for education and training. Educators must ensure that graduates who prepare for a career in such a setting are able to perform all these competencies (Rourke 1996:1133-1138; Chaytors *et al* 2001:766-71). The concern is whether this range of "undifferentiated competencies" can be acquired during a postgraduate course or whether it would result in curriculum overload. A strategy to address this difficulty is to define the core issues in the syllabus and augmenting them with electives, plus ensuring that candidates acquire life-long learning skills.

Table 56 provides a visual representation of how core, priority and elective areas can be build into a curriculum for rural practice (Personal communication: S Reid). This fits in with the distinction in the literature between a primary and advanced curriculum. The primary curriculum includes the clinical content usually covered in family practice education and training, as a large part of district hospital work includes the management of undifferentiated PHC problems. The advanced skills curriculum must include clearly defined areas such as obstetrics, anaesthetics, surgery and emergency medicine (Rourke 1988:1058; Doolan 1997:43-46; Rourke 1996:1134).

TABLE 56:   CORE, PRIORITY AND ELECTIVE AREAS FOR RURAL PRACTICE EDUCATION AND TRAINING

Elective	Gynaecology Surgery, Orthopaedics Anaesthetics	**Clinical areas**
Priority	Chronic and infectious diseases Maternal and child health	
Core	Primary Care Emergency Care	
Priority	Family and community oriented care Quality improvement	**Organisational approaches**
Elective	Population-based planning Health management Research	

5.1.2   CAESAREAN SECTION

One of the most striking findings from this study was the incidence of caesarean sections carried out in district hospitals in the Western Cape. Caesarean section was previously found to be the most commonly performed surgical procedure in district hospitals in the Kwazulu Natal and North West provinces of South Africa (Jacques & Reid *et al* 1998:9); in the Eruwa province of Nigeria (Solanke 1997:140); in Central Africa (Watters & Bayley 1987:762) and in rural hospitals in Canada (Chiasson & Roy 1995:1450). Monitoring the performance and quality of caesarean sections at a district hospital could thus serve as a proxy marker for the effective and equitable functioning of district hospital services.

Caesarean section in the hands of appropriately qualified family doctors has allowed rural health services in Canada to continue to provide adequate maternity care at reduced cost (CFPC 1999:2416). The quality of obstetric care in rural hospitals in Canada and in the USA was found to be comparable to that of urban hospitals. A 15-year retrospective study of caesarean sections performed by family doctors in rural hospitals in Canada, provided documentation of outcomes favourably comparing with

accepted national standards and equal to those of obstetricians (Deutchman *et al* 1995:81-90; Norris *et al* 1996:456). Small hospitals staffed by generalists can provide high-quality obstetric care if they are integrated into regional perinatal care systems (Norris *et al* 1996:455,459).

Maintaining viable obstetrical units in rural hospitals is, however, not a simple task. Obstetrics is a demanding clinical discipline, requiring a set of cognitive and psychomotor skills and a commitment to the unpredictable timing with which deliveries occur (Norris *et al* 1996:455). In South Africa, increasing stresses in obstetric and gynaecological units in district hospitals are caused by the attrition of experienced midwives, a high prevalence of HIV-positive patients, redirection of rape survivors to district hospitals, and a heavy teaching load due to regular rotations by inexperienced community service doctors (Larsen 2003:236).

Training to competently perform a caesarean section is thus of crucial importance for practitioners employed in district hospitals. In South Africa, it is important that family practice academics and organised rural practice together with the specialty of Obstetrics and Gynaecology, define minimum competency standards for caesarean section. Currently it is not realistic to expect all interns to be trained in this procedure. Plans should, therefore, be made for those requiring this skill to receive the opportunity to learn it under supervision. District and regional hospitals may well provide such opportunities and it is, therefore, of immediate importance to establish posts for appropriate trainers in the relevant hospitals.

5.1.3   ANAESTHESIOLOGY

Anaesthetic services are essential to district hospitals and need special consideration. Medical officers at district hospitals were providing extensive anaesthetic services in the Western Cape. Similarly, family practitioners with limited formal training in Anaesthesiology were also found to perform 80% of anaesthetic services at rural Canadian hospitals. The satisfaction of their hospital management with the adequacy

of these services suggested that they were meeting reasonable standards (Chaisson *et al* 1995:1450). In rural hospitals, with limited human and other resources, more use should be made of local, regional and spinal anaesthesia (Solanke 1997:141; Jacques & Reid *et al* 1998:11; Watters & Bayley 1987:763).

To define and maintain good quality anaesthetic services in district hospitals, rural family practice policy makers and academics should work with their anaesthesiologist colleagues in drafting competency criteria for safe anaesthesia. Furthermore, the problems experienced with anaesthetic machines in rural areas indicate that an audit and a maintenance programme of all such equipment are mandatory. Appropriate training in order to perform a safe anaesthetic is essential for district hospital practice.

5.1.4   EMERGENCY, TRAUMA AND PRIMARY HEALTH CARE

The morbidity profile of patients presenting at district hospital casualty departments set out in Phase One of this study, indicated that medical officers spend considerable time dealing with the effects of violence, which remains a major public health dilemma. Since there is no indication that this situation is likely to change, it is worthwhile to introduce the profile of emergency and casualty patients at the undergraduate level. Violence creates physical and psychological trauma that needs to be acknowledged and addressed by health care workers employed in these settings. It also has an effect on health care services and health care workers themselves.

It was found that medical officers devoted much time to patients presenting with PHC problems. Students need to be able to deal with undifferentiated problems, to value PHC work and be provided with role models in primary care. Large numbers of patients who present at the casualty departments with minor complaints, could be dealt with effectively by a nurse practitioner trained in PHC. These PHC problems divert hospital personnel's time and energy which could more productively be spent on patients who require their expertise.

On the other hand, primary care is the foundation of health services and requires specialised resources and personnel. The most experienced doctors are often the best equipped to deal with undifferentiated problems cost-effectively. A qualified family physician who practices patient-centered care with a bio-psycho-social approach, will make less use of scarce resources such as drugs and special investigations which may prevent mere symptomatic treatment leading to repeated consultations.

It has been found that many patients bypass PHC facilities to present at a district hospital, particularly after-hours (Engelbrecht *et al* 2000:21). Links with PHC facilities require strengthening in order to monitor referrals and to treat patients at a more appropriate level of care. This issue is, however, complex and needs more research.

5.1.5   THE INFLUENCE OF DISTANCE AND TRANSPORT

Distance is an important factor influencing health service delivery. Rural health services are defined as services which are located more than 80 km or one hour's transport by road away from the nearest referral center and where generalists provide most of the services (Rourke *et al* 1999:6; Norris *et al* 1996:90). Many of the medical officers in district hospitals in the Western Cape regarded isolation as a major problem, including those in the greater metropolitan areas such as in the False Bay and Atlantis Hospitals. District hospital practice requires doctors to have the knowledge and skill to practise in settings where high technology and specialist resources are limited. Rural practitioners emphasised both the distance from their regional hospital and the restricted nature of local services. This self-perception of being rural or remote emerged as an important element in how doctors had acquired skills and practised medicine (Wise *et al* 1994:316). Also, working confidently without back-up in a district hospital is an important skill that needs to be developed and maintained.

Significant problems with transport were identified during Phase One of the study and were viewed as detrimental to the effective functioning of district hospitals. In rural

and remote areas, accessibility to health care services is dependent on transport being available to the community. Also, routine referrals to higher levels of care often pose problems to patients who cannot afford transport costs. Emergency transfer to referral hospitals requires an efficient ambulance system, without which extensive time delays are likely to occur and vehicle "down time" will be experienced. Transport is also an essential component for successful outreach from the district hospital to primary health services, as well as from regional to district hospitals. The management and administration of health care services is directly affected by transport in terms of supplying drugs and other stocks. Finally, personnel needs transport to attend professional development activities and to attend DHS meetings (Couper 2000:26).

Dealing with uncertainty is a reality for district hospital practitioners. This can be due to insufficient information, technical support or lack of confidence. Given that few medical curricula deal with the process of medical decision-making, doctors will remain vulnerable to dealing with uncertainty, unless it is specifically included in the curriculum. Educating medical students about the role of uncertainty and providing them with insight in how to deal with it, would have a positive effect on the quality of district hospital services (Hall 2002:216).

5.2   HUMAN RESOURCES

5.2.1   DEMOGRAPHIC CHARACTERISTICS OF MEDICAL PRACTITIONERS - IMPLICATIONS FOR DISTRICT HOSPITALS

The gender distribution of respondents in Phase One of this study, closely resembles the HPCSA statistics (Personal communication: Y Hoffman, IT Helpdesk, HPCSA, December 2001). Of the doctors registered in the category Public Service (Community Service), 47.9% were female, compared to the 41.2% of community service doctors in this study. In the categories Independent Practice and Public Service combined, 26.1% of the medical practitioners were female, compared to 25.5% of the Phase One respondents. Of the doctors in full-time public service district

hospital employ, 45.8% were female (compared to 14.5% of part-timers being female), indicating that female doctors are an important resource for public health services. This is also a reflection of the changing demography of the medical profession. Of concern is the fact that women were found to be less likely than their male counterparts to practise in rural areas, often for family reasons with the male partner's location taking preference over that of the woman (Rosenblatt *et al* 1992:1156). As this is potentially a significant influence in the recruitment and retention for rural practice, it is important that barriers to and difficulties faced by female practitioners in rural practice be identified and addressed.

In a surprise finding, women doctors were found to be statistically significantly more likely to perform consultations relating to TOP and to carry out the actual procedure, despite the fact that they were younger and less experienced than male practitioners. This occurred despite the fact that female family doctors in general performed fewer procedures than their male counterparts (Chaytors *et al* 2001:770). This suggests that there are other factors motivating female practitioners to assist patients with TOP, such as greater sympathy for women requesting assistance, or an understanding of the dilemma facing these women. This is an important area for further research into factors influencing moral decision-making in medical practitioners. Orientation towards issues around women's health problems as opposed to bio-medical education and training in Obstetrics and Gynaecology at the undergraduate level is one way of addressing the problem. Furthermore, service managers should identify and support medical officers willing to perform a TOP, as they carry a disproportionately large load of a procedure which is by nature emotionally challenging.

The average age of respondents (40.3 yrs) in Phase One of this study is lower than the 46.5 years found in a corresponding study in 1999 in Western Cape rural areas (Geldenhuys & Hanekom 1999:14). This is probably due to the introduction of community service which became effective after completion of the previous study. The statistically significant difference in age and years of experience in the different service categories suggests that there may be a career path from community service to full-time district hospital practice, and from there on to a combination of public and private practice. On the other hand, another explanation for this is that several full-

time medical officers had left the service and had to be replaced by (part-time) private practitioners from the area. This progression from full-time public service, to part-time practice needs to be taken into account in human resource planning for district hospitals.

The fact that almost all of the medical officers employed at Western Cape district hospitals were South African citizens, was quite surprising and atypical of the general South Africa situation. Using the services of local private practitioners in district hospitals is a critical success factor for retaining experienced family practitioners in rural areas.

Part-time medical officers formed 64.6% of the district hospital workforce and were in general more experienced than full-timers. Private family practitioners are an essential part of health care delivery in rural South Africa. Almost half of the doctors in rural practice in South Africa combine private practice with sessions at a public hospital or clinic, thus significantly contributing to the public health service (De Vries & Reid 2003; De Villiers 2000:12). In addition to rendering services in the public sector, they also treat large numbers of the poor inhabitants of rural areas at a discount cash fee which often includes consultation plus medication. In the Boland-Overberg region alone, there are 103 private practitioners, an invaluable resource to rural health services (Personal communication: F Krige, Regional Director). This confirms Couper's observation that "going back home" is not a common reason for doctors to work in public hospitals in South Africa, but is indeed the case in rural private practice (Couper 1999:738).

Failing to include private practitioners in the rural public health system is simply shortsighted. There should be a commitment to building a strong public health sector, providing for the recruitment and retention of all healthcare professionals. Plans to attract private practitioners to public facilities have progressed with the establishment of a Public-Private Forum between the PGWC and the private sector (PGWC 2002:4-5). Contractual arrangements with private practitioners need to be clarified so that the historically flawed experience with part-time district surgeons is not repeated (De Villiers *et al* 1995:7-8). In the Northern Cape town of De Aar, the advantages of

replacing the part-time district surgeon system with private medical practitioners performing clinical sessions at public clinics are well documented. Specific improvements were continuity of care, improvement in the quality of care, and in-service training of nurses (Pillay & Asia 2000:5).

Of concern is the fact that 36.4% of the respondents in Phase One had considered resigning in the near future, citing workload and the unpleasant nature of after-hours work as main reasons. Rural practitioners face an infinitely harder task than that of the doctor in a well equipped and staffed urban hospital and they, therefore, need to receive recognition for their important contribution to society (Kamien & Buttfield 1990:170). The following were raised as specific issues of part-time practitioners:

> ➤ Appropriate remuneration for advanced procedures and after-hours work.
> ➤ Improved relations with management.
> ➤ Clarification of medico-legal insurance protection for part-timers in the public service.
> ➤ Functional integration of the DHS with strengthening of the PHC platform.

Only 5% of the Phase One respondents are qualified family physicians with postgraduate qualifications in that discipline. Criticism has been leveled at family medicine education and training programmes for not having sufficient focus on skills and competencies which are important to district hospital practice. Closer co-operation between the Family Medicine Education Consortium (Famec), the SA Academy of Family Practice/Primary Care, and RuDASA is needed in this regard.

5.2.2   THE IMPACT OF COMMUNITY SERVICE ON DISTRICT HOSPITALS

At the time of the study, there were 20 community service doctors in Western Cape district hospitals out of a total of 141 such practitioners allocated to the Province. (DOH 2002:6) This raises the question whether community service placements were in fact serving rural and underserved areas, the very reason for the introduction of the

system. There is clearly more capacity for community service placements in district hospitals. Furthermore, it was of concern that despite some community service doctors wishing to continue to work in district hospitals, they had to leave due to a lack of posts. Community service doctors need to get preference for obtaining a post in a district hospital on completion of their year of community service, as this would greatly assist the problem of recruitment and retention of appropriately experienced medical practitioners in rural areas.

Community service doctors generally had a positive impact on district hospitals. Their main contribution was that they shared the burden of PHC work in the district hospital. This is a good example of implementation of the proposals made in the Pick report, namely using less experienced personnel to perform tasks requiring less advanced skills (Pick 2001:xii). In an evaluation of the first year of community service for doctors in South Africa, Reid found that 65% of the respondents thought that the experience had been worthwhile. The young doctors reported their experiences in terms of three major themes, namely learning, supervision and attitudes. The level of supervision was found to be extremely variable. During the community service year they learnt to make independent decisions and the development of self-confidence was a critical factor in maintaining a positive attitude towards the year. District hospitals felt the presence of community service doctors more than larger hospitals. Of great concern, however, was the finding that 34% of the respondents indicated that they intended to work overseas upon completion of their community service (Reid 2001:331-332; Bateman 2001:792-93).

Difficulties encountered by the employment of community service doctors in Western Cape district hospitals included their lack of skills and need for supervision, complicated by short rotations which left senior doctors to continuously train new doctors. Larsen quotes the example of junior doctors replacing four out of six practitioners in a busy district hospital's Obstetrics and Gynaecology unit every four months. A heavy clinical load had been alleviated, but largely replaced by a heavy teaching and training load. The need to begin again with a new team every few months is demoralising and exhausting (Larsen 2003:236). The "revolving door" staffing pattern that replaces each departing doctor with a new assignee is disruptive

to colleagues and communities (Pathman *et al* 1992:1556). In addition, community service doctors used more laboratory tests and X-rays, adding further strain on already limited hospital budgets. This latter practice is an indication of the reliance on special investigations that medical students are taught and should be addressed in undergraduate education and training and during internship.

The competency ratings in all the service categories in Phase One of this study clearly demonstrated the superior ability and wider range of competencies of the older and more experienced practitioners. Newly qualified doctors do not have the skills and experience necessary to function unsupervised in a district hospital, where significant generalist skills in anaesthesiology, obstetrics, surgery and medicine are required. It is those doctors who have served time in district hospitals who would be able to provide community service doctors with the teaching, training and support that they need - those very doctors, in fact, who were forced to leave hospitals in order to create space to accommodate community service posts (Clarke 1998:1).

Matching the need for medical care with the supply of medical practitioners involves more than attracting sufficient doctors to practise in a community. Co-ordination and continuity of care can only be achieved if doctors practise in a community for a sufficient length of time. One year could be seen as such a short duration of service as to be an impediment to continuity and quality of care (Humphreys & Rolley 1998:941; Pathman *et al* 1992:1556). The provision of quality rural health care depends not only on the total number of doctors, but also the correct ratio of senior to junior doctors. (Cameron *et al* 2002:278). A comprehensive policy on human resources for medically underserved areas in South Africa is needed, with obligatory community service for doctors constituting only a part of this policy (Reid 2001:334).

5.3 COMPETENCIES AND GAPS

One of the main objectives of Phase One of this study was to identify the knowledge and skills gaps of medical practitioners employed in district hospitals in the Western Cape. The results from the self-rated competency section indicated the areas in which medical practitioners lacked confidence. Further statistical and qualitative exploration of the perceived gaps indicated that the knowledge and skills of individuals varied considerably according to previous education and training, experience and the circumstances of a particular district hospital. The results of the knowledge and skills gaps, therefore, need careful interpretation, taking into account the interplay between a number of influences.

It is important to understand that there were a number of factors that enhanced or hampered the skills and competencies of district hospital doctors. Close examination of the theoretical framework depicted by the skills boat model revealed the complex interaction between opportunities and threats, as well as restraining and driving forces influencing the work of medical practitioners in district hospitals, and ultimately the health care of communities served by these hospitals. Improved functioning within the DHS, particularly between different levels of care, and appropriate matching of skills levels with tasks can greatly enhance district hospital services. Perceived opportunities such as procedural practice and the ability to provide continuity of care should be utilized. Working conditions and training deficiencies are the two main restraining factors which need to be addressed to enable medical practitioners to deliver an equitable and quality district hospital service.

The skills boat model relates to a theme developed from another South Africa study. That model, represented as a tree, depicted confidence issues of rural doctors performing surgical skills and calls for the systematic empowerment of the generalist and demystification of many simple procedures. Without confidence, the isolated doctor became progressively more restricted to a narrow repertoire of clinical

interventions with consequent over-resort to referral hospitals (Jacques & Reid *et al* 1998:17).

Two factors were found to influence the competencies and attitudes of interns and community service doctors, namely the degree of supervision available and the management of the institution. In terms of supervision, the level of competence and confidence of the more senior doctors was critical in making the community service doctor's work a positive learning experience. Management capacity in terms of administrative and logistical efficiency, plus the quality of leadership impacted on the ability of these doctors to perform their task satisfactorily (Reid *et al* 2002:7,8). This reinforces the crucial importance of employing experienced doctors in district hospitals (Larsen 2003:236; Reid 2001:2).

Self-rated competency levels were used in this study to identify possible knowledge and skills deficiencies. Measuring perceived learning gaps has limitations, but is recognised as a valid and practical method (O'Connor & Davidson 1992:1793). Competency can be defined as the ability to perform a complex task at a certain level of skill, including knowledge, decision-making, technical skills and attitudes. Competency can also be seen as the self-assessment of ability (Miller 1997:232; Kovacs 1997:390). Self-rated competency is useful as individuals achieve competency thresholds at different rates. However, competency is more likely to be an objective indicator, while confidence is the individual's subjective belief in his or her own ability (SRPC 2001:13; Cameron *et al* 2002:278).

The value of surveying a group of practitioners in terms of their perceived competencies is to be found in discerning the strengths and weaknesses of their education and training and in designing interventions to address knowledge and skills gaps. Norris *et al* carried out a large study in the USA which investigated the educational needs of 590 rural practitioners. Their findings indicated that, similar to the results obtained in Phase One of this study, relevant training provided adequate preparation for rural practice in many important areas. Nevertheless, inadequate competencies were apparent in a number of areas including rehabilitative medicine, counseling, community health, practice management, advanced procedures, paediatric

trauma care and others. Increased attention to these educational needs will improve preparation for rural practice (Norris *et al* 1996:86-93).

Table 57 summarises and comments on the knowledge and skills gap analysis which was made by using the Phase One results of this study.

TABLE 57:   KNOWLEDGE AND SKILLS GAP ANALYSIS

KNOWLEDGE/ SKILL	FINDING	COMMENT
Caesarean section	Frequently performed; 19% do not perform; need supervision	Entry requirement for district hospitals; in-service training for all medical officers
Female sterilisation	Frequently performed; 16% do not perform; need supervision	Entry requirement for district hospitals; in-service training for all medical officers
Excision, removal of lumps, bumps, etc	Frequently performed	Basic surgical skills training at under-graduate and intern levels
Evacuation uterus, D & C	Frequently performed; 43% do not perform TOP (although 49% can)	Management support to those performing TOP; workshops on moral, ethical, social aspects
General Anaesthetics	Commonly performed; 35% do not perform; need supervision	Requirement for intern training; in-service training; audit of anaesthetic machines essential
Spinal and Ketamine Anaesthetics	Safe, useful procedures 39% & 44% (respectively) do not perform; need supervision	Requirement for intern training; in-service training older medical officers
Neonatal resuscitation	Essential procedure 21% need supervision	Obligatory APLS or equivalent course; in-service training
Laparotomy	Less commonly performed; only 31% do independently or teach; complex reasons	Develop protocols for performance of laparatomy at district hospital level
CPR with intubation	Essential skill; 90% do independently or teach	Obligatory ACLS, ATLS or equivalent courses
Closed reductions of fractures/dislocation	Essential to limit referrals; 90% do independently or teach	Undergraduate and intern training; X-ray facilities and personnel
Emergency management of severe burns, head injuries, poisonings, suicidal patients	20–26% need supervision in emergencies not commonly encountered at district hospitals	In-service training; rotations to higher levels of care

KNOWLEDGE/ SKILL	FINDING	COMMENT
HIV/AIDS skills: Counseling, confidentiality, prophylaxis	19–26% need supervision	Obligatory in-service training courses for all medical officers
Autopsy	50% do not perform, 14% need supervision; only some hold appointment for this procedure	In-service training; specific courses for pathological and clinical forensic skills
Communication skills such as tobacco cessation counseling	19% need supervision: Health promotion skills are essential	Emphasis shift in undergraduate education to promotion and prevention
In-patient management of child with severe malnourishment	22% need supervision	In-service training
Problems with amputations	33% need supervision	Rehabilitation in undergraduate curriculum; rotations; visits by rehab experts
Dealing with family violence	Extremely common in district hospital practice; 30% need supervision	Management protocols; in-service training; social welfare support; co-operation with NGO sector
Managing child with resistant asthma	Important to limit referrals; 24% need supervision	In-service training; appropriate medication on code
Dementia in the elderly	Potentially life-threatening condition; 27% need supervision	Undergraduate education; in-service training
Management skills	Mostly done by appointed Medical Superintendents	Consensus about responsibility; capacity building
Public health skills	Seldom done by most; importance of integrating public health and clinical medicine	Dedicated time required; undergraduate education; in-service training
Outreach to and support of PHC	Seldom done; lack of time; unclear job description	Dedicated service time; include in job description

5.3.1 IN-PATIENT SERVICES

Performing in-patient services such as surgery and anaesthetics contributes significantly to job satisfaction with tangible immediate results. Carrying out procedures provides a unique opportunity for continuity of care, encompassing clinical diagnosis, surgery, postoperative care, as well as patient support and counseling. However, there are important caveats to the performing of surgical operations that must be addressed by doctors at district hospital level.

<u>Firstly,</u> there must be a clear realisation of each practitioner's limitations, both in the selection of procedures and the risk category of patients (Watts 1993:1475,1478). <u>Secondly,</u> training in advanced skills must be understood as beneficial, but also potentially detrimental. While increasing the practitioner's repertoire, it may also significantly add to responsibilities leading to less time off and potentially less recognition for greater effort and feelings of being "under-rewarded" (SRPC 2001:7).

<u>Thirdly,</u> there must be an accompanying ability to recognise and manage complications with the back-up to handle these intra- and post-operatively. Given these considerations, Phase One of this study identified specific procedures which provided insight into the practice – and by implication, the desired training – of those working in district hospitals in the Western Cape.

Medico-legal risks were found to be a significant deterrent to medical practitioners in the Western Cape when considering more complex procedures, especially amongst part-time practitioners who had to provide for their own indemnity insurance. This situation was similar to that found in Australia where some general practitioners were found not to perform certain procedures due to the growing emphasis on medical litigation, and the increase in medical defense subscription rates if such procedures were undertaken (Spike & Veitch 1990:1551).

Performing a laparotomy appeared as an important threshold procedure for district hospitals. A laparotomy was rarely performed in district hospitals in the Western Cape, as was the case in the North West and Kwazulu Natal provinces (Jacques & Reid *et al* 1998:8). A laparotomy appears to be a "bench-mark" procedure which only a few experienced district hospital practitioners would undertake. This is confirmed by the findings that junior doctors working in a district hospital lack confidence to perform a laparotomy at the end of their internship (Cameron *et al* 2002:277). The inherent unknown outcome of the procedure, lack of resources, fear of complications, and the perceived high risk of complications provides some explanation for the rarity of the procedure. It is therefore unwise to uniformly include the performance of a laparotomy as a standard skill for district hospital medical practitioners.

Analysing performance of caesarean sections in district hospitals is a useful indicator of existing skills levels, not only because the procedure is a potential "proxy marker" for patient requirements, hospital function and facilities, but it can be used as a standard of surgical skill to which all practitioners can relate. This study found the vast majority of respondents rated their competency at performing a caesarean section as high. The 20% who rated their competency as low or not performing the procedure at all, cited a lack of training as the reason for their deficiency. These results are similar to the findings of a study in rural hospitals in the USA where most of the respondents (family practitioners staffing rural hospitals), felt either very comfortable (59.2%) or extremely comfortable (35.3%) in performing a caesarean section. The most important factor contributing to comfort levels was the number of caesarean sections performed during residency training. Doctors who felt either very or extremely comfortable performed on average 30 procedures during their training in contrast to those who were less confident and who had performed fewer than 10 caesarean sections during their residency (Norris *et al* 1996:457). The actual number of operations which needed to be performed before comfort or competency is achieved, may vary with prior learning and experience on the part of the trainee. The numbers quoted to achieve competency range from 10 – 100, with an average of 30, depending on the extent of "overlearning" that is necessary (CFPC 1999:2419).

Anaesthetics was shown in this study to be an important area of technical skill. As with caesarean sections, it is a skill in high demand in district hospitals with confidence levels reflecting training, opportunity and interest. Community service doctors were more likely to perform a spinal block than the more experienced practitioners. This could be due to the community service doctors' lack of competency or confidence in performing a general anaesthetic, or lack of training in spinal anaesthesiology on the part of more experienced practitioners. It is of concern that interns expressed a lack of confidence in their ability to administer a general anaesthetic at the end of their internship year, despite the fact that they were required to perform anaesthetics under supervision for a period of two weeks (Cameron *et al* 2002:277). This is clearly a priority for vocational training and must form part of the core curriculum in postgraduate syllabi.

The high proportion of medical officers who did not perform a TOP for moral or ethical reasons, should be an issue of concern to the service. It confirmed previous findings in South Africa overall that TOP services were more readily available at regional than at district hospitals. Given that most district hospitals are in rural areas, decreased access to TOP services in the periphery is evident (HST 1998: Chapter 6). In the USA in 1996, only 1% of abortions were reported in rural areas, and nearly 50% of rural Idaho physicians would not refer their patients to another provider for an abortion. Due to the lack of qualitative data regarding fertility decision-making in rural women, it is unknown whether their low abortion rate was solely due to limited access to services. Other factors such as funding, community opposition, and lack of a qualified health provider, all seemed to play a role (Bennett 2002:112). The provision of well-functioning and quality TOP services, thus serves as a practical indicator to measure equity of access to health services in rural areas.

5.3.2   EMERGENCY AND TRAUMA SERVICES

Most knowledge and skills areas in the emergency and trauma category received high competency ratings, and there were no statistical differences between the various practitioner groupings. Skills in performing a neonatal resuscitation were the exception with 21% of medical officers indicating a need for supervision. Neonatal resuscitation skills were also found lacking in rural practitioners in the USA (Norris *et al* 1996:89). In Canada, it has been found that some family practitioners did not feel comfortable or competent in performing important procedures such as adult and paediatric resuscitation, simple fracture reduction, casting, intravenous access, lumbar puncture and endotracheal intubation (O'Connor & Davidson 1992:1791; Van der Goes *et al* 1999:79; Kelly 1998:469). Although tracheotomy was identified as rarely needed in the district hospital context in the Western Cape, the lack of training to perform this emergency procedure is nevertheless a cause for concern.

The popularity of the ACLS, APLS or ATLS courses amongst the Phase One respondents, indicates that these courses, which are largely skills-based, but include

substantial theoretical content, were perceived as useful for district hospital practice. The teaching strategy used in the ACLS course is seen as effective for the learning of technical skills (Kovacs 1997:389-390). District hospital practitioners should complete one of these or an equivalent course in emergency medicine as part of their continuing professional development for district hospital practice.

5.3.3   OUT-PATIENT SERVICES

Despite the high levels of competency that were recorded in managing most of the problems related to out-patient services, the substantial need for supervision in specific core activities needs attention. For instance, district hospitals manage a large caseload of violence related complaints, but almost a third of the practitioners felt they needed supervision in dealing with problems related to family violence. Another area in which low confidence was expressed, was managing problems relating to health promotion, preventative medicine and rehabilitation. These two examples demonstrate the importance of acknowledging the similarities between family practice and district hospital practice, and of including standard family medicine curriculum content into education and training modules for district hospital practice. Also, there is a need to move away from narrow curative medicine towards a comprehensive primary health care approach as competency for district hospital practice is about more than mere technical skills (Humphreys & Rolley 1998:942).

The lack of confidence expressed by older practitioners in dealing with issues around HIV/AIDS and especially counseling issues, indicates the need for sophisticated and formalised wider communication skills as a core ingredient of vocational training and postgraduate courses in Family Medicine. Communication skills encompass teamwork, interprofessional behaviour, decision-making, dealing with uncertainty and reflective practice, all of which are qualities of higher-order cognition (Gibbs 2002:609). A deficiency in these so-called "soft" skills in interns and community service doctors was found to significantly hamper the provision of medical services as a whole (Reid *et al* 2002:7).

The ability to perform out-patient forensic duties is very important, given the public heath problems related to violence and accidents, a major cause of unnatural deaths. The phasing out of the part-time district surgeon system has necessitated the retraining of practitioners who previously were not responsible for these functions (De Villiers *et al* 1995:32-34). Forensic work requires a high level of skill and expertise. Training for this work, therefore, needs urgent and special attention, as well as defining the category of health worker who should deal with this specialised field.

5.3.4   OUTREACH AND SUPPORT

District hospitals in Phase One of this study were found to mainly function in the curative domain, with little function in outreach involvement and support to primary health care services. District hospitals deal with large numbers of patients in need of curative services. The WHO criteria hold that level-one hospitals should also be involved in activities such as supporting PHC services, interacting with communities on their health needs, providing training programmes, and establishing intersectoral linkages (WHO 1992:12). For the hospitals surveyed in this study to perform this wider remit, a rethink on the strategic use of level-one hospitals is required. This would allow district hospitals to have a more comprehensive effect on the health of the communities which they serve.

Engelbrecht *et al* found a similar problem between hospital and PHC services with ward staff, for example not regarding themselves as part of the overall district health system (Engelbrecht *et al* 2000:4). The WHO has emphasised the importance of close co-operation between the district hospital and PHC services (WHO 1992:55). Taking services to the community and working closely together with clinics was found to be one of the key factors in the effective functioning of a district hospital (Couper & Hugo 2002:37).

Improved outreach and support between district hospitals and PHC services will lead to improved communication and co-operation between the services and reduce unnecessary referrals. In-service clinical training, sharing human resources and equipment and using PHC data in service planning, can support PHC services. District managers should work with district hospitals to develop a plan on how to provide outreach and support from the hospital to PHC services, and ways to overcome the barriers to outreach such as workload and lack of education and training to perform these functions. District-friendly models exists which integrate the hospital in the district through management processes to improve efficiency by way of regular interaction and supportive involvement in each other's functions, and support of clinics to improve access and provide care to the district as a whole (Couper & Hugo 2002:35).

5.3.5   MANAGEMENT AND PUBLIC HEALTH

Most medical officers generally did not perform district hospital management and public health functions, unless they were appointed as a Medical Superintendent. Competency in these areas was rated low. Many practitioners simply presumed that management was not their responsibility. Excessive clinical workload also did not allow practitioners to be involved in management and public health issues. Weak management skills such as budgeting and personnel management were similarly identified as a gap at Gordonia Hospital in Upington in the Northern Cape (Engelbrecht *et al* 2000:43).

Practitioners' lack of involvement in management means that there is little or no capacity building in management skills and a lack of perspective in wider health issues. Regular personnel meetings would assist in addressing this problem, as well as specific training in management skills. There is a need for training in management, especially in terms of the important aspect of quality assurance. Barriers to such functioning, such as a high clinical workload, will need to be overcome. Until district hospital medical officers have time available to do anything other than attending to

patients, it will be difficult, if not impossible, for them to perform any additional duties.

This is even more important in terms of public health related skills, which appeared to be peripheral issues for most practitioners. Given the fact that district hospitals are community hospitals, it is of concern that the practitioners have limited time for and understanding of the importance of a community-oriented primary care approach (Reid 2000:223-243). Rural practitioners in the Northern and Western Cape similarly did not value community health topics as useful for CPD (De Villiers 2000:15). Practitioners need to learn about the WONCA-WHO "Towards unity for health" approach, which responds to the needs of a population through integration of individual and community health activities, and the development of productive and sustainable partnerships among key stakeholders to improve the health of a community. Blending the clinical skills of medical practitioners with epidemiology, preventive medicine and health promotion, helps to resolve the separation between public health and clinical care (WONCA-WHO 2001:4).

5.3.6   REFERRALS

The most important reason for transferring a patient to a referral hospital recorded in Phase One of the study was that "the patient's condition required specialist care". This correlates with the finding in a 1997 study on referral patterns in the West Coast/Winelands region of the Western Cape (Kimmance 1999:8). Developing the knowledge and skills of both medical and nursing personnel can impact on referral rates and may ultimately reduce the cost of care. Appropriate and functioning equipment, as well as support services such as regular visits by specialists will allow more patients to be cared for without referral.

A significant time wasting and frustrating experience was the difficulty which district hospital medical officers experienced in dealing with medical personnel in referral hospitals. In Australia, country doctors had two main complaints about city hospitals. Firstly, the unethical behaviour of hospital doctors criticising the treatment prescribed

by rural doctors and <u>secondly</u>, being "talked-down" to by junior hospital doctors (Kamien & Buttfield 1990:169). Better lines of communication need to be established between rural centers and urban specialists, with referral hospitals sensitised to the context and difficulties of district hospitals (Hamilton 1995:199). Comprehensive community-based training and development of significant role models practicing outside of tertiary centers are crucial entities that will assist in addressing this problem. Ethical guidelines on dealing with referrals will provide assistance for improved professional behaviour in this area.

5.4 WORKING CONDITIONS AND RETENTION STRATEGIES

Working conditions in rural hospitals of South Africa have recently been under scrutiny in the press and medical publications. Understaffing, excessive workloads, inadequate supervision or support and long working hours are described as factors which compromise care in rural hospitals (Bateman 2001:792-3; Verkuijl 2002:664-6). Doctors are quoted as being unable to perform their duties satisfactorily due to a lack of equipment and drugs, malfunctioning transport systems, scant management support or faulty management systems, with little time for continuing education (Engelbrecht *et al* 2000:43; Reid *et al* 2002:7,8; Cameron *et al* 2002:276-278).

In the *Lancet*'s 2002 Wakeley essay, appropriately named "Country gardens", Parrish describes the situation as follows: "Our provincial health system is wintry at present; the staff has flown north for money and safety and there is a drought on building repairs. A tap outside one of our medical wards has now leaked for a year. Two plumbers, no washers. A while back when it rained on the CT scanner - the sensible advice was to pour the water out of the keyboard, and not switch on until dry. Millions spent on the machine, but no tin for the roof. On top of this, a plague has arrived. The wards are AIDS transformed. Old young faces in rows, bewildered tired eyes. (Where have all the elderly patients gone?)" (Parrish 2002:2059).

The in-depth interviews in Phase One of this study reported substantive evidence of struggling rural district hospitals with stressed personnel trying to serve their communities. These findings confirmed that unfavourable working conditions such as excessive after-hour duties and a perceived lack of management support impacted negatively on district hospital doctors. The conceptual model developed from the interviews in this study, namely the inverse performance spiral, highlights the significant influence of working conditions on medical practitioners in district hospitals in the Western Cape. Interventions aimed at reversing the cascade of events at any point, would be invaluable in improving both staffing and quality of care.

It is essential to prepare undergraduate and postgraduate students for working conditions in rural health services. Being realistic is part of a patient-centered approach that ought to receive much more prominence in undergraduate training (De Villiers 2000:60-65). Students also need to be taught coping mechanisms to deal with the stress resulting from working in these conditions. Medical officers need support from the service to decrease the possibilities of burnout. Low morale and stress lead to increased referrals and inequitable health service delivery (Haslam 2003:234-5).

Throughout the world family practitioners appear to be more dissatisfied with their working conditions than ever before. More than 90% of respondents in a UK study said that they worked too much and felt undervalued, with 25% wanting to leave the profession. Long hours, work related stress and the fact that they thought patients were getting a "raw deal" all added to the profession's dissatisfaction (Kmietowics 2001:887). These are similar to the results obtained from practitioners in Phase One, who found it increasingly frustrating to provide quality health care to underprivileged populations with ever-shrinking resources.

Dissatisfaction with workload is the single most important factor which influences a doctor's decision to leave rural practice. Mainous *et al* found that 25% of younger rural doctors said they would leave rural practice within two years because of excessive work-hours (Mainous *et al* 1994:790-1). In another study, 25% of doctors younger than 40 years of age indicated that they were seriously considering leaving rural practice (Dickenson *et al* 1995:1274). The younger generation of medical

practitioners seems to be even less likely to accept long working hours and difficult working conditions. Any planning will have to take into account the tendency of younger doctors to give only short-term service to rural practice. The most common reason for resignation amongst specialists working in rural regional hospitals in Tasmania, was the onerous workload, particularly while on-call after hours. The frequency of on-call duties, as well as the nature of the call-outs plays an important role (Katekar 2003:1-7). A high workload was also found to be the principal source of job related discontent amongst British family practitioners, with the proportion intending to quit rising from 14% in 1998 to 22% in 2001 (Sibbald *et al* 2003:22-4).

Rural and remote practice locations are associated with longer work-hours. Country doctors in Western and Southern Australia reported working 45–55 hours per week and being on-call two to three nights per week. Thirty five percent of the doctors were on-call every night (Delva *et al* 2002:1218). The medical officers in Western Cape district hospitals were also found to carry a substantial workload. Furthermore, it was clear from the Phase One qualitative results that full-time medical officers were dissatisfied with their workload and found it difficult to cope with the number of after-hour duties. Excessive acute care workloads usually received priority, with insufficient time for preventive health activities. Working conditions contributing to excessive turnover of personnel may be modifiable through interventions such as locum relief, support, infrastructure and communication mechanisms (Humphreys & Rolley 1998:942). Reducing the hours on-call, sharing the load with a colleague and having relief available for leave are means to reduce practitioner burnout and improve the situation of doctors in rural areas (Hamilton 1995:199).

Workload variables are significantly correlated with workload satisfaction which, in turn, is a strong independent predictor of the likelihood of change practice. Actual workload is an important factor in that it relates to the individual's perception of his or her workload (Mainous *et al* 1994:790-1). Satisfaction with workload and not the actual workload itself, is such an important factor in the retention of medical practitioners that it must be addressed in Western Cape district hospitals. More than a third of the respondents in Phase One of this study indicated that they were considering leaving the district hospital service. The reasons for this were mainly

workload, financial considerations and poor relationships with management. Forming a public-private partnership with private practitioners in rural towns to cover after-hour shifts, is a viable and cost-effective option.

Retaining medical practitioners in district and rural hospital services is a worldwide challenge. Workload and income are primary considerations. Retention, other than recruitment, is generally <u>unaffected</u> by practitioner characteristics or their backgrounds, including factors such as rural origin and type of training received predating their arrival in rural settings (Pathman *et al* 1994:53). Retention problems cannot be passed off as being a consequence of non-altruistic practitioners who are said to be unsympathetic to the health care needs of underserved areas. If retention is to improve, the services will need to address the causes of low provider morale and the doctors' expectations. Improved personal and professional support assist significantly in retention (Pathman *et al* 1992:1558).

The shortage of appropriately qualified rural doctors is a health care problem, which has to date not been tackled with the sincerity it deserves. The implementation of plans to improve human resources for health is not a task for part-time volunteers. It requires full-time professional liaison between medical and government bodies on promoting, recruiting, training and nurturing practitioners who work and want to work in rural areas (Kamien & Buttfield 1990:171). The fast tracking of the registration of suitably qualified practitioners from developed countries by the HPCSA and the announcement of a substantive increase in rural allowances are examples of steps that can be readily implemented. Isolated "piecemeal" interventions such as salary revisions, Cuban doctors, community service and upgrading of rural allowances are evidence of a lack of a comprehensive personnel retention plan. Incentives such as sabbatical leave, tax rebates and a floating pool of posts which enables community service doctors to stay on, can positively influence recruitment to and retention of medical personnel in rural areas (Bateman 2003:317).

Three major approaches have been used internationally to improve the supply of professional human resources in underserved areas, namely incentives, coercion and facilitation. Strategies that have been shown to be more successful than coercion

(such as by way of obligatory community service) are the selection of students from rural areas, meaningful community-based experiences during undergraduate education and training, support for postgraduate and continuing professional development, and attractive conditions of service (Reid 2001:333; Strasser *et al* 1995:11).

The challenge facing the Western Cape is thorough and meaningful collaboration between the Department of Health and the various other role-players involved in district hospital functioning such as academic institutions, non-governmental organisations, local government and researchers, to produce a comprehensive plan for district hospitals in the Western Cape. This plan must be accompanied by a dedication to implementation by all the stakeholders, a commitment of resources, political and academic will, plus support for such a plan.

5.5 STRENGTHS AND LIMITATIONS

5.5.1 PHASE ONE OF THE STUDY

a. *The medical officer questionnaire*

The medical officer questionnaire was a means of obtaining baseline data about the full spectrum of medical officers working in district hospitals. It was important to ensure an adequate response rate so that valid statistical inferences could be drawn, generalisable to the entire cohort. The 75% overall response rate, the similarity between the respondents and total population in terms of service categories (part-time, full-time and community service), and narrow confidence intervals in the demographic variables all support a high validity of the data from the medical officer questionnaire.

One of the limitations of the questionnaire was that competency ratings for all knowledge and skills areas could not be done for practical reasons. This meant that

knowledge and skills gaps in areas such as Dermatology, Ophthalmology and to a lesser extent Otorhinolaryngology could not be directly identified. However, identifying knowledge and skills areas as a "gold standard" proved to be a feasible option.

b.   District hospital data

The short sampling period (seven days) for district hospitals' casualty department data unfortunately limits the generalisability of those results. Other sampling strategies that take the hospitals' logistical problems into consideration should be considered in future studies. The morbidity profile and information from theatre registers were, however, extremely helpful in defining the role and function of district hospital medical practitioners.

c.   In-depth interviews

The in-depth free-attitude interviews used in this study explored unarticulated areas of individual experiences. These results assisted in the development of theoretical insights that explained and translated the meaning of the practitioners' perceptions.

The internal validity of the qualitative process was enhanced by strictly applying the free-attitude interview technique. Systematic rigour towards interpretive components, as well as procedures was maintained by the documentation and revision of an audit trail for the qualitative study. External validity was obtained with triangulation of the results from the medical officer questionnaire, interviews and district hospital data (Mash 2002:41; Giacomini & Cook 2000:478-472; Malterud 2001:483-488).

Factors outside the professional life of the district hospital doctor could contribute to decisions to stay in or leave rural areas. Although this was outside the scope of this research, it is an important aspect that needs further attention or research once the educational and professional support of the district hospital doctor has been optimised.

5.5.2   PHASE TWO OF THE STUDY

Phase Two was mainly a consultative process and as such did not contribute much to the final outcome of the study. It did, however, play a meaningful role in the informal validation by confirming many of the Phase One findings.

5.5.3   PHASE THREE OF THE STUDY - USING THE DELPHI METHODOLOGY

Consensus forming is the essence of using a Delphi technique. The effects of pushing towards consensus need to be carefully considered in the interpretation of results. Firstly the initial firm and comprehensive consensus achieved in the first round was useful to confirm agreement between the panel and the researcher on a large number of issues. The substantial degree of consensus became important to our considerations on how to proceed, as did the qualitative comments emanating from the first round. The Phase Three findings were similar to outcomes striven for in a Delphi technique such as the identification of the degree of consensus or lack thereof, specifying the range of different positions, and revealing the rationales behind the judgments (Critcher & Gladstone 1998:432, 440).

On the other hand, exploring issues on which consensus was not reached at the conclusion of Round 3, provided in-depth insights. It is important in Delphi to include the exploration of issues on which consensus could not be reached. The use of various statistical methods to explore the data shed more light onto the nature of non-consensus. The use of categorical data analysis to assess differences in opinions between subgroups in the panel brought a better understanding on a variety of issues, as illustrated by the large number of statistically significant p-values found, especially in terms of frequency of updating and some teaching modalities.

Factor analysis is used for data reduction to understand underlying attitudinal constructs. It analyses correlations between variables, seeking to find common factors that explain or retain most of the information from the original variables. Factor loadings represent the correlation between the original variables and the derived

factors. Therefore, the closer the value is to 1, the higher the correlation. These loadings are also used to name the factors for improved interpretability (Basilevsky 1994:133). The overall value of the factor analysis in this study was in validating some of the findings obtained in the previous sections. In particular, it clarified common views on negative responses such as the frequency for updating and the practise of endoscopic procedures at district hospital level. The factor analysis was not used to test a statistical hypothesis, but rather to form a visual image confirming results from previous findings. The interpretation of the factor analysis in this study, however, needs to be carefully interpreted as the sample size was too small for generalisable deductions to be made.

Iteration used in the Delphi assisted in making the research process more visible and transparent. Consideration needs to be given to the influence of feedback to the participants during the Delphi process, especially on the opinion of the panel. Participants may change their mind to stay with the group or change their opinion after reflection and reconsideration.

A middle neutral point was deliberately excluded from the Likert scale used in Phase Three in order to encourage respondents to commit themselves to taking a firm stand on each particular item. This strategy served its purpose in that clear calculations could be made on agreement and disagreement. The literature recommends the absence of a neutral point in order to force participants to identify specific items by offering a finite number of ranking options (Linstone & Turoff 1975:89; Goodman 1987:732).

Consensus formation is influenced by a number of factors, as demonstrated by the conceptual model developed in the Delphi used in this study. It is important that there is a full understanding of the influences on consensus, which may differ, depending on the content nature of the study. Inherent differences and varying experience between individuals, notwithstanding the homogeneity of the group, will always affect the nature of consensus. In this study the differences were found to be a strength rather than a weakness, as they assisted in better understanding the multifactorial nature of the matter under investigation.

The expert panel for this study consisted of persons residing in various provinces of South Africa. This was done to minimise bias that could have been introduced by using experts from a single area or province with a risk of converging opinions and cross-contamination of ideas. International experts were not considered to optimise the study's generalisability to South Africa. Experts were carefully selected with reference to their expertise, interest and relevance. The panel was categorised into three groups to ensure a wide scope of opinion from within a homogeneous group of participants with expertise in rural health. They were asked to "rate" their own expertise in particular areas, which assisted in analysing varying opinions amongst the panelists (Jones *et al* 2000:332; Jones *et al* 1992:36; Critcher & Gladstone 1998:435).

The expert input was very important to clarify terms and definitions used to make clear recommendations, to identify issues for exploration and to eliminate duplication. In this study, the Delphi technique (as opposed to conventional surveys), allowed participants not only to provide input into the questionnaire, but also to question the basis and premise of the research objective and methodology itself. It is vital that the researcher is well versed in the content matter of the material and is able to explain the rationale of decisions influencing methodological considerations. The researcher must also be able to convince the participants that possible causes for bias have been minimised and that the process has not been manipulated (Jones *et al* 2000:331; Moore 1987:66).

Similar to other Delphi studies, it became apparent at an early stage that the panelists' responses and concerns went beyond the scope of the study. Their comments directed the researcher's attention to other important and related issues, some of which were incorporated into subsequent rounds. The challenge is to develop specific propositions, but at the same time keep a flexible agenda which can be amended by the participants. In this way the Delphi acts as its own control (Jones *et al* 1992:39; Critcher & Gladstone 1998:441; Critcher & Gladstone 1992:434; McKnight *et al* 1991:56).

The quality of any Delphi study depends on a number of critical factors, for example the size of the sample. The sample size used in this study falls within the

recommendations made in the literature of between a minimum of ten and a maximum of fifty (Linstone & Turoff 1975:86; Moore 1987:58). The attrition and response rates achieved over the three Delphi rounds were better than those described in the literature (typically between a half and two-thirds). In this study the response rates were 73%, 87% and 100% for rounds 1, 2 and 3 respectively (Critcher & Gladstone 1998:435). Large sample sizes are difficult to manage in the Delphi and generally draw low response rates, while small sample sizes can leave the study with too few participants at the end of consecutive rounds. The good response rate in the Delphi used in this study reinforces the notion that a small, manageable group of experts must be identified, given the opportunity to confirm their commitment to the process, and followed up vigourously to maintain their interest. The length and complexity of the questionnaire also influenced the response rate, as the reply rates increased with consecutive rounds with correspondingly shorter questionnaires. (Jones *et al* 2000:331; Bellamy *et al* 1991:1913).

Using a Delphi technique is time-consuming and the participants do not see immediate results for their efforts. A mechanism for prompt and continuous sharing of information on both the process and results is important (McKnight *et al* 1991:57). The three rounds of the Delphi technique used in this study took about five months to complete, including an analysis of the results. The feedback that the participants received after each of the rounds had a positive effect on keeping them informed. Furthermore, it is important to decide when to terminate the Delphi, and this is usually after sufficient consensus has been reached. At the end of round 3, consensus was achieved on 97% (376/388) of the items originally generated, as well as clear qualitative feedback on reasons for lack of consensus on the remaining items.

5.6   EXPERT CONSENSUS

5.6.1 LEARNING NEEDS

There was general agreement that updating to maintain competence means learning new things or refreshing concepts. There was also consensus that updating for district

hospital practice should be based on the needs of the individual. The potentially favourable contribution of CPD to skills competence is reduced by a lack of identification of learning needs. Adult learners will frequently choose educational content that is of interest to them, rather than being related to areas of educational need. A closer matching of educational provision to measured need is a desirable feature of CPD (Myers 1999:303). The development of specifically tailored CPD programmes that meet the needs of rural practitioners is a key recommendation from the WONCA Working Party on Rural Health (Davis *et al* 1995:700; Strasser *et al* 1995:14).

The analysis of the knowledge and skills gaps in this study was useful as a way of identifying the learning needs of medical practitioners employed in district hospitals in the Western Cape. Learning is a process, not an event, which underlines the importance of the learner first identifying the gaps in their knowledge or skills. Practicing doctors are not always good at identifying what they need to know. Creating a learning environment is, therefore, the challenge. Practitioners should be encouraged to use their everyday professional experience to find the learning agenda required to focus their learning activities. This is an important prerequisite for learning, particularly for practitioners who are professionally and geographically isolated (Stanley *et al* 1993:210-11).

An important concept emerging from the Phase Three results was that, once a practitioner had acquired basic surgical skills, these could be applied to most new procedures with the use of good surgical reference material. The implication is that training programmes do not have to cover all surgical procedures required for district hospital practice, but rather ensure that learners know how to use the appropriate reference material when they are confronted with a procedure they have not previously performed.

The panelists differed in their opinion on whether practitioners need updating of a particular skill if they practise that skill on a regular basis. Panelists mainly involved in clinical work thought that updating under these circumstances was unnecessary, whereas the service managers and academics thought that it was. This questions the

notion of whether experience can be a substitute for learning, and whether good skills training can substitute experience. More research on this question is necessary.

The premise of de-skilling was also examined, with the experts agreeing that updating was important in the absence of regular practise of a knowledge or skill area. There is no evidence that competence in procedural practice requires the continuing practise of a minimum number of procedures (Jackson & Diamond 1993:1639). A study examining the outcomes of caesarean sections in rural hospitals suggests that family doctors with substantial initial training can maintain their skills while performing relatively few caesarean sections (Deutchman *et al* 1995:88).

Similarly, it was found that the effect of training in interviewing skills not only was maintained over time, but that improvement took place after qualification, and that it was the quality of the training and not the frequency of use that preserved the skills base (Bowman *et al* 1992:67; CFPC 1999:2419). Research should be carried out to establish the basis of skills atrophy.

5.6.2   FREQUENCY OF UPDATING

The respondents' opinion on the frequency of updating knowledge and skills areas remained varied. This divergence reflected uncertainty and indecision amongst the panel on how frequently updating of knowledge and skills areas should take place. The panel felt that varying individual needs would determine different updating requirements. Less regular (ten-yearly) updating frequencies were generally not supported, whereas very frequent (yearly) updating was only supported for a few areas, notably in domains in which rapid information growth takes place.

After rephrasing the question on updating frequency in Round 3, consensus was reached that most of the knowledge and skills areas need to be updated between two to five years. Significant support for an updating frequency of five to ten years was detected across most of the knowledge and skills areas in the factor analysis.

These results indicate that yearly updating (except for a few areas) is considered unnecessary and that 10-yearly frequencies are too far apart. Updating for maintenance of competence for district hospital practice should, therefore, occur on average every five years, with some areas more and others less frequently, depending on the learning needs of individuals and the rate of developments in a particular field. The statistical difference between academics and service managers on yearly updates indicates the need for further research on the different opinions amongst these groups.

5.6.3   CONTENT

a.   *Scope of practice*

One of the main objectives of this study was to define the content that should be included in a programme aimed at addressing the knowledge and skills gap and maintaining the competence of medical practitioners employed by district hospitals. Often there is disparity between education and practice in terms of content relevant to the day-to-day practicalities of district hospital functions. Narrow categorical CPD programmes are of dubious benefit to rural doctors (Stanley *et al* 1993:210; Wise *et al* 1994:317). It is also important that a curriculum of procedural skills be clearly defined so that realistic programmes can be developed which emphasise these skills during training (Spike & Veitch 1990:1545).

In Phase Three of this study, the Phase One results were utilized to organise knowledge and skills areas for district hospital practice into three categories, namely commonly occurring, identified gap and special need areas. Overwhelming and immediate consensus was achieved in the first Delphi round on the necessity to update all but one of the defined knowledge and skills areas. The unanimity of respondents' opinion confirmed the accurate defining of these areas. In addition, it reiterates the importance of competence in these areas for medical practitioners serving district hospitals. All these categories should be included in a course addressing the maintenance of competence for district hospital practice.

b.   *Priorities*

The wide scope of district hospital practice makes it important that prioritisation of knowledge and skills areas for updating needs takes place. What criteria should a training programme use to decide which knowledge and procedures should be mastered? The amount of training needed, programme content and how this is best accomplished remain difficult challenges. Those areas in which a gap has been identified, need to receive priority, but Norris advised that updating of procedural skills should focus on those procedures that are done by the majority of practising doctors, thus supporting our category of commonly occurring areas (Wigton *et al* 1989:938; Norris *et al* 1997:102).

A training programme for rural surgery can also be based on a priority and tier system in which patients are categorised into priorities 1 to 3 depending on the severity of the problem, and three tiers developed, based on the distance of the practitioners from a major regional hospital. Doctors employed by hospitals in the third tier will have to be able to perform a wider range of skills (Hill 1996:431-2).

This study contributes to the prioritisation of training content by the development of three categories of knowledge and skills, namely those that are common, those in which a gap has been identified, and those areas identified as special needs. Priorities may change over time with the emergence of new diseases (confirmed by the findings on proficiency in managing HIV/AIDS amongst older practitioners), and changes in legislation, well demonstrated in this study by the impact of new regulations on the management of TOP.

c.   *Specifics*

Specific areas emerged from the study as being supported or not being supported and these are vivid examples of the potentially useful application of these research findings. For instance, the updating of endoscopic skills was not supported, as it was

not seen to be a district hospital function. Updating of tonsillectomy skills was supported, but the results also indicated that it should not be included as a district hospital function. Tonsillectomy is included in the Western Cape core package of services, but not in the national norms and standards document.

Of interest is the support that was received from the panelists on the necessity to update areas defined as "special needs" for district hospitals, which included "soft" areas such as community participation, working in isolation and teamwork. Public health activities and the need for an understanding and participation in community issues were also seen as important. Rural practitioners have a significant role to play in health promotion, disease, and accident and injury prevention. The high prevalence of social problems in rural communities makes it imperative that practitioners are equipped to deal with these issues intellectually and emotionally. Practicing continuity of care with a high level of communication skills to work effectively with patients, the community and other health workers are vital. These "soft skills" need particular attention as they underpin the functioning of a district hospital medical practitioner (Humphreys & Rolley 1998:941,942,948; Wise *et al* 1994:315; Gibbs 2002:609; Reid *et al* 2002:7-8).

Research similar to this study should be done in each province in South Africa in order to define regional priorities, which will vary with disease patterns and the needs of local communities. Furthermore, as priorities shift over time, it would be prudent to perform a prioritisation exercise at five to ten yearly intervals (depending on the number of changing variables), and to use those results to inform relevant education and training for district hospital practice. The categorisation developed and successfully utilized in this study can be used as a basis for further studies in defining training content, priorities and specifics.

The updating of ethical issues remained a problem throughout Phase Three, and appeared to centre on TOP beliefs. The panel held varied moral viewpoints on TOP. This is similar to the findings in Phase One where many of the practitioners did not perform TOP because of ethical objections. It should be part of ethics learning that

practitioners develop moral reasoning skills on how to solve this and other ethical dilemmas.

5.6.4   UPDATING METHODS

a.   *In-service learning*

In-service learning under supervision in the district hospital itself was the most widely supported updating method for both knowledge and skills areas as suggested by the Delphi panel, as well as by the respondents in Phase One of the study. In-service learning under supervision was not initially included in the Delphi questionnaire as an updating modality, as it is not an accreditable CPD activity with the MDB. However, it is clearly seen by the experts in this study as an excellent way of maintaining competence for district hospital practice, and ways and means to convert such activities into accreditable CPD points should be developed.

The perceived advantages of in-service learning raises a number of questions, not least of which would be who should be responsible to set and maintain the standards for in-service learning? In-service learning under supervision implies that there must be experienced practitioners working in district hospitals who can provide teaching and set the standards. In-service learning in district hospitals can further be guided by utilising evidence-based protocols and guidelines (contextualised to the setting) as a standard. This links into the discussion on the human resources mix for district hospitals, the importance of a career structure in level-one hospitals for senior doctors, and the use of experienced general practitioners from the private sector in district hospitals. Exclusively focusing on service delivery by bringing in junior and foreign qualified practitioners will have a deleterious effect on the quality of services rendered in the medium to long term.

Operating under the supervision of an experienced colleague or a visiting specialist needs to be associated with feedback on performance. Learning psychomotor

(technical, procedural) skills requires a specific approach in that observer feedback and self-assessment based on outcomes form important elements of learning. In psychomotor skills training, educational strategies must assure not only the acquisition of a particular skill, but also competence and retention of that skill over time (Kovacs 1997:388-391; O'Connor & Davidson 1992:1789).

b. *Small group learning*

Small group discussions as an updating modality received immediate and strong consensus, as well as overall support for their use, especially in knowledge areas. Small groups were recommended for learning about content areas in all three the knowledge and skills categories. Interactive techniques and practice-based activities are more effective in facilitating learning than didactic teaching. Small groups have been found to be particularly useful in learning practical skills, focusing on specific learning needs of the participants, dealing with a topic in-depth and, especially, case-based discussions from the participants' own practice (Davis *et al* 1995:700; De Villiers *et al* 2003:8).

The support given to outcome-based small group learning in district hospitals by the expert panel, suggests it will be worthwhile to pursue this learning method. Empowerment of clinicians through training in educational principles will be needed, as it cannot be expected that practitioners can institute such programmes without the necessary background and support. The Teaching and Learning module in the Masters in Family Medicine programme of the University of Stellenbosch and the small group development initiatives of the SA Academy of Family Practice/Primary Care can provide such assistance.

The Canadian model of practice-based small group CPD proved to be useful in isolated areas. This includes facilitator training and the provision of information sheets that contain critically appraised reviews of the literature. The primary task for facilitators is to help their colleagues use the learning material in a meaningful way; i.e. to help the group constructively address the inconsistencies, paradoxes and other

difficulties so frequently encountered in the learning and change process (Premi *et al* 1994:801). Effective small groups should build on the experience of participants, actively involve learners, be relevant to practice and involve cycles of action-reflection (De Villiers *et al* 2003:5).

c.   *Special courses*

Special skills courses such as the ATLS received almost unanimous support from the panel of experts in this study. Thirty eight percent of the participants in the Delphi Round 1, completed an ATLS (or equivalent), and almost 50% of the respondents in Phase One. The ATLS course uses an effective teaching strategy for skills training. <u>Firstly</u>, there is a cognitive phase involving conceptualisation, where the context of the skills is appreciated. <u>Secondly</u>, visualisation and verbalisation is achieved by opportunities to see, describe and practise the procedure. <u>Thirdly</u>, there is a correction and reinforcement stage, leading to skill mastery and autonomy in performance. This type of learning process is considered very effective in acquiring technical psychomotor skills (Kovacs 1997:390). Special courses focused on a particular area can be very useful if they are linked to the learning needs of an individual. Other special courses for knowledge areas were highly supported, especially by the educational experts and service managers in all three categories of knowledge and skills areas.

d.   *Outreach visits*

Outreach visits by specialists were endorsed, with the proviso that the specialist understands the district hospital context and provides relevant and appropriate teaching. These visits were regarded as useful for addressing the knowledge and skills gaps and special needs areas, for example learning about minor surgical skills, spinal and local anaesthetics and common medical conditions. Evidence supports the use of educational outreach visits combined with additional interventions to reduce

inappropriate prescribing by doctors. Practice-based teaching visits by an educator with rural experience can include direct observation of consultations, operations, review of videotaped consultations, patient record reviews and discussion of clinical and practice management topics (Hays 1990:546-7). The cost-effectiveness of outreach visits has been identified as a problem in other countries. Further research is needed to assess the effects of such visits on other aspects of practice and to identify key characteristics which are crucial to their success (O'Brien *et al* 2003:1-5; Kamien & Buttfield 1990:169).

e.   *Workshops and audio-visual material*

Workshops were supported for knowledge areas on a similar level to small groups, but, in a surprise finding, were less supported for updating procedural skills. Workshops were seen as the third most popular measure for teaching procedures in family practice residencies in Canada. They were considered useful in teaching procedures seldom encountered in actual practice (Sierpina & Volk 1998:422-423). Audio-visual material also received good support for updating knowledge areas, but less so for updating procedural skills.

f.   *Secondary hospital rotations*

Although doubts were expressed initially on the usefulness of rotations through secondary hospitals, such rotations were finally supported in general terms for the updating of mainly procedural skills. These rotations were believed to be particularly useful to learn about procedural skills less frequently encountered at the district hospital such as neonatal resuscitation and skin grafts, but were seen as impractical because of service obligations. On the other hand, service managers significantly supported secondary hospital rotations. It should be the responsibility of managers to organise the service in such a way that secondary hospital rotations can take place. It may be an option to appoint practitioners to a "pool" on a regional basis, in order to allow for rotations.

Practitioners often lack the opportunities to acquire competency in emergency medicine, e.g. paediatric resuscitation, as was identified in this study. Rotation through centers where more of these cases are encountered, would be useful to update knowledge and skills in these crucial areas. Such rotations were also favoured by the Phase One respondents and were used by rural doctors in the Western Cape to prepare themselves for district hospital practice (O'Connor & Davidson 1992:1792; Geldenhuys & Hanekom 1999:24).

g. *Tertiary hospital rotations*

There was a lack of consensus on the usefulness of tertiary hospital rotations as an updating modality for district hospital doctors. These rotations were seen as not being relevant to district hospital practice, with superspecialists probably lacking insight into conditions of practice at level-one hospitals. It was also thought that such rotations were impractical because of distance and service constraints. Another limitation of using tertiary hospital rotations was the competition between various groups for training opportunities. In the words of one resident "you go back to university and end up standing behind a line of residents trying to learn something." The learning opportunity hierarchy in tertiary hospitals would reduce its effectivity. Closer co-operation between specialist and generalist trainers will have to be achieved before rotations through tertiary hospitals would be seen as useful for rural doctors (Hamilton 1995:199; Rourke 1988:1058; Watts 1993:1475; Kamien & Buttfield 1990:113).

The place of tertiary hospital rotations appeared to be for the updating of complex procedural skills such as performing a laparotomy, or learning about problems that were important, but seldom seen at district hospitals. Special areas such as Otorhinolaryngology, Ophthalmology and Dermatology which did not form part of secondary hospital services, were also thought to be best learnt in a tertiary hospital environment.

h.   *Specialist lectures*

Similar to tertiary hospital rotations, proposals for lectures by experts received little support and did not achieve consensus. The main reason given for this view was that experience with (super) specialist input was often inappropriate and not relevant to the learning needs and service context of practitioners in district hospitals. Another reason for a mismatch between training by specialists and learning needs of district hospital doctors is the probability that doctors at district hospitals are more likely to perform established procedures, while specialists often focus on emerging technologies and knowledge (Norris *et al* 1997:102). Lectures by specialists which are presented in a manner relevant to district hospitals practice, were seen as useful and, especially so, for updating on specialised areas such as forensic medicine, medico-legal issues and to address identified knowledge and skills gaps.

There was also a notion expressed that specialists are seen as superior practitioners who hold the key to knowledge which was regarded to be disempowering to generalists. The hierarchical relationship between generalists and specialists should, therefore, change to that between an educational consultant who provides relevant and contextual information on issues identified and asked for to be addressed by generalists.

i.   *Journal reading*

Journal reading, which is readily accessible to rural doctors, was not regarded by the expert panel to be useful to update procedural skills, and moderately useful for updating knowledge areas. In Phase One of the study it was found that the CPD habits of practitioners in Western Cape district hospitals were similar to those of other South African doctors who commonly read journals and attend lectures (De Villiers 2000:14; Van den Berg & De Villiers 2003:11). Journal reading and lectures are generally not needs driven, mostly based on the acquisition of knowledge, and do not facilitate the development of practical skills. The attraction to lectures and journal

reading is understandable if one recognises the fact that doctors, until recently, emerged from a medical school education which was largely rendered in the form of didactic lectures, mostly presented by specialists. It is a characteristic of dependent learners to look for "teachers" to "provide" education, either directly or by means of the dissemination of learning material. It is a cause for concern that activities which are regarded not to be useful to the maintenance of competence of practitioners in district hospitals are often those that are used most frequently.

It is hoped that the introduction of adult education principles, problem-based and student-centered learning, currently happening in medical education, will produce a practitioner who is skilled in independent learning (Stanley *et al* 1993:210).

j. *Internet learning*

Although resources from the Internet are accessible to rural doctors, e-learning received the least support from the panel of all the learning modalities proposed to update both knowledge and skills areas. E-learning has the potential of being always available and accessible, self-directed, a source of unlimited information, affordable, while having multimedia applications and the potential for being continuously updated. Uncertainty and fear of using technology may be barriers to the use of e-learning. The main difference between journals and Internet information is that practitioners receive medical journals on their desk, while some effort must be expended to search for useful and relevant Internet information. Ways and means of ensuring easy access to relevant Internet information at level-one hospitals should be investigated.

5.6.5 MAINTENANCE OF COMPETENCE

a. *The model*

This study succeeded in defining the criteria, qualities and needs for CPD required by the Western Cape district hospital medical practitioners as seen by themselves and an expert panel. In pursuit of consensus on content and teaching modalities to update knowledge and skills of district hospital practitioners, Phase Three, amongst others, set out to develop a comprehensive approach towards the maintenance of competence for level-one hospital practitioners. This outcome addresses the need for a system to support the maintenance of the competence of these doctors. The approach goes beyond isolated updating activities and forms a process which can cater for the quality of care provided by medical practitioners in level-one hospitals.

The conclusions resulting from Phase Three are supported by theory and evidence from the current CPD delivery system. CPD is concerned with the acquisition, enhancement and maintenance of knowledge, skills and attitudes. Its broad aim is to enhance professional performance and to optimise the outcome of practice. There are three types of CPD models, namely those aimed at enhancing competence and performance and these are referred to as update models.

The competence model aims to ensure that minimum standards for knowledge, skills and attitudes are attained. Performance models aim not only to help doctors to overcome barriers to successful changes in practice, but also help then to resolve clinical concerns and improve health outcomes (Nel & Kent 1994:462; Grant & Stanton 2000:3).

The update model, which simply aims to disseminate information, is the model most widely used in South Africa. (Van den Berg & De Villiers 2003:10). Evidence from educational research underscores the need to develop interventions that focus on the learning needs and practice problems of the individual learner as opposed to the acquisition of knowledge only. There is little evidence that CPD as currently offered

is effective in changing doctors' practices, or that educational interventions which have proven to be effective in changing behaviour, have been systematically incorporated into CPD. The challenge for an effective programme is that it should constructively incorporate modern learning modalities, as well as principles of adult education, such as self-directed learning, reflection, contextual learning and direct relevance. This would move CPD participation from an update model to a competence and performance model (Premi *et al* 1994:801; Grant & Stanton 2000:2).

An appropriate strategy for maintenance of competence will, <u>firstly</u>, recognise the educational starting point of the learner, <u>secondly</u>, the potential of professional experience and, <u>thirdly</u>, the need to maintain competence in response to changing demands. Stanley *et al* developed a self-directed learning model that connects experience and competence through systematic use of three learning media, namely reading, reflection and audit. Their model utilises neglected connections between experience, learning, competence and performance. They describe the learning of an individual as a pyramid, based on experience. The method takes the learner's immediate experience of the material, reflects on it and audits his or her position regarding this new information. It also takes the learner's learning characteristics into account (Stanley *et al* 1993:212; Stanley *et al* 1993:249). See Figure V for this model.

FIGURE V: SELF-DIRECTED LEARNING MODEL
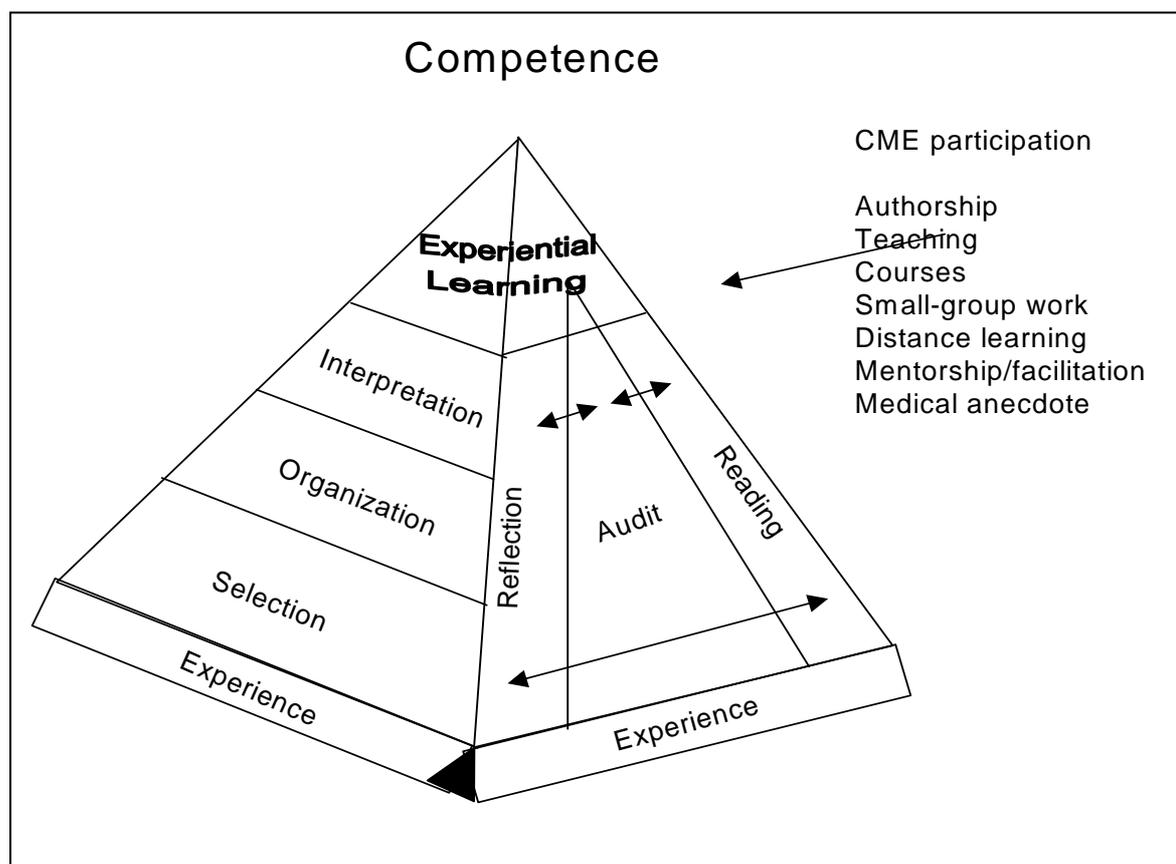
Phase Three of this study has indicated the way forward for an approach to update competencies for district hospital doctors. The approach aims to integrate the acquisition of knowledge into practice in order to achieve quality patient care.

b.   Underlying principles

The following principles inform this approach and the programmes that are developed from them. These principles are of essence to the success of any programme using the model.

- The programme represents a move away from merely the acquisition of (mostly) inappropriate knowledge to providing a practical approach for achieving competence and performance updating models.

- The approach facilitates the integration of updating modalities into everyday district hospital practice.

- The programme combines and utilises a wide array of updating modalities, including innovative ways to overcome geographical barriers.

- The content of the programme is based on the learning needs of the individuals participating, as well as on service and community needs.

- The circumstances of each particular district hospital (or health service, for that matter) are taken into account.

- The programme empowers participants to take charge of their own learning.

- The overall focus of the programme is to improve the quality of health care services.

c.   *Practical considerations*

Workload was identified in both Phases One and Three as a substantial barrier to continuing learning. As such it is one of the most fundamental issues underlying the maintenance of competence for district hospital practitioners, directly influencing equitable and quality health service delivery. The impact of any programme attempting to address maintenance of competence will be limited if workload and other service issues are not addressed simultaneously. Practical considerations are important and must be taken into account. These include the following:

➢ The learning must primarily be district hospital-based.

➢ Some acquisition of knowledge and skills could take place off site, utilising hospital rotations and special courses to provide for particular needs.

➢ A regular weekly one-hour time slot devoted to the programme must be instituted.

➢ Protected time must be created for learning.

➢ Learning must be relevant to the context.

➢ Visiting experts must link into the district hospital programme.

➢ A provincial workshop must be organised to address those areas in which knowledge and skills gaps had been identified.

➢ Orientation and training in the principles and functioning of the approach are a matter of urgency.

➢ Management must be supportive of the approach and programme.

The implementation of updating programmes for district hospitals practitioners is a complex process. This study has identified pointers in terms of principles, content, updating modalities and an overall approach that need to be followed. However, since this approach moves away from the well-known update model currently used in South Africa, it will be important to pilot the institution of such a maintenance of competence programme in district hospitals in the Western Cape. The pilot will need to take into consideration all the variances uncovered in this study and will have to be properly evaluated to point the way forward for the long-term sustainability of such programmes in district hospitals.

d.   ***In closing***

This study gathered information in Phase One which highlighted the circumstances, experiences and needs of medical practitioners working in district hospitals in the Western Cape. These were further confirmed during the consultative process which followed in Phase Two. Linking the exploration of the Phase Three data with the results from the previous phases, lead to conclusions about needs, methods, modalities, practicalities, opinions, consensus and delivery of updating the professional knowledge and skills of district hospital doctors. It uncovered and confirmed clear obstacles – some related to perception, capacity, attitudes, costs, distance, and political will and others of an organisational and monitoring nature - which will have to be taken into consideration in the development of a model for the maintenance of competence.

CHAPTER 6

RECOMMENDATIONS

The following recommendations pertaining to the education and training of medical practitioners for district hospital practice, working conditions in district hospitals and other related district hospital practice issues were formulated, based on the literature study and the results of this research project.

6.1 EDUCATION AND TRAINING

Appropriate education and training for district hospital and rural practice is a cornerstone in the recruitment and retention of medical practitioners for these health care services. Education and training at the undergraduate, internship, vocational and postgraduate levels, as well as during continuing professional development need to be relevant to the district hospital and rural environment.

6.1.1 UNDERGRADUATE EDUCATION AND TRAINING

a. *Policy issues*

Undergraduate education and training programmes for rural practice need to be developed, implemented and evaluated. For this purpose it is **recommended** as follows:

➢ Family Medicine is to play the leading and central role in undergraduate education and training for rural practice and is to receive recognition and the necessary resources to perform its responsibilities (see section 2.4.1).

➢ Rural rotations are to be recognised as an essential part of the curriculum and are to be integrated into the curriculum as a whole, with rural topics being interwoven as core golden thread throughout the entire curriculum (see section 2.4.1).

➢ Community-based rotations in rural areas to be consistently and repeatedly introduced in all phases of the curriculum, starting early on and continuing throughout the course - once-off rural rotations are insufficient (see section 2.4.1).

➢ Rural family practitioners to undergo preparation as supervisors by faculty in order to enable them to adequately supervise students during their rural rotations, and to provide learners with role models in rural practice (see section 2.4.1).

➢ Clear evidence from the literature regarding the successful recruitment of learners from rural origins to rural practice must be heeded and learners with rural backgrounds need to be specifically sought after and assisted with funding in order to pursue undergraduate studies in medicine (see section 2.3.1).

➢ Partnerships between communities, health service providers and teaching institutions need to be established to facilitate the enrolment of learners from rural backgrounds (see section 2.3.1).

b.   *Curriculum issues*

The Phase One results (i.e. sections 4.1; 4.2; 4.3 and 5.1.1 of this report) pointed to the need to pay attention to a number of specific curriculum issues for rural and district hospital practice. It is, therefore, **recommended** as follows:

> ➢ The curriculum is to emphasise the integration of a public health approach with clinical patient care, while training is to encourage a community-oriented health care approach.

> ➢ Learners to be oriented towards rendering a comprehensive primary health care service so that dealing with primary care problems is not denigrated to an inferior status in their view and experience.

> ➢ Interdisciplinary education and training to be included in the curriculum to improve effective health care teamwork.

> ➢ Procedural training in office and minor surgical practice is to receive specific attention during the undergraduate curriculum.

> ➢ Learners to be qualified to understand the morbidity profile of patients who present at district hospital level, and to know how to manage clinical problems which range from primary health care to serious trauma.

> ➢ Learners to understand the limitations and constraints of working in a level-one hospital and to learn from an early stage onwards how to cope with those limitations and constraints.

> ➢ Learners to be prepared for dealing with the effects of violence.

> ➤ Teaching learners to render patient-centered care to be regarded as an essential part of education and training.

6.1.2   INTERNSHIP TRAINING

Newly qualified interns need to be equipped with the necessary skills to effectively practise in rural areas and district hospitals. In terms of internship, it is, therefore, **recommended** as follows (see sections 2.4.2; 4.1; 4.2; 4.3; 5.1, 5.1.1; 5.1.2; and 5.3.1 of this report):

> ➤ Rotations in the domain of Family Medicine during internship training are important as they form the bases of rural and district hospital practice.

> ➤ Suitably qualified and experienced family physicians are to provide supervision to interns during these rotations.

> ➤ Posts for family physicians to serve as supervisors are to be created.

> ➤ Suitable sites for internship in Family Medicine are to be developed, including primary health care clinics, community health centers and district hospitals.

> ➤ Tertiary hospitals to significantly change the internship training which they provide in order to become a more relevant skills-based training.

> ➤ Interns are to learn how to manage both common and serious clinical problems which present at the community level.

> ➤ Interns are to learn to deal with undifferentiated problems and with the uncertainties of having limited resources.

➢ Emphasis to be placed on practising common surgical, emergency and trauma skills, as well as efficient communication skills.

➢ Interns are to learn to have a community-oriented approach and to practise public health skills.

➢ Training in performing caesarean sections is to receive specific attention in the case of those interns who are allocated to work in district hospitals during their community service year or who are planning a career in rural practice. These interns to receive the opportunity to perform at least 10 caesarean sections during their internship training.

➢ Interns to have the opportunity to administer general anaesthesia to uncomplicated patients during their internship training in a district hospital context.

6.1.3 VOCATIONAL TRAINING

Vocational training for generalist practice, including rural practice, should become a nationally accepted strategy in order to address the needs of communities and community hospitals (section 2.4.3). It is, therefore, **recommended** as follows:

➢ Vocational training programmes with curricula appropriate to the service needs of level-one hospitals are to be introduced.

➢ Pilot sites to be developed, supported and evaluated.

➢ Service providers and teaching institutions to work together in creating training posts for supervisors.

> The trainee is to work in a district hospital, as well as in clinics and community health centers attached to such a district hospital.

> Such vocational training programmes to have an academic teaching, as well as a practical training component.

6.1.4   POSTGRADUATE EDUCATION AND TRAINING

a.   Policy issues

Postgraduate education and training for rural practice which leads to specific qualifications is important in order to suitably prepare a cadre of experienced practitioners who will become future educators, trainers and supervisors. In this regard, it is **recommended**   (see sections 2.4.3; 4.4; 4.5; 4.6; 4.7 and 5.3.1-5.3.6) as follows:

> Family Medicine to become a recognised specialty which requires special education and training and qualified practitioners to deal with the specific needs of patients in the community context.

> Rural Medicine to become a subdivision within the domain of Family Medicine in view thereof that rural medicine is generalist practice within the rural context, requiring additional skills.

> A Diploma in Rural Medicine to be developed in a process which involves all relevant role-players.

- The Master's degree programme in Family Medicine to include rural streams to provide in the need for a postgraduate qualification in Rural Medicine.

- Famec to form a Task Team on postgraduate education and training to make recommendations on education and training for rural practice in collaboration with RuDASA, the SA Academy of Family Practice/Primary Care and the College of Family Practitioners (CFP) of the Colleges of Medicine of South Africa (CMSA).

- Academic units which work towards the development and maintenance of rural education and training programmes to be established within or attached to Departments of Family Medicine at Faculties of Health Sciences, and to become part of the Famec consortium.

b. *Curriculum issues*

Under curriculum issues, it is **<u>recommended</u>** in terms of sections 4.1-4.7; 5.6.3 and 5.6.5 of this report as follows:

- The learner is to work in a relevant clinical environment, supported by appropriate supervision of a family physician during the period of postgraduate education and training.

- Training and supervisors' posts in district hospitals to be created in collaboration with service providers.

- Common difficulties such as isolation, poor working conditions, excessive workloads, inappropriate caseloads and others to be anticipated and managed appropriately.

- Training content to be prioritised according to service needs for a further 24 months.

- The curriculum to be structured into a list of core skills, priority and elective areas.

- The core curriculum to include all the content areas usually covered in education and training for Family Medicine.

- The core curriculum to be addressed in a two-year training programme, followed by an elective programme for a further 12 to 24 months.

- A core list of skills for district hospital practice to be developed.

- Specific skills training for advanced procedural and community-oriented practice to be included in the curriculum.

- Specific areas to be addressed and to include knowledge and skills in emergency and trauma medicine.

- Training in advanced maternity skills to be facilitated through co-operation with trainers in Obstetrics and Gynaecology.

- Appropriate generalist anaesthetic skills to be promoted by a similar arrangement with anaesthesiologists.

6.1.5 CONTINUING PROFESSIONAL DEVELOPMENT

a. *Programme development*

A comprehensive programme to facilitate the maintenance of competence for district hospital medical practitioners is proposed (see section 5.6.4; and 5.6.5) and it is **recommended** as follows:

- ➢ CPD to be made relevant to the learning needs of individual practitioners, services, and the specific community's health needs.

- ➢ A process for maintenance of competence to be established, rather than to specify particular educational formats.

- ➢ The programme is to move from the acquisition of knowledge to the integration of theory into practice.

- ➢ The programme is to contain a wide range of learning modalities.

- ➢ Service managers, professional organisations such as the SA Academy of Family Practice/Primary Care and RuDASA, and teaching institutions to collaborate in support of district hospitals and the development of the recommended programmes of education and training.

- ➢ Such programmes and qualifications to be accredited and recognised as additional and specialist qualifications by the Medical and Dental Professions Board (MDB) for registration purposes.

b.   Format and content

Each district hospital should institute a programme in which its format incorporates all the elements of the adult learning cycle as proposed in Phase 3 of this study (see sections 4.4; 4.5; 4.6 and 4.7). It is thus **recommended** as follows:

➢ Mandatory weekly CPD meetings to be held.

➢ Service managers to create protected time for learning.

➢ A specific person, ideally to be a senior medical practitioner who is qualified in Family Medicine and whose job description includes the responsibility for establishing and maintaining a local continuing education and training programme and to co-ordinate the programme at each facility.

➢ Health authorities to make input on what they regard as their training priorities.

➢ Content areas to include the problem areas which commonly present themselves in district hospitals, areas in which knowledge and skills gaps have been identified, and areas defined during this study as special needs for district hospitals.

c.   Orientation and support

District hospital practitioners will need orientation with regard to the principles of adult education and self-directed learning in order to appreciate the different approach

to continuing professional development proposed herein (see sections 2.4.4 and 5.6.5). Towards this end, it is **<u>recommended</u>** as follows:

- ➢ Practitioners in district hospitals are to be oriented with regard to the principles of adult education.

- ➢ A training course to be developed and implemented for individuals to serve as group facilitators.

- ➢ Support for the effective functioning of the programme by means of learning materials, accreditation for CPD points, and organisational support to be provided.

6.2 WORKING CONDITIONS

A number of significant service issues impact on the performance of medical practitioners in district hospitals. It needs to be strongly emphasised that working conditions need to be addressed systematically. Without such planning, a training programme would have limited impact and may increase frustrations instead of improving the quality of service.

6.2.1 WORKLOAD

The results of this study in sections 4.1; 4.2 and 4.3 emphasised the negative effects which workloads and perceptions of workloads have on the retention of district hospital practitioners. The strain which full-time medical officers in particular are experiencing in district hospitals, has a significant impact on their mental and physical health, leading to work-related stress and eventual resignation from the service. This

is confirmed in the literature which was reported in section 2.3 hereof. Mechanisms need to be found to retain these practitioners and it is, therefore, **<u>recommended</u>** as follows:

➢ After-hours duties of full-time practitioners to be reduced.

➢ Sabbatical leave to be granted to senior practitioners.

➢ The inappropriate PHC clinical load on district hospitals to be addressed.

➢ Protected time for professional development to be provided.

➢ Part-time practitioners to be engaged to reduce the service load on full-timers.

6.2.2 CAREER PATH

The loss of skilled and experienced senior medical practitioners from level-one hospitals continues (see section 4.2; 4.3). A career path will provide the opportunity to these practitioners to progress in their career, not only financially but also in terms of seniority in the service. A clear career path will have positive long-term effects by retaining established and skilled doctors which will result in a more cost-efficient and effective service (section 2.3).

➢ In is therefore **<u>recommended</u>** that family physician posts for persons who hold appropriate qualifications and experience be created in order to deliver high quality services at larger district hospitals. (Chief Medical Officers mostly serve in supervisory and managerial capacities, while family physicians would provide the capacity for teaching, training and support, quality assurance and research.)

6.2.3   PUBLIC-PRIVATE PARTNERSHIPS

A public-private partnership with local family practitioners in the private sector will be useful in reducing workloads, bringing experienced practitioners into the public service at reasonable cost, and would provide private general practitioners with an opportunity to render service to the community (section 5.2.1). It is, therefore, **<u>recommended</u>** as follows:

> ➢ Appropriate remuneration for advanced procedures and after-hours work to be investigated and instituted.

> ➢ Relations between private family practitioners and management to be improved.

> ➢ Medico-legal insurance protection for part-time practitioners to be clarified.

> ➢ Pilot sites for the implementation of public-private partnerships with local practitioners to be established and evaluated.

6.2.4   PHC AT DISTRICT HOSPITAL LEVEL

The PHC services must be strengthened to manage such problems more efficiently and to reduce the PHC load on the district hospital, especially after-hours (see sections 4.1; 4.2; and 4.3). It is, therefore, **<u>recommended</u>** as follows:

> ➢ On-call PHC nurses at emergency departments of district hospitals to deal with most PHC problems.

- Gateway PHC clinics to be established <u>on site</u> at district hospitals (depending on local conditions such as the location of the hospital in the community).

- A bypass fee for patients who present directly at district hospitals for non-emergencies to be instituted.

- Other personnel categories such as interns, community service doctors and PHC nurses to be utilised to assist in dealing with the PHC load.

6.2.5   RELATIONS WITH MANAGEMENT

This study identified a definite need for improved communication between management and all other levels of medical practitioners (see section 4.2; 4.3). It is **<u>recommended</u>** as follows:

- In view of this finding, management is to be <u>seen</u> to value the opinions of its personnel.

- Objective investigations to be held into areas of concern which are raised by personnel, by means of mandatory and regular personnel meetings – not only on an *ad hoc* basis or at times of crisis.

- Medical practitioners employed by district hospitals to be assisted to develop a proper perspective and understanding of the problems and challenges which management has to face and deal with on the regional, provincial and national levels.

6.3 RELATED DISTRICT HOSPITAL ISSUES

This study has clearly and categorically uncovered areas and issues that are of importance to health authorities and need to be tackled by the Western Cape Health Department. These areas relate to district hospital services in general and need to be examined by further research to complement this study, which focused on issues facing medical practitioners at district hospitals. A comprehensive approach is required to address these related service issues.

6.3.1   NURSING PERSONNEL

The nursing personnel form the backbone of district hospital services. Results obtained and reflected in section 4.3 (in-depth interviews) indicated that the performance of nurses had a significant influence on the performance of medical practitioners in district hospitals.

> ➢ It is, therefore, **recommended** that a gap analysis, similar to that performed in Phase 1 of this study, be carried out to examine issues that face nurses employed by Western Cape district hospitals.

6.3.2   EQUIPMENT

Faulty or obsolete equipment is a common negative factor to which medical practitioners in district hospitals referred in Phase One (see section 4.3) of this study Often small, basic and inexpensive equipment items cause severe problems such as needle holders, oxygen machines and fetal monitors. The following **recommendations** are, therefore, submitted:

➢ A systematic programme for the replacement and upgrading of equipment must be undertaken in Western Cape district hospitals.

➢ Anaesthetic machines in Western Cape district hospitals are to receive specific attention.

6.3.3   TRANSPORT SYSTEM

The qualitative results of this study (see section 4.3) confirmed that there exist serious deficiencies in the transport system which supports district hospitals in the Western Cape.

➢ It is, therefore, **recommended** that these deficiencies be investigated and dealt with appropriately.

6.3.4   INTEGRATION INTO THE DISTRICT HEALTH SYSTEM

The results which were obtained in Phase One (see section 4.1; 4.2 and 4.3 hereof) suggested that district hospitals in the Western Cape are not yet functionally integrated into the district health system in terms of the guidelines contained in the literature (see section 2.1 and 2.2 of this report) and it is **recommended** as follows:

➢ Barriers to the full integration of district hospitals into the district health system must be identified and addressed.

➢ District hospital personnel needs to be oriented to appreciate the broader role of district hospitals in supporting district health services, which moves away from only providing curative services to a comprehensive care approach which shall include outreach and support services.

➤ District hospitals to be recognised on the macro level for the important role which they have to fulfill in community-based services.

➤ Links between district hospitals and their referring primary health care services need to be clearly defined, established and maintained.

➤ Communication between and mutual respect for personnel employed by the different services need to be fostered.

➤ Regular meetings such as monthly morbidity and perinatal outcome discussions to be utilised to strengthen the links between district hospitals and PHC services.

➤ Protected time for outreach visits to clinics to be provided.

➤ Outreach visits to be used to render assistance with clinical problems, in-service training, and to improve continuity of care, while creating a culture of focusing on quality of care issues and on mutual learning.

6.3.5 RELATIONS WITH REFERRAL HOSPITALS

The problems identified in the in-depth interviews with regard to relations between district hospitals and their referral hospitals must be addressed in order to improve co-ordination, cost-efficiency and continuity of care (see section 4.3). It is, therefore, **recommended** as follows:

➤ Practitioners working in referral hospitals to be familiarised with the conditions of service, circumstances at and limitations of district hospitals.

- Joint meetings, visits, rotations and regional team building exercises to be held to improve the co-operation and functioning between the different levels of care.

- A code of conduct for dealing with referrals to be developed, implemented and strictly adhered to.

6.3.6 INTERSECTORAL CO-OPERATION

Phase One of the study identified the fact that there are a number of community, non-profit, welfare and business organisations in the Western Cape whose expertise and resources could be used effectively by utilizing the district hospital boards to assist district hospitals in fulfilling their role (see section 4.3). Keeping this in mind, it is **<u>recommended</u>** as follows:

- Active and effective community involvement and intersectoral linking of organisations with district hospitals should be accomplished and maintained by utilising any available means such as the good offices of hospital boards to achieve community involvement and co-operation.

CHAPTER 7

CONCLUSION

7.1   DEVELOPMENT OF HYPOTHESIS

At the start of this project there were a number of factors driving the process. <u>Firstly,</u> increasing emphasis was placed on the primary health care approach and the district health system as the vehicle to deliver comprehensive health services to communities. District hospitals formed an integral part of the district health system and as such played an important part in the delivery of health services at community level. Little research on district hospitals had previously been carried out in South Africa. This was limited in scope with insufficient information on the role and experiences of medical practitioners staffing district hospitals.

<u>Secondly,</u> information about district hospitals in the Western Cape was not available in terms of their human resources, services, functions and roles. This was especially important given the concerns about reports of inadequate health services in rural areas where most district hospitals are situated. As the study progressed, it became apparent that additional factors needed to be investigated to logically describe the health service platform in the Western Cape and the district hospital doctors' role within that system.

<u>Thirdly,</u> there was a paucity of data pertaining to doctors staffing district hospitals. Their demographic characteristics, knowledge and skills levels, experience and attitudes to their roles as medical officers were unknown. This information was critical if district hospitals were to deliver equitable and quality health services, properly focused undergraduate and

postgraduate education and training were to be appropriately constructed and meaningful continuing professional development was to be provided.

Finally, at the same time, the author's academic department at the University of Stellenbosch was developing a Masters in Family Medicine programme by distance education which required models for rural practice. Questions were asked as to whether rural practice could logically evolve into a subspeciality of Family Medicine, and whether the latter could provide appropriate education and training for district hospital practice.

These factors initiated and sustained the research focus of the study making it both a highly relevant source of practical information for health authorities and simultaneously researching the needs of district hospital doctors in terms of their education and training and professional development.

7.2   DATA COLLECTION

As no data existed on the roles and functions of district hospital medical officers, research methodologies had to be developed *de novo*. This process was achieved after wide consultation with experts, management and literature reviews which resulted in a unique series of questionnaires, reports and interviews. Informal discussions with personnel at all levels provided further insights into the actual and perceived roles of the district hospital doctor.

The vast amount of both quantitative and qualitative data collected, demanded extensive collation and interpretation. The sorting and analysis of the raw data was a time-consuming exercise, but the process itself led to a deep appreciation of the motivation and philosophy behind the commitment of district hospital practitioners. These results

were validated by a series of presentations and meetings with a wide range of stakeholders.

Combining the factual and validated data with the international literature on rural practices gave direction to the formulation of a Delphi technique. This was used to obtain consensus amongst a group of defined rural health experts on the content and learning modalities needed to maintain the competence of district hospital doctors. The innovative use of the Delphi technique with its consensus defined outcomes, was helpful to those guiding continuing professional development with specific reference to rural practices.

7.3   ROLES OF DOCTORS IN DISTRICT HOSPITALS

Just as it became clear that these doctors' work environment is complex and critical, it also emerged that all aspects of their education, training and vocation, plus their ongoing development need to be addressed.

This thesis examined the roles of medical doctors in district hospitals to establish what their actual functions were and what influenced them to carry out those functions satisfactorily – or not. Apart from the environmental factors, strong linkages were identified to education and training.

Thus, a subsequent theme emerged, namely the theoretical and philosophical paradigms which underpin these doctors' selection, motivation, preparation and support to function in district hospital practice. Concomitantly it became imperative to focus on the practical aspects of the continuum of education and training.

It became clear that education and training on all of the undergraduate, postgraduate, internship, and CPD levels had crucial influences on district hospital practice. Preparation

for district hospital practice must relate to the needs of the community. Undergraduate education and training, therefore, must have a specific emphasis on rural practice, while students from rural origin need to be actively recruited. Appropriate postgraduate courses and programmes must be developed under the auspices of academic Departments of Family Medicine. Continuing professional development initiatives must focus on appropriate content and teaching modalities which will foster the maintenance of competence. These and other specific recommendations on the education and training of district hospital doctors became the focus of this thesis.

7.4   NATIONAL AND INTERNATIONAL PERSPECTIVES

The thesis findings relating to the Western Cape province of South Africa need to be compared and contrasted with the published literature. Nationally, those findings were informally validated by a large number of role-players and appeared to correlate well with the little work that had been done in this domain in South Africa. However, similar studies need to be conducted in other parts of the country to inform health service managers.

The presentation of these results as they were being gathered, evoked lively interest whenever they were presented. The original nature of the information has been of particular importance and its positive reception validated the crucial nature of the data gathered in Phase One of the study.

Internationally viewed, there were similarities in terms of the roles and functions, difficulties and experiences described there to those described by doctors who participated in this study. Lessons learnt at the organisational level confirmed that rural medicine must be recognised as a subdivision of Family Medicine and needs to have a definitive role in the education, training and maintenance of competence of doctors in district hospital practice.

7.5   THE AUTHOR'S PERSPECTIVE

In conclusion, it is perhaps opportune to provide some background to the author's professional experience that culminated in this project. Working as the only family doctor in an impoverished township environment, fostered an intimate understanding of community-oriented primary care and the conviction to serve under-privileged people. This motivation was furthered by an academic appointment during which time teaching and training strategies were being developed at undergraduate and postgraduate levels in Family Medicine, as well as for community-based research.

More recent involvement in university faculty management, provided a unique opportunity to initiate the establishment of a rural health centre within the institution and further develop public and primary health sciences through education, training, research and community service. Serving in leadership positions within the organisation of the medical fraternity has allowed a wider perspective on the profession, its continuing professional development and research within this domain. Exposure to South Africa's health systems, regulatory and legislative frameworks by serving on the HPCSA and the MDB have, furthermore, influenced a broader perspective on the national basis.

By means of this thesis, the author's interest in medical education and an understanding of community-based health care systems merged with a large measure of synergy.

7.6 FINAL ANALYSIS

Finally, the results of this study indicate that two fundamental areas have to act in complete concert if satisfactory health services are to be delivered to communities. The <u>first</u> area is the role of health systems, i.e. the philosophy, organisation and management of health services. In health systems, national policies, provincial priorities and operational management directly influence the functioning of the district hospital and its medical personnel. The <u>second</u> area relates to human resource development issues which, in the case of district hospital medical officers, are intimately connected with their education, training and ongoing professional development. In this regard educational institutions are primarily responsible for the education and training of health professionals, while their policies, organisation and programmes have a profound influence on health service delivery. Health systems and teaching institutions are irrevocably interdependent on each other.

This study is an example of the meeting of health service providers with their authority over policy and services on the one hand, with academic teaching and regulatory professional domains on the other who, in co-operation with each other, are responsible for the education and training of health professionals.

Service management and academic institutions need to collaborate on an ongoing basis with each other, to assess, support and strengthen the functioning of the health system in its entirety in order to improve health care delivery.

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DISTRICT HOSPITAL SKILLS AUDIT
QUESTIONNAIRE TO MEDICAL OFFICERS

(Sien keersy vir Afrikaanse vertaling)

Thank you in assisting us with this important research project. Please read all the questions carefully and write or tick in the appropriate box. (MO = Medical Officer; DH = District Hospital)

SECTION A: DEMOGRAPHIC INFORMATION

Please enter one letter or figure per block

Age (years)

Gender (M / F)

Nationality

In which country did you obtain your basic medical qualification?

Year of basic medical qualification?

Are you a full-time MO (**FT**) or part-time/sessional MO (**PT**) or community service MO (**CS**)?

In which hospital are you currently working?

For how many months have you been working in this hospital?

Do you hold full (**F**) or limited (**L**) registration with the HPCSA?

SECTION B: EDUCATION AND TRAINING

1　　**Which of the following postgraduate qualifications do you hold?**
　　　　Please tick all the relevant options.

MFamMed / MPrax Med or equivalent

MCFP / MFGP

Diploma in Anaesthesiology

Diploma in Internal Medicine

Diploma in Emergency Care

Diploma in Obstetrics

Diploma in Child Health

ACLS

APLS

ATLS

Diploma in Occupational Health

Diploma in Public Health

Other : (please specify)……………….

2　　**What kind of work experience (for how long in terms of months), and in which country, did you acquire after your internship to prepare you for your current post?**

　　　　Please indicate the number of months and country for all the relevant options.

TYPE OF EXPERIENCE	MONTHS	COUNTRY
Rotations in secondary hospitals		
District hospital		
Primary health care centers, clinics		
Registrar post		
Rotations in tertiary hospitals		
General practice (private sector)		
Defence Force		
Other : (please specify) ……………... …………………………………………		

1

3. How do you update your knowledge and skills?
Please tick all the relevant options.

Read journals	
Pharmaceutical industry CPD meetings	
Work with colleagues in performing skills	
Refresher courses at academic institutions	
Regular district hospital CPD / academic meetings	
Study handbooks, textbooks	
Evidence-based medicine (obtain evidence from literature and apply to practice)	
Enroll in postgraduate degree or diploma courses	
E-mail groups/lists, e.g. Mailadoc	
Meeting with a drug company representative	
Other : (please specify) …………………………………………..	

SECTION C: SKILLS

1   IN-PATIENT-SERVICES

1.1   Do you perform any of the following skills?

*Please fill in the **most applicable** score for **each** of the skills below.*

0   = Do not perform this skill
1   = More theoretical background needed
2   = More experience needed
3   = Some experience in skill but need help/supervision in performing the skill
4   = Can perform skill independently
5   = Can teach or supervise this skill
6   *= Other (please specify)*

SKILL	SCORE
1 Appendectomy	
2 Skin graft	
3 Laparotomy	
4 Female sterilisation	
5 Caesarean section	
6 Vaginal breech delivery	
7 Termination of pregnancy	
8 Reduction of dislocated shoulder	
9 Closed reduction & POP application of Colles fracture	
10 Tonsillectomy	
11 General anaesthetic with relaxation	
12 Spinal block	
13 Ketamine anaesthetic	
14 Lumbar puncture on a child with possible meningitis	
15 In-patient management of child with meningitis	
16 In-patient management of child with severe malnutrition	
17 In-patient management of adult with severe pneumonia	
18 In-patient management of a diabetic with difficult glycaemic control	
19 Neonatal resuscitation	
20 Autopsy	

1.2 If you do not perform any of the above skills (answer = 0), please indicate the most likely reason/s for not performing that particular skill (more than one option may be chosen to a maximum of three)

1 = Not trained for the skill
2 = Do not see patients who need this skill
3 = Referred for specialist care
4 = DH equipment and/or infrastructure not adequate
5 = Too few personnel available
6 = Work load does not allow time to perform this skill
7= Other (please specify) ……………………………………………………………………..

SKILL	REASON/S		
1 Appendectomy			
2 Skin graft			
3 Laparotomy			
4 Female sterilisation			
5 Caesarean section			
6 Vaginal breech delivery			
7 Termination of pregnancy			
8 Reduction of dislocated shoulder			
9 Closed reduction & POP application of Colles fracture			
10 Tonsillectomy			
11 General anaesthetic with relaxation			
12 Spinal block			
13 Ketamine anaesthetic			
14 Lumbar puncture on a child with possible meningitis			
15 In-patient management of child with meningitis			
16 In-patient management of child with severe malnutrition			
17 In-patient management of severe pneumonia in adult			
18 In-patient management of diabetic with difficult glycaemic control			
19 Neonatal resuscitation			
20 Autopsy			

1.3 Have you referred any patients who needed any of the above skills to another health facility? Yes ☐ No ☐

State reasons why you had to refer the patient: …………………………………………………
……………………………………………………………………………………………………
……………………………………………………………………………………………………

1.4 Is there an anaesthesiologist present apart from the surgeon during the following anaesthetic procedures?

	Never	Sometimes	Always
Ketamine anaesthetic			
General anaesthetic			
Spinal anaesthetic			

2   EMERGENCY AND TRAUMA

2.1   Do you perform any of the following skills? *Please fill in the **most applicable** score for **each** skill.*

0   = Do not perform this skill
1   = More theoretical background needed
2   = More experience needed
3   = Some experience, but need help/supervision in performing the skill
4   = Can perform skill independently
5   = Can teach or supervise this skill
6   *= Other (please specify) ……………………………………………………………*

SKILL	SCORE
1 IV cutdown	
2 Intraosseous line in a child	
3 Full CPR with intubation	
4 Tracheotomy	
5 Chest tube drainage	
6 Management of head injury: Glasgow 3 scale	
7 Use of streptokinase in a patient with acute myocardial infarction	
8 Management of shocked patient with acute abdomen	
9 Management of acute poisoning	
10 Management of acute and severe burns	
11 Management of acutely suicidal patient	
12 Seclusion and sedation of a confused psychiatric patient	
13 Management of rape survivors	
14 Management of injury on duty	
15 Management of alleged drunken driver	
16 Reduction of paraphemosis	

2.2   If you do not perform any of the above skills (answer = 0), please indicate the most possible reason/s for not performing the particular skill (more than one option may be chosen to a maximum of three)

1 = *Not trained for the skill*
2 = *Do not see patients who need this skill*
3 = *Referred for specialist care*
4 = *DH equipment and/or infrastructure inadequate*
5 = *Too few staff available*
6 = *Work load does not allow time to perform this skill*
7= *Other (please specify) …………………..…………………………………………………*

SKILL	REASON		
1 IV cutdown			
2 Intraosseous line in a child			
3 Full CPR with intubation			
4 Tracheotomy			
5 Chest tube drainage			
6 Management of head injury: Glasgow 3 scale			
7 Use of streptokinase in a patient with acute myocardial infarction			
8 Management of shocked patient with acute abdomen			
9 Management of acute poisoning			
10 Management of acute and severe burns			
11 Management of acutely suicidal patient			
12 Seclusion and sedation of a confused psychiatric patient			
13 Management of rape survivors			
14 Management of injury on duty			
15 Management of alleged drunken driver			
16 Reduction of paraphemosis			

2.3 **Have you referred any patients who needed any of the** Yes ☐ No ☐
above skills to another health facility?

State reasons why you had to refer the patient: ……………….………………………….
……………………………………………………………………………………………….
……………………………………………………………………………………………….

3 **GENERAL OUT-PATIENT SERVICES**

3.1 **Do you diagnose and treat any of the following problems presenting to you in the DH Out-patient Department?**

*Please fill in the **most applicable** score for **each** of the following problems.*

0 = Do not perform this skill
1 = More theoretical background needed
2 = More experience needed
3 = Some experience in skill, but need help/supervision in performing the skill
4 = Can perform skill independently
5 = Can teach or supervise this skill
6 = Other (please specify) ……………….………………………………………………

PROBLEM	SCORE
1 Major depressive episode	
2 Syndromic approach to STD's	
3 Antepartum haemorrage	
4 Family violence	
5 Infertility	
6 Child with resistant asthma	
7 Chronic tiredness in adult	
8 Generalised body and joint pains in adult	
9 Resistant urinary tract infection	
10 Dementia in the elderly	
11 Breaking bad news	
12 HIV/AIDS anti-retroviral drug treatment	
13 Injury with HIV/AIDS infected blood/body fluids	
14 Counselling on tobacco cessation	
15 Immunisations	
16 Disability grant review	
17 Problems associated with amputation	
18 Insulin dependent diabetic referred back from higher level of care	
19 Pain control for terminal patient	
20 Patient versus third party confidentiality in HIV/AIDS	
21 End-of-life decision in resuscitation	
22 Termination of pregnancy request	
23 HIV/AIDS counselling	

3.2 **If you do not diagnose or treat any of the above problems (answer = 0), please indicate the most possible reason/s for not performing the particular skill (more than one option may be chosen to a maximum of three)**

1 = Not trained for the skill
2 = Do not see patients who need this skill
3 = Referred for specialist care
4 = DH equipment and/or infrastructure inadequate
5 = Too few personnel available
6 = Work load does not allow time to perform this skill
7 = Other (please specify) …………………..……………

PROBLEM	REASON		
1 Major depressive episode			
2 Syndromic approach to STD's			
3 Antepartum haemorrhage			
4 Family violence			
5 Infertility			
6 Child with resistant asthma			
7 Chronic tiredness in adult			
8 Generalised body and joint pains in adult			
9 Resistant urinary tract infection			
10 Dementia in the elderly			
11 Breaking bad news			
12 HIV/AIDS anti-retroviral drug treatment			
13 Injury with HIV/AIDS infected blood/body fluids			
14 Counselling on tobacco cessation			
15 Immunisations			
16 Disability grant review			
17 Problems associated with amputation			
18 Insulin dependent diabetic referred back from higher level of care			
19 Pain control for terminal patient			
20 Patient versus third party confidentiality in HIV/AIDS			
21 End-of-life decision in resuscitation			
22 Termination of pregnancy request			
23 HIV/AIDS counselling			

3.3 **Have you referred any patients who needed any of the above skills to another health facility?**   Yes ☐   No ☐

State reasons why you had to refer the patient: …………………..……………………………
………………………………………………………………………………………………….
………………………………………………………………………………………………….

4   OUTREACH AND SUPPORT TO PRIMARY HEALTH CARE

4.1   Do you perform any of the following skills?

*Please fill in the **most applicable** score for **each** of the skills.*

0   = Do not perform this skill
1   = More theoretical background needed
2   = More experience needed
3   = Some experience in skill but need help/supervision in performing the skill
4   = Can perform skill independently
5   = Can teach or supervise this skill
6   = Other (please specify) …………………..………………………………………………

SKILL	SCORE
1 In-service training of PHC personnel, e.g. specific formal training courses	
2 Continuing professional development activities for PHC personnel, e.g. *ad hoc* lectures, journal club	
3 Support services to PHC personnel, e.g. working yourself in PHC services, mentoring other staff	
4 Able to conduct health care team personnel meetings	

4.2   If you do not perform any of the above skills (answer = 0), please indicate the most possible reasons for not doing so from the list below (more than one reason may be chosen to a maximum of three).

1 = Not trained for the skill
2 = DH equipment and/or infrastructure inadequate
3 = Too few personnel available
4 = Work load does not allow time to perform this skill
5 = Opportunity to perform the skill has not arisen
6 = Other (please specify) ………………………………………………………………….

SKILL	REASON		
1 In-service training of PHC personnel, e.g. specific formal training courses			
2 Continuing professional development activities for PHC personnel, e.g. *ad hoc* lectures, journal clubs			
3 Support services to PHC personnel e.g. working yourself in PHC services, mentoring other personnel			
4 Able to conduct health care team personnel meetings			

5   MANAGEMENT SKILLS

5.1   Do you perform any of the following skills?

*Please fill in the **most applicable** score for **each** of the skills.*

0 = Do not perform this skill
1 = More theoretical background needed
2 = More experience needed
3 = Some experience in skill, but need help/supervision in performing the skill
4 = Can perform skill independently
5 = Can teach or supervise this skill
6 = Other (please specify) ………………..…………………………………………………

SKILL	SCORE
1 Drawing up duty rosters for the DH	
2 Managing labour conflict in the DH	
3 Drawing up a budget for the DH	
4 Involvement in strategic planning for the DH	
5 Participation in a formal quality improvement cycle	
6 Performing formal personnel training in the DH	
7 Involvement in a community participation process with the DH	
8 Participation in a research study in the DH and/or its community	

5.2   If you do not perform any of the above skills (answered = 0), please indicate the most possible reason/s for not doing so from the list below (more than one option may be chosen to a maximum of three).

*Please fill in the **most applicable** score for **each** of the skills.*

1 = Not trained for the skill
2 = DH equipment and/or infrastructure inadequate
3 = Too few personnel available
4 = Work load does not allow time to perform this skill
5 = Opportunity to perform the skill has not arisen
6 = Other (please specify) ………………..…………………………………………………

SKILL	REASON		
1 Drawing up duty rosters for the DH			
2 Managing labour conflict in the DH			
3 Drawing up a budget for the DH			
4 Involvement in strategic planning for the DH			
5 Participation in a formal quality improvement cycle			
6 Performing formal personnel training in the DH			
7 Involvement in a community participation process with the DH			
8 Participation in a research study in the DH and/or its community			

1.   **What are the gaps (if any) that you experience between the skills that you currently have, and those that are needed to perform your professional activities in your current post in the DH?**

…………………………………………………………………………………………………….

…………………………………………………………………………………………………….

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………………………………………………………………………………………

2.   **How would you like to address these gaps?**

…………………………………………………………………………………………………….

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………………………………………………………………………………………

3.   **Are you planning to leave the DH in the near future?**

        Yes ☐   No ☐

3.1   **If so, why?**

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………………………………………………………………………………………

4.   **Are there conditions at the DH that make you think of leaving?**

        Yes ☐   No ☐

4.1   **If so, describe**

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………………………………………………………………………………………

5.   **Any other comments?**

…………………………………………………………………………………………………….

INFORMATION REQUIRED TO ASSIST IN DEFINING A DISTRICT HOSPITAL

1. PROFESSIONAL CAPACITY

1.1 STAFF

1.1.1   Number and category of medical practitioners (full-time, part-time, community service)

1.1.2   Number and category of nursing staff (professional nurses, staff nurses, assistant nurses)

1.2 SERVICES RENDERED

1.2.1   Theatre service

1.2.2   24 hour emergency service

1.2.3   Support services, e.g. x-rays

2. NUMBER OF BEDS

2.1   Total number of beds

2.2   Actual number of beds utilised

3. LINKAGE BETWEEN SERVICES

3.1   Accept referrals from primary health care level

3.2   Refer to secondary health care level

3.3   Support primary health care level through outreach and training

4. GEOGRAPHICAL AREA

4.1   Size of population served

4.2   Distance from nearest other District Hospital

4.3   Distance from secondary health care level

QUALITY TRAIL: IN-DEPTH INTERVIEWS

NARRATIVE DESCRIPTION OF ANALYSIS PROCESS FOR AUDIT PURPOSES

INTRODUCTION

The following narrative was written parallel to the analysis of the in-depth free-attitude interviews. The narrative was compiled both to keep a record of the process so that the analysis could be audited at a later stage and to increase quality in the analysis. It also proved to be useful as a reflective process for the researcher in reviewing the results. An expert in qualitative research subsequently reviewed the quality trail.

The narrative is written in the first person and in the present tense, portraying the reflective and contemporaneous nature of the summary. It was later edited for grammar only, so as not to interfere with the content.

In preparation for the analysis and according to the literature, I formalised and wrote down my own frames of reference and theoretical framework as a purposeful exercise to define my own points of departure (Malterud 2001:483-8). My theoretical framework included a strong person-centered approach, focusing on people's feelings, fears, expectations and functioning; a comprehensive primary health care approach; and a holistic bio-psycho-social model and philosophy attempting to attain a systems worldview.

ANALYSIS OF PHASE 1

In keeping with the first step of qualitative analysis, I attempted to read through the interviews without prejudice while refraining from categorising the data at this stage. Initially I started to underline some parts in the transcriptions, but then stopped doing so as it diverted me from "reading only" to subconsciously look for focus and categories.

I wrote down a few comments after reading each interview attempting to define an overall feel about the interview (e.g. flowing, negative, facilitative, probing etc). I also wrote down issues that came out strongly from the particular interview, but deliberately refrained from doing this systematically in order that it should not bias me towards some emerging themes.

The result of this overview reading process in an unstructured manner is that I feel as if I am carrying the data as a huge, amorphous mass in my head. I am also continuing to suppress thinking about emerging themes until I enter the second phase of the analysis in order to reduce possible bias towards particular issues. It is rather unnerving to hold the data in such a loose way. On the other hand I feel that, by adhering to this method, I will be able to identify categories and eventually themes in a more creative way and come up with fresh results. I see this as a positive development in the analysis process despite my previous concerns about the influence of the data gathering sequence on the outcome of my analysis of the interviews.

Having read through two thirds of the interviews, the material was becoming repetitive and it is probable that the data is saturated already at this stage. Nevertheless, the five remaining interviews which are in the final stages of transcribing, may still be useful and will be analysed in a similar manner.

It has also become clear that the interviews need to be analysed firstly in two subgroups, namely those of full-time and those of part-time medical officers interviewed. Issues specific to each of the groups seem to consistently arise from the

respective interviews. So the eight full-timers interviewed will be analysed in the subgroup of full-time medical officers. Then the 12 interviews with part-time medical officers will be analysed in that subgroup. Finally, the themes identified in the two subgroups will be compared and analysed to identify similarities and differences.

I have been thinking of what names or headings to use in the second phase of the analysis. (I would prefer not to call these "categories" and certainly not "themes" at this stage.) I feel that the names used to organise the data during the second phase must be merely descriptive in order to indicate what the interviewee was expressing at that particular stage of the interview.

ANALYSIS OF PHASE 2

I read through all the full-timer interviews again, this time with a pencil in hand to label sentences and paragraphs as I proceed. The labeling which I use is based on concrete headings or labels simply describing what the content is about. For instance: Talking about lack of skills was labeled as "skills gap/lack"; ambulance problems were labeled as "transport/ambulances"; paragraphs describing why the doctor is working in a district hospital were labeled as "work motivation/satisfaction"; sessions by specialists as "specialist support"; problems with referring to the secondary/tertiary hospital as "interaction/support from higher levels of care"; PHC service constraints impacting on the district hospital as "PHC interaction/influence"; talk about ways of improving skills as "skills development"; descriptions of long hours and many patients as "work load/work circumstances", etc.

The headings became settled after two interviews and only a few new headings were introduced thereafter. On a few occasions, the content lent itself to identifying a theme, even at this early stage, e.g. the "effect of a skills gap on the medical officer and subsequent development of defense mechanisms". These were marked as possible themes. However, I tried to keep these to a minimum in order to go into Phase 3 with as little prejudice as possible.

Having reflected on the process on completion of Phase 1 and written down my thoughts as explained in the preceding paragraphs, I found it much easier to undertake the Phase 2 analysis. I feel that my own biases and prejudices towards organising the content were limited by going through Phase 1 in such an amorphous and non-analytical manner. In that sense, the labeling during Phase 2 was more of a clean and natural process and less influenced by my prior knowledge and own agendas.

Identifying and stating my own frame of reference and theoretical framework (bio-psycho-social model; person-centered care) before embarking on the analysis, is already proving to be beneficial. During the Phase 2 analysis of one of the interviews, I clearly identified a Phase 3 theme based on the imbalance between bio-medical and holistic undergraduate education and training of medical practitioners. This came about while the interviewee described how young doctors come to district hospitals wanting to do surgery and "real medicine". When they find that they have to do menial PHC and casualty work, sprinkled with a large dose of social problems, they lose interest and move on. The realisation that this theme came straight from my theoretical framework was exciting, but also somewhat sobering. In this sense I will carefully review themes that are so clearly formulated from my own frame of reference. The Malterud article is incredibly useful in this regard and I will certainly recommend it to colleagues who embark on qualitative analyses (Malterud 2001:483-8). I have also returned to read the section on analysis in my PhD proposal in order to familiarise myself again with the probing depth analysis technique as described there.

During the labeling process of the last full-timer interview (No 8), I felt that I had to draw a diagram to understand the influences of working conditions on the skills of medical officers and the quality of care. This was exciting as the drawing process proved to be tremendously creative and was linking many of these influences in a flowing, logical and coherent manner (to the extent that somebody looking at it for the first time would be able to say "of course, that is how it is!"). Also, it was not as if I had to force the ideas. On the contrary, Phase 2 of the analysis provided me with new insight concerning the interrelationship of many of the issues that surfaced during the interviews. I suspect that this is already a Phase 4 product (i.e. modifying themes into

a theoretical framework). I do not see it as a bias, but believe that, proceeding with Phase 3, more refining of the model will take place.

I then started labeling the part-timer interviews in order to ascertain whether I needed to keep the part-time and full-time groups totally separate. My concern was that in labeling the part-timer interviews first, new and fresh labels which might be useful in the full-timer interviews may emerge. On the other hand, this may influence crossover from the one to the other. Having labeled three part-timer interviews, it became clear that the part-timers do have a number of emerging issues that are totally different from those of the full-timers. However, doing the process in parallel provides fine-tuning of some of the headings and some useful sub-headings.

Phase 2 was then completed for the part-timer interviews. One of the part-timer interviews was viewed as "deviant" as the interview format differed from the others. The interviewee initially refused to take part in the study (in fact, all three doctors from that practice refused because they felt that senior management was going to use the results of the study against them), but then agreed after discussion with the research assistant. At the stage when the taping of the interview started, there was another doctor in the room and the research assistant felt he could not ask him to leave in view of the hostile situation which already existed. The second doctor contributed about two to three paragraphs to the interview, which were subsequently disregarded in the analysis. He then left the room. It was also not clear when and if the key question was posed at all during this interview. However, it was decided to include this interview because of the potential of raising differing points of view, but to clearly flag the comments. In the end, the deviant interview did not bring much that was different to the previous analyses, apart from a stronger focus on the medico-legal risks accompanying district hospital work.

ANALYSIS OF PHASE 3

Due to other work pressures, a period of approximately two and a half weeks passed before I could start to work on Phase 3. This was frustrating in the sense that the flow

of the analysis was being interrupted and also that, with the passing of time, the magnitude of the job of analysing the interviews seemed to increase daily with the inevitable building up of some resistance. During this time, I also received the statistical analyses on the quantitative data, which further pushed aside the work on the qualitative data. On the positive side, however, this space in time provided for some distance in terms of fresh views on the data, as well as some internal consolidation of the process thus far, allowing for more in-depth understanding and reduced bias.

The text of the interviews was then cut into strips which corresponded to the labeling. These bits of text were then pasted onto large newsprint paper according to the different categories. The groupings for the full-timer interviews were as follows:

GROUPING	GROUPING (continued)
Scope of skills	Personnel – nurses
Remoteness	Team support
Skills gap	Community service doctors
Skills development	Lab, X-ray support
CPD	Transport
Personal influences and expectations	Protocols/reviews
Relationship with higher levels of care	Public-private interface
Specialist support	Interaction with PHC
Job satisfaction	Community issues
Job frustrations	Social problems
Workload	

Grouping the labels onto the newsprint pages, made it possible for a number of the smaller groups to be placed onto a single page and subsequently to form categories of their own. These categories represented a bigger functional grouping, which could be used with ease to analyse the data into emerging themes. The following categories were formulated to include all the groups:

➢ Skills scope, gaps, development, CPD.

➢ Job expectations, frustrations, satisfactions, workload, social problems, remoteness.

➢ Support from other personnel (nurses, community service doctors, support personnel, the team), private sector, higher levels of care, specialists, support services, transport, community, and PHC.

➢ Interaction with patients, the community and the private sector, in terms of higher and lower levels of care.

These categories were studied and themes identified for each of them (provisionally named):

➢ The skills of a medical officer in a district hospital: Scope, challenges, gap and development.

➢ The job of a medical officer in a district hospital: Expectations, satisfactions and frustrations.

➢ Support for a medical officer in a district hospital.

➢ Interaction between a medical officer in a district hospital with various other role players.

At this stage, the visual image takes shape of the full-time medical officer being at the core of an amoebic organism with several dendrites branching out and feeding into the centre. The district hospital can be compared to an antheap with a vast array of actors which move in and out of the antheap with the medical officer in the centre and playing a pivotal role in many of the activities which take place. Being one of the specialised workers in the antheap, the medical officer need to be highly skilled, but

also need to have a wide range of skills in order to perform a variety of jobs. The job entails many frustrations, but also many satisfactions and joys. Several other workers and services support the crucial work which the medical officer ant does - some more and some less crucial and some better and some less well performed. The medical officer ant has to deal with a variety of ants and colonies of ants outside his or her own colony in order to smooth out the functioning of the ant heap.

The groupings for the part-timer interviews were similar to those of the full-timers, but there were a number of issues unique to part-timers, namely private practice issues and functioning of the DHS.

The themes were then captured in a "results section" of the qualitative interviews, utilising appropriate quotes for each theme and subdivisions of themes. The quotes also assisted in checking that the reported results remained true to the text from the initial interview through to the final analysis. This was a long and exhausting process resulting in 21 pages of descriptions of the results.

ANALYSIS OF PHASE 4

Phase 4 is the final and most difficult part of the analysis, namely the formulation of a theoretical framework based on the data. I have had some ideas in my mind and was, in fact, trying to think of some comparison with an occurrence in nature, such as the tree which was used in the Kwazulu-Natal skills survey (Jacques & Reid *et al* 1998:14). The theoretical framework from my results emerges as three pictures:

> ➢ A description of the medical officer in a district hospital – the ant picture described above. In the end I decided not to pursue this picture, because of its constrained descriptive nature and, in my opinion, it did not really add to current knowledge or generate a new theoretical framework.

> ➢ The inverse performance spiral - this vivid picture developed in my mind while analysing the full-timer interviews. This could be demonstrated by an

inverse spiral, where the medical officer gets sucked into a whirlwind spiral on entrance of service at a district hospital, and where the spiral has a negative effect on the knowledge and skills of the medical officer and leads to decreased quality of care.

➢ The professional skills of district hospital medical officers – threats and opportunities which serve as restraining and driving forces. I believe that this picture is the most comprehensive theoretical framework developed from the data. This model can be used to serve as the basis for formulating recommendations and future action to address the skills gap of medical officers in district hospitals.

CONCLUSION

Today, 14 December 2001, I feel that I have traveled a long and exhausting journey in order to analyse these 20 interviews. In retrospect, I think less interviews could have sufficed, especially with part-timers, as the data became saturated after only a few interviews. This indicates that, since the comments became repetitive, there was "consensus by agreement" and the results are probably generalisable to most of the medical officers in Western Cape district hospitals. Also, wider sampling was unlikely to have generated fresh ideas, concepts or problems.

QUESTIONNAIRE FOR DELPHI, ROUND 1

DISTRICT HOSPITAL MEDICAL PRACTITIONERS' SKILLS DEVELOPMENT PROGRAMME

Thank you for assisting us with this research. Please read all questions and tick or write in the appropriate box. Please enter one letter or figure per block. Please answer all the questions.

SECTION A:	DEMOGRAPHIC INFORMATION OF RESPONDENT

A1 Age (years)

A2 Gender (M / F)

A3 Year of basic medical qualification?

A4 What is the nature of your current employment?

Please tick all the relevant options

	Yes	No
1 Full-time clinical practice		
2 Part-time clinical practice		
3 Full-time academic appointment		
4 Part-time academic position		
5 Public sector		
6 Private sector		
7 Hospital manager		
8 District/Regional/Provincial manager		
9 Administrative position		
9 Retired		
10 Other (please specify)		

1 Yes	2 No

A5 Do you have any postgraduate qualifications?

A6 If yes, how many postgraduate qualifications do you have?

A7 If your answer to Question A5 is yes, please specify which of the following postgraduate qualifications you have. *Please tick all the relevant options*

QUALIFICATION	Yes	No	QUALIFICATION	Yes	No
1 MFamMed / MPrax Med			9 Diploma Occupational Medicine		
2 MCFP / MFGP			10 Diploma Primary Emergency Care		
3 MMed Community Health			11 Diploma in Anaesthesiology		
4 Diploma Internal Medicine			12 ACLS		
5 Diploma in Obstetrics			13 APLS		
6 Diploma in Child Health			14 ATLS		
7 Diploma in Surgery			15 Other (please specify)		
8 Diploma in Public Health					

A8 Please indicate your expertise in rural health. *Please tick all the relevant options*

	Yes	No		Yes	No
1 Clinical patient care			5 In-service training		
2 Undergraduate training			6 Service management		
3 Vocational training			7 Educational expert		
4 Postgraduate training			8 Other (please specify)		

This section deals with the updating of skills commonly performed in Western Cape district hospitals (DH). Please indicate whether it is essential for these skills to be updated, the frequency of updating, and the most appropriate method of updating the particular skill. Please provide comment on any aspect of updating the particular skill in the comment box next to the question.

KEY: SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree

B1 Caesarean section		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Working visit by specialist to DH					
	7 Practical day/weekend workshop					
B2 Female sterilisation		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Working visit by specialist to DH					
	7 Practical day/weekend workshop					
B3 Termination of pregnancy (gynae)		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Audio-visual material, CD-ROM; video					
	7 Practical day/weekend workshop					
B4 Termination of pregnancy (ethics)		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Small group case discussions					
	7 Practical day/weekend workshop					
B5 Tonsillectomy		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Rotation through tertiary hospital					
	7 Working visit by specialist to DH					
B6 Reduction, splint of closed fractures		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Working visit by specialist to DH					
	7 Practical day/weekend workshop					
B7 Minor surgical skills		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Working visit by specialist to DH					
	6 Audio-visual material CD-ROM; video					
	7 Practical day/weekend workshop					

B8 Minor urological procedures		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Audio-visual material CD-ROM; video					
	7 Practical day/weekend workshop					
B9 General anaesthesia		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Rotation through tertiary hospital					
	7 Working visit by specialist to DH					
B10 Spinal anaesthesia		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Working visit by specialist to DH					
	7 Practical day/weekend workshop					
B11 Various local anaesthesia		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Working visit by specialist to DH					
	7 Practical day/weekend workshop					
B12 Trauma skills		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Practical day/weekend workshop					
	7 Special courses i.e. ATLS, ACLS, APLS					
B13 Dealing with common medical conditions		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Lecture by expert					
	7 Reading medical journals					

If you have strong feelings on any of these or suggestions for alternative methods, please indicate and explain. Please specify the number/s of the skill on which you are commenting.

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SECTION C: **TRAINING FOR SKILLS IN WHICH GAPS WERE IDENTIFIED**

This section contains a list of conditions and skills in which MOs have identified skills gaps. Please specify whether it is essential for these skills to be updated, the suggested frequency of updating, and your feelings on the suggested method of updating the particular skill. Please provide comment on any aspect of updating the particular skill in the comment box next to the question.

**KEY**: SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree

C1 Autopsy		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Working visit by specialist to DH					
	6 Practical day/weekend workshop					
	7 Special forensic medicine course					
C2 Laparotomy		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Rotation through tertiary hospital					
	7 Working visit by specialist to DH					
C3 Skin graft		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Working visit by specialist to DH					
	7 Audio-visual material CD-ROM video					
C4 Neonatal resuscitation		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through secondary hospital					
	6 Practical day/weekend workshop					
	7 Special courses i.e. APLS					
C5 Dealing with a malnourished child		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Small group case discussions					
	7 Reading medical journals					
C6 Dealing with resistant asthma child		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Small group case discussions					
	7 Reading medical journals					
C7 Tracheotomy		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through tertiary hospital					
	6 Audio-visual material CD-ROM video					
	7 Practical day/weekend workshop					

C8 Dealing with severe head injury		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through tertiary hospital					
	6 Lecture by expert					
	7 Small group case discussions					
C9 Dealing with acute and severe burns		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through tertiary hospital					
	6 Lecture by expert					
	7 Practical day/weekend workshop					
C10 Dealing with acute poisoning		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Small group case discussions					
	7 Reading medical journals					
C11 Dealing with acute abdomen		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skills	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill is	5 Rotation through secondary hospital					
	6 Lecture by expert					
	7 Small group case discussions					
C12 Dealing with suicidal patient		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Small group case discussions					
	7 Reading medical journals					
C13 Dealing with major depression		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Small group case discussions					
	7 Reading medical journals					
C14 HIV/AIDS confidentiality		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Lecture by expert					
	7 Practical day/weekend workshop					
C15 End-of-life decisions		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Lecture by expert					
	7 Reading medical journals					

C16 Dealing with domestic violence		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Small group case discussions					
	7 Reading medical journals					
C17 Post-amputation problems (OPD)		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through tertiary hospital					
	6 Working visit by specialist to DH					
	7 Practical day/weekend workshop					
C18 Dealing with dementia in elderly		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Small group case discussions					
	7 Reading medical journals					
C19 Motivational interviewing, e.g. to stop smoking		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Audio-visual material CD-ROM; video					
	7 Practical day/weekend workshop					
C20 In-service training or CPD for other personnel		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Audio-visual material CD-ROM; video					
	6 Lecture by educational expert					
	7 Practical day/weekend workshop					
	8 Special educational course					
C21 Public health skills		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Special courses					
	7 Small groups case discussions					
C22 Management skills		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by management specialist					
	6 Practical day/weekend workshop					
	7 Special courses					

C23 Team work		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Practical day/weekend workshop					
	7 Lecture by expert					
C24 Quality improvement		SD	D	A	SA	Comment
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Practical day/weekend workshop					
	7 Special courses					
	8 Small group case discussions					

If you have strong feelings on any of these or suggestions for alternative methods, please specify and explain. Please indicate the number/s of the skill on which you are commenting.

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SECTION D: **SKILLS DEFINED AS SPECIAL NEEDS FOR DISTRICT HOSPITALS AND ITS MEDICAL PRACTITIONERS**

The following skills or abilities to manage certain conditions/issues were identified as special needs for the functioning of a DH in the Western Cape. Please indicate whether it is essential for these skills to be updated, the suggested frequency of updating, and your feelings on the suggested method of updating the particular skill. Please provide comment on any aspect of updating the particular skill in the comment box next to the question.

KEY: SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree

D1 Disability grant review		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through rehabilitation unit					
	6 Lecture by expert					
	7 Small group case discussions					
D2 Clinical forensic work (rape etc)		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Practical day/weekend workshop					
	7 Small group case discussions					
D3 Medico-legal issues		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Small group case discussions					
	7 Reading medical journals					
D4 Syndromic approach to STDs		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Practical day/weekend workshop					
	6 Small group case discussions					
	7 Reading medical journals					
D5 Medication interactions		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Special Pharmacology course					
	7 Small group case discussions					
	8 Reading medical journals					
D6 Endoscopic skills i.e. gastroscopy		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotation through tertiary hospital					
	6 Audio-visual material CD-ROM, video					
	7 Practical day/weekend workshop					
	8 Special endoscopic skills courses					

D7 Stress management		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Lecture by expert					
	6 Practical day/weekend workshop					
	7 Small group case discussions					
D8 Working without backup/in isolation		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Working visits by specialists to DH					
	6 Small group case discussions					
	7 Reading medical journals					
D9 How to motivate staff		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Practical day/weekend workshop					
	7 Special courses					
D10 Referral skills		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Working visits by specialists to DH					
	6 Small group case discussions					
	7 Reading medical journals					
D11 Dealing with transport issues		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Lecture by expert					
D12 Private-pubic initiatives		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill is:	5 Small group case discussions					
	6 Lecture by expert					
D13 Community participation		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Lecture by expert					
	7 Practical day/weekend workshop					
	8 Special courses					
D14 Using community resources		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Lecture by expert					
	7 Special courses					

D15 Social problems in the community		SD	D	A	SA	Comments
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Lecture by expert					
	7 Practical day/weekend workshop					
D16 Communication skills		SD	D	A	SA	**Comments**
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Audio-visual material CD-ROM, video					
	7 Practical day/weekend workshop					
D17 Interpersonal skills		SD	D	A	SA	**Comments**
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Small group case discussions					
	6 Audio-visual material CD-ROM, video					
	7 Lecture by expert					
D18 Interaction with other levels of care		SD	D	A	SA	**Comments**
	1 It is essential to update this skill					
Suggested frequency of updating this skill	2 Update every year					
	3 Update every five years					
	4 Update every ten years					
Suggested method of updating this skill	5 Rotations through secondary hospital					
	6 Working visits by specialists to DH					
	7 Small group case discussions					

If you have strong feelings on any of these or suggestions for alternative methods please specify and explain. Please indicate the number/s of the skill on which you are commenting.

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SECTION E:	GENERAL COMMENT

Please provide any other comment that you feel is relevant to this study

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QUESTIONNAIRE FOR DELPHI, ROUND 2

DISTRICT HOSPITAL MEDICAL PRACTITIONERS' SKILLS DEVELOPMENT PROGRAMME

Thank you for participating in the second round of this research project. Please give your answer in the appropriate box. Please complete ALL the questions. (DH = District Hospital)

SECTION A I:	DEMOGRAPHIC AND GENERAL INFORMATION

A1 Age ………….   Years
A2 Gender …………..   Male/Female

A3 What is the nature of your current employment? *Please tick all the relevant options.*

1	Full-time clinical practice		6	Hospital manager or superintendent	
2	Part-time clinical practice		7	District/Regional/ Provincial manager	
3	Full-time / part-time academic appointment		8	Other administrative position	
4	Public sector		9	Retired	
5	Private sector		10	Other (Please specify)	

A4 Please indicate your expertise in rural health. *Please tick all the relevant options.*

1	Clinical patient care		5	In-service training	
2	Undergraduate training		6	Service management	
3	Vocational training		7	Educational expert	
4	Postgraduate training		8	Other (name)	

SECTION A II:	IN THIS SECTION WE ARE TRYING TO DEFINE TERMS RELATING TO UPDATING OF KNOWLEDGE AND SKILLS AREAS

Please read all 11 questions before answering

<u>KEY</u>*: SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree*

Question	SD	D	A	SA
1 Updating a skill means relearning that skill				
2 Updating means learning **new things** about a skill or knowledge area				
3 Practitioners carrying out skills on a regular basis do not need updating of those skills				
4 The initial correct acquirement of a skill is more important than the updating thereof				
5 Updating a skill in the absence of regular practice is important				
6 In general, updating of knowledge/skills areas should take place every year				
7 In general, updating of knowledge/skills areas should take place every five years				
8 In general, updating of knowledge/skills areas should take place every two to four years				
9 Once acquired, skills are permanent and do not need updating				
10 Updating of knowledge/skills areas must be based on the need of the individual and not generalised to a group				
11 Once a practitioner has acquired basic surgical skills, they can be applied to any new surgical procedure with the assistance of good surgical reference guide material				

If you have strong feelings on any of these or suggestions for alternatives, please specify and explain. Please indicate the number of the question on which you are commenting.

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Please read all 8 questions before answering

KEY: SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree

QUESTION		SD	D	A	SA
1	Rotation through tertiary hospitals is generally a useful method for updating knowledge/skills areas needed for DH practice				
2	Rotations through secondary hospitals is generally a useful method for updating knowledge/skills areas needed for DH practice				
3	Visits by specialists to the DH as a method for updating knowledge/skills areas is useful in updating DH doctors				
4	Reading medical journals is a useful method for updating knowledge areas for DH practice				
5	In-service clinical learning from an experienced colleague at the DH is useful as an updating method				
6	Formal reflection on outcomes at the DH is useful as an updating method				
7	Small group discussions at the DH is useful as an updating method				
8	Regular practice of a knowledge/skill area under supervision at the DH is useful as a method op updating				

If you have strong feelings or alternative suggestions, please specify and explain. Please indicate the number of the question on which you are commenting.

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SECTION B: UPDATING KNOWLEDGE/SKILLS AREAS THAT ARE COMMONLY PERFORMED OR MANAGED IN WESTERN CAPE DISTRICT HOSPITALS

This section deals with the updating of knowledge/skills areas commonly performed in Western Cape district hospitals. Consensus was not reached on these methods during Round I. Please confirm your agreement of not on the proposed method of updating.

KEY: SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree

		SD	D	A	SA
B1 Caesarean section	1 Practical workshop				
B2 Female sterilisation	1 Rotation through secondary hospital				
B3 Termination of pregnancy (clinical aspects)	1 Rotation through secondary hospital				
	2 Audio-visual material, i.e. CD-ROM; video				
	3 Practical workshop				
B4 Termination of pregnancy (ethical aspects)	1 Lecture by expert				
	2 Practical workshop				
B Minor urological procedures	1 Rotation through secondary hospital				
B6 General anaesthesia	1 Rotation through tertiary hospital				
B7 Spinal anaesthesia	1 Rotation through secondary hospital				
B8 Local anaesthesia techniques	1 Rotation through secondary hospital				

If you have strong feelings or alternative suggestions, please specify and explain. Please indicate the number of the question on which you are commenting.

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SECTION C:	TRAINING FOR KNOWLEDGE/SKILLS AREAS IN WHICH GAPS WERE IDENTIFIED FOR W. CAPE DISTRICT HOSPITALS' MEDICAL OFFICERS

This section contains conditions and skills in which MOs have identified skills/knowledge gaps. Consensus was not reached on these methods during Round I. Please indicate your agreement or not on the suggested method of updating the particular skill/knowledge area.

KEY: *SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree*

		SD	D	A	SA
C1 Laparotomy	1 Rotation through tertiary hospital				
C2 Skin graft	1 Rotation through secondary hospital				
C3 Neonatal resuscitation	1 Rotation through secondary hospital				
C4 Tracheotomy	1 Rotation through tertiary hospital				
C5 Dealing with severe head injury	1 Rotation through tertiary hospital				
C6 Dealing with severe burns	1 Rotation through tertiary hospital				
C7 HIV/AIDS confidentiality	1 Lecture by expert				
C8 End-of-life decisions	1 Reading medical journals				
C9 Team work	1 Lecture by expert				
C10 Quality improvement	1 Lecture by expert				

If you have strong feelings or alternative suggestions, please specify and explain. Please indicate the number of the question on which you are commenting.

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SECTION D:	SKILLS DEFINED AS SPECIAL NEEDS FOR DISTRICT HOSPITALS AND THEIR MEDICAL PRACTITIONERS

The following skills or ability to manage certain conditions/issues were identified as special needs for the functioning of a DH in the Western Cape. Consensus was not reached on these methods during Round I. Please indicate your agreement or not on the suggested method of updating.

KEY: *SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree*

		SD	D	A	SA
D1 Disability grant review	1 Rotation through rehabilitation unit				
D2 Endoscopic skills	1 Rotation through tertiary hospital				
	2 Special course participation				
D3 Working without backup/in isolation	1 Reading journals				
D4 Dealing with transport issues	1 Small group case discussion				
	2 Lecture by expert				
	3 Drs do not need to know about this				
D5 Private-public initiatives	1 Small group discussion				
	2 Lecture by expert				
D6 Community participation	1 Lecture by expert				
	2 Special course participation				
D7 Using community resources	1 Special course participation				
D8 Social problems in community	1 Lecture by expert				
D9 Interpersonal skills	1 Lecture by expert				

If you have strong feelings on any of these or suggestions for alternative methods, please specify and explain. Please indicate the number of the question on which you are commenting.

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SECTION E:	GENERAL COMMENT – PLEASE PROVIDE ANY OTHER COMMENTS WHICH YOU FEEL ARE RELEVANT TO THIS ROUND

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QUESTIONNAIRE FOR DELPHI, ROUND 3

DISTRICT HOSPITAL MEDICAL PRACTITIONERS' SKILLS DEVELOPMENT PROGRAMME

Thank you for participating in the THIRD round of trying to find consensus on updating skills/knowledge areas for district hospital doctors. Please complete ALL the questions.

SECTION A I: DEMOGRAPHIC INFORMATION	

1 Age ………….. Years
2 Gender ………….. Male/Female
3 Please specify your expertise in rural health. *Please tick **ONLY ONE** option*

3.1 Mainly clinical patient care	
3.2 Mainly academic (teaching, research)	
3.3 Mainly service management	
3.4 Both clinical care and academic	
3.5 Both clinical care and management	

SECTION A 2: IN THIS SECTION WE ARE TRYING TO DEFINE TERMS RELATING TO UPDATING OF KNOWLEDGE AND SKILLS AREAS NEEDED FOR DISTRICT HOSPITAL PRACTICE

KEY: SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree

QUESTION	SD	D	A	SA
1 Even if a practitioner carries out a skill regularly, she or he still needs updating of that skill (*question rephrased*)				
2 Updating a skill means refreshing that skill *(new question)*				
3 Most skills/knowledge areas need to be updated at intervals between two to five years *(question rephrased)*				
4 Questions on TOP are problematic because of people's differing views on the topic *(new question)*				
5 Rotations through tertiary hospitals is a useful method for updating procedural skills needed for district hospital practice	20	45	30	5
6 Lecturing by specialists is a useful method for updating knowledge areas needed for district hospital practice *(new question)*				
7 Lectures relevant to district hospital practice is a useful method for updating knowledge areas needed for district hospital practice *(new question)*				

SECTION A 3: IN THIS SECTION WE ARE TRYING TO PRIORITISE THE USEFULNESS OF EDUCATIONAL METHODS FOR UPDATING/REFRESHING PROCEDURAL KOWLEDGE AND SKILLS AREAS FOR DISTRICT HOSPITAL PRACTICE.

Please rank the method using a scale from 1 to 5 where 1 is totally useless and 5 is extremely useful.
Write your answer in the blocks for BOTH procedural knowledge and skills areas

UPDATING METHOD	Usefulness for updating *KNOWLEDGE AREAS*	Usefulness for updating *PROCEDURAL SKILLS*
Tertiary hospital rotations		
Secondary hospital rotations		
Workshops		
Specialist visits		
In-service learning under supervision		
Audio-visual, i.e. CD, Video		
Regular practice		
Small group discussions		
Medical journals		
Special courses		
Lectures by specialists		
Formal reflection on outcomes		
E-mail list discussions		
Learning from Internet sources		
Handbooks		
Other (name)		

SECTION B:	THIS SECTION DEALS WITH THE UPDATING OF KNOWLEDGE/SKILLS AREAS COMMONLY PERFORMED IN WESTERN CAPE DISTRICT HOSPITALS

Consensus was not reached on these methods during Round 2. Please confirm whether you agree or not to the proposed method for updating in the space provided under the figure reflecting the Round 2 results.

KEY: *SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree*

SKILL	UPDATING METHOD	SD	D	A	SA
B1 Caesarean section	Workshop (practical demonstrations)	5	35	50	10
B2 Termination of pregnancy (clinical aspects)	Audio-visual material, i.e. CD-ROM; video	11	21	63	5
B3 Termination of pregnancy (ethical aspects)	Lecture by expert	16	32	42	11
	Practical workshop	16	16	52	16
B4 General anaesthesia	Rotation through tertiary hospital	0	42	47	11

SECTION C:	THIS SECTION CONTAINS CONDITIONS ON AND SKILLS IN WHICH MEDICAL OFFICERS HAVE IDENTIFIED KNOWLEDGE/SKILLS GAPS

Consensus was not reached on these methods during Round 2. Please confirm whether you agree or not to the suggested method of updating the particular knowledge/skill area.

KEY: *SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree*

		SD	D	A	SA
C1 Laparotomy	Rotation through tertiary hospital	10	35	50	5
C2 HIV/AIDS confidentiality	Lecture by expert	5	40	50	5
C3 End-of-life decisions	Reading medical journals	0	50	45	5
C4 Team work	Lecture by expert	15	30	55	0

| SECTION D: | THE FOLLOWING SKILLS OR ABILITIES TO MANAGE CERTAIN CONDITIONS/ISSUES WERE IDENTIFIED AS SPECIAL NEEDS FOR THE FUNCTIONING OF A DISTRICT HOSPITAL IN WESTERN CAPE |

Consensus was not reached on these methods during Round 2. Please confirm whether you agree or not to the suggested method of updating.

<u>KEY</u>: *SD = Strongly disagree; D = Disagree; A = Agree; SA = Strongly Agree*

		SD	D	A	SA
D1 Disability grant review	Rotation through rehabilitation unit	10	35	45	10
D2 Endoscopic skills	Rotation through tertiary hospital	5	37	47	11
	Not a skill needed for DH practice *(new question)*				
D3 Working without backup/in isolation	Reading journals	11	32	58	0
D4 Dealing with transport issues	Lecture by expert	21	42	26	11
D5 Private-public initiatives	Lecture by expert	11	21	58	11
D6 Community participation	Lecture by expert	11	33	56	0
D7 Social problems in the community	Lecture by expert	5	37	58	0
D8 Interpersonal skills	Lecture by expert	11	42	47	0

| SECTION E: YOUR FINAL COMMENTS ON POSSIBLE REASONS FOR NON-CONSENSUS? |

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