

# Undergraduate pharmacy education in two countries in the southern hemisphere

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## Abstract

The aim of this article is to present information related to pharmacy practice and education in two countries, South Africa and New Zealand, where there is currently a small migration of pharmacists from the former to the latter. The pharmacy profession in both countries is under the statutory regulation of a pharmacy council, and a society is responsible for professional aspects. The councils also play an important role in undergraduate pharmacy education, and tertiary institutions are responsible for the curricula. Externships and indigenous health programmes are important elements of education at both institutions cited in this article (Nelson Mandela Metropolitan University and The University of Auckland). Compulsory community service for pharmacists has been introduced in South Africa, while New Zealand is pioneering Continued Professional Development linked to competency and annual pharmacist registration. The information presented in this article may stimulate discussion and collaboration between members of the pharmacy profession across geographical borders.

**Keywords:** *Migration, undergraduate, externship, curriculum/curricula, pharmacist, registration*

## Introduction

The migration of health professionals from financially and (potentially) politically unstable countries was discussed by Matowe *et al.* (2004) and Levy (2003), and was followed by letters from readers to the respective journals. Qualified professionals will migrate from country to country for a variety of reasons. It is not the aim of this article to debate such migration; rather, to present information related to pharmacy practice and education in two countries, South Africa and New Zealand, where there is currently a small migration of pharmacists from the former to the latter. The information presented here may stimulate discussion, collaboration and the sharing of information and skills between members of the pharmacy profession across geographical borders, not only between the two countries named in this article, but between readers within and across continents.

There were 2768 practising pharmacists on the New Zealand

Pharmacy Register in 2006 and 86 (3.1%) of these were first registered in South Africa. An additional 20 South African pharmacists were on the non-practising New Zealand register; together the figures reflect about 1% of registered South African pharmacists. At the time of writing this article, South African pharmacists undergo an extensive programme for registration in New Zealand, including assessment of qualifications, additional education as specified by the New Zealand Pharmacy Council, a supervised internship of a minimum of six months, a written law and ethics examination, and an assessment based on Observed Structured Clinical Observations (OSCEs) (Pharmacy Council of New Zealand, 2006). The process has been revised and readers are encouraged to consult the webpage of the New Zealand Pharmacy Council (<http://www.pharmacycouncil.org.nz>)

In order to contextualize the information, a brief overview of the health environment of the two countries is presented below, followed by a discussion of pharmacy undergraduate

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education at the Nelson Mandela Metropolitan University (NMMU) and the University of Auckland (UoA) as examples of institutions providing pharmacy education in the two countries. The entry level qualification in South Africa and New Zealand is a four-year B.Pharm degree. In addition to registration in New Zealand, pharmacists who hold an annual practicing certificate (APC) may apply to register in Australia under the Trans-Tasman Mutual Recognition Agreement, a reciprocal agreement between the two countries. A similar agreement allowed pharmacists from New Zealand, Australia and the UK to register and practise within the three countries, but the agreement ceased from 30 June 2006 (Anonymous, 2003). A reciprocal agreement used to exist between the UK and South Africa but was terminated in 1968; there is currently no reciprocal agreement between South Africa and either New Zealand, Australia and/or the UK.

### Overview of Health Care in South Africa and New Zealand

A major difference in healthcare between the two countries is the subsidy of medicines in New Zealand, which are provided through privately owned community pharmacies. In South Africa, patients who cannot afford to purchase medicines obtain them from public hospital outpatients departments.

#### South Africa

South Africa has a population of approximately 46.5 million (Statistics South Africa, 2004) with an income per capita per annum of US\$2730 (GeoHive, 2006). The annual expenditure on health as a percentage of GDP was 8.8% in 2000 with 57.8% sourced from the private sector and 42.2% of total expenditure on health provided by the government (Steyn, 2003). South Africa does not have any form of national health insurance. Patients either subscribe to private medical schemes and pay private providers of health care, or they rely on public sector services and facilities. It has been estimated that 89% of the population are dependent on the public sector for health services. Of the 10,629 pharmacists

registered with the South African Pharmacy Council only 1,222 (11.5%) are employed in the public sector with a ratio of public sector pharmacists per 100,000 population of 3:1. The number of medical practitioners, in the public sector, per 100,000 population is 19:1 (Health Systems Trust, 2005).

#### New Zealand

New Zealand permanent residents and citizens have access to subsidized medical services and medicines through the Ministry of Health (PHARMAC, 2006). The level of subsidy is determined by the individual or family income. Hospitals provide free care to residents and citizens within the constraints of a public health system and there are private hospitals that cater for patients who can afford elective surgery. Members of private medical insurance schemes can also use the services of public hospitals and clinics.

Community pharmacy operates on a business model and pharmacists are paid by a District Health Board (DHB) for their dispensing service and for medicines provided to patients. Payment of the dispensing fee is negotiated between the pharmacy profession and DHBs. New Zealand has a much smaller population of just over 4 million people. There were 2840 pharmacists registered with the New Zealand Pharmacy Council at 29 August 2005, with most of the pharmacists situated in urban areas (Pharmacy Council of New Zealand, 2006). Most of the pharmacists (82%) are registered as community pharmacists.

### Regulatory and Professional Aspects of Pharmacy

#### South Africa

Regulatory control of pharmacy and representation of the profession are controlled by two separate organisations: The South African Pharmacy Council (SAPC) is the statutory body (established by terms of the Pharmacy Act 53 of 1974 as amended), responsible for developing the entry-level unit standards for pharmacists (Table I) (Unit Standards for Pharmacists, 2000), and for regulation of undergraduate

Table I. Competence Standards (NZ) and Unit Standards for Pharmacy (SA) for entry level pharmacists

| New Zealand                                | South Africa  |
|--|---|
| Prepare pharmaceutical products            | Organise and control the manufacturing, compounding, and packaging of pharmaceutical products |
| Contribute to the quality use of medicines | Provide education and information on health care and medicine                                 |
| Provide primary health care                | Promote community health and provide related information and advice                           |
| Research and provide information           | Participate in research to ensure the optimal use of medicine                                 |
| Dispense medicines                         | Dispense and ensure the optimal use of medicines prescribed to the patients                   |
| Apply management and organization skills   | Organise the procurement, storage and distribution of pharmaceutical materials and products   |
| Practice pharmacy in a professional manner | Provide pharmacist initiated care to the patient and ensure the optimal use of medicine       |

\*Not listed in order

training and education. The Pharmaceutical Society of South Africa (PSSA) is responsible for safeguarding the interests and promoting the profession of pharmacy. Practising pharmacists require annual registration with the SAPC while membership of the PSSA is voluntary. Legislation currently being prepared will require pharmacists to provide proof of involvement in Continuing Professional Development (CPD) through development of professional portfolios. This will not, however, be linked to competence to practice or annual registration.

Pharmacists can apply to register for supplementary training including primary care drug therapy (pharmacotherapy) and family planning with the SAPC. These courses require advanced clinical knowledge and skills including diagnosis and prescribing a limited list of medicines (including some antibiotics, blood pressure medication and oral contraceptives). Pharmacists are required to undertake training with accredited providers, to complete a specified number of hours of supervised practical experiential learning and/or to successfully complete written examinations. In addition to registration of the supplementary training with the SAPC, pharmacists are required to apply to the Department of Health for a Section 22a permit, in terms of the Medicines and Related Substances Act 101 of 1965, if they wish to prescribe medicines. Successful pharmacists can levy a fee for the provision of these services.

The additional pharmacy services are especially valuable in the remote and rural areas of South Africa. Many institutions have included training for the above courses in their undergraduate programmes, as well as cholesterol screening, HIV counseling, immunization services and advanced first aid courses. These courses are also provided as Continuing Professional Development for registered pharmacists.

#### *New Zealand*

The New Zealand Pharmacy Council was established under the Health Practitioners Competence Assurance (HPCA) Act 2003. Prior to this, the Pharmaceutical Society of New Zealand had been responsible for regulation and professional matters, and the profession of pharmacy was governed by the Pharmacy Act 1970. The Pharmacy Council has a duty to protect the public and promote good pharmacist practice. Under the HPCA the statutory organization for each profession has to ensure that registered health professionals are competent to practise. The competency standards for practising pharmacists are also listed in Table I. The Pharmacy Council of New Zealand is the statutory organization responsible for the registration of pharmacists. In 2006, most of the registered pharmacists (82%) were employed in community pharmacy, with 10% of pharmacists in the hospital sector.

All practising pharmacists are required to have an Annual Practising Certificate (APC) and to participate in a recertification programme that has been accredited by the Pharmacy Council. The ENHANCE<sup>®</sup> programme, available

from the Pharmaceutical Society of New Zealand Inc (PSNZ Inc.), is currently the only accredited continuing professional development (CPD) recertification programme. With the PSNZ Inc. responsible for the ENHANCE<sup>®</sup> programme, the majority of pharmacists are members of PSNZ Inc. Registered pharmacists can also undertake post-registration qualifications for the supply of the Emergency Contraceptive Pill (ECP), and to provide services for Medication Review and Comprehensive Pharmaceutical Care (CPC<sup>®</sup>). Other services are under discussion. The PSNZ Inc. is responsible for professional aspects of pharmacy and membership is voluntary. A third organization, the Pharmacy Guild, represents pharmacy owners and membership is voluntary.

### **Undergraduate Pharmacy Education**

#### *South Africa*

Education and training for the four-year undergraduate programme is controlled by the South African Qualifications Authority (SAQA), established in terms of the South African Qualifications Authorities Act of 1995. For additional information, refer to <http://www.saqa.org.za>. SAQA controls the quality standards of education and training through the registration and accreditation of Education and Training Quality Assurance Bodies (ETQA's). The South African Pharmacy Council serves as the ETQA for pharmacy. Pharmacy training is provided at eight Pharmacy schools in seven academic institutions. The institutions are Nelson Mandela Metropolitan University (formerly the University of Port Elizabeth), North West University (formerly Potchefstroom University), Rhodes University, University of KwaZulu-Natal (formerly University of Durban-Westville), University of Limpopo (formed by the merger of two former institutions which offered training for purposes of registration as a pharmacist, namely the University of the North and the Medical University of South Africa (or MEDUNSA) in collaboration with the Tshwane University of Technology – formerly Pretoria Technikon), University of the Western Cape, and the University of Witwatersrand. Seven of the eight Schools of Pharmacy offer a traditional degree programme while the eighth offers an integrated problem-based programme (Summers *et al.*, 1999).

Each accredited institution is inspected by the South African Pharmacy Council at least every three years or at periods determined by Council. There are approximately 450 pharmacy graduates annually from all the institutions; only North West University and University of Limpopo (Turfloops Campus), have produced more than 100 graduates in a year.

Graduates are required to undertake an internship for a minimum period of one year in community pharmacy, hospital pharmacy, the pharmaceutical industry or academia, under supervision of an approved pharmacist 'tutor' registered with the SAPC. Interns who elect to do their internship in the pharmaceutical industry or in academia are also required to undertake 400 hours of supervised practice in either community or hospital pharmacy to ensure that all entry-level pharmacists have the skills to dispense prescriptions and supply appropriate Over-the-Counter (OTC)

medicines and advice to the public, and to interact with other health professionals. Academic interns register at an approved tertiary institution and must complete a Master's degree during their internship (the academic internship usually takes more than one year), in addition to the 400 supervised internship hours. They are thus eligible for entry into the pharmacy profession with a postgraduate qualification.

Additional requirements for registration with the SAPC are the successful completion of a written pre-registration examination and submission of a professional portfolio. (South African Pharmacy Council, 2006). The SAPC is responsible for developing the written examination, the aim of which is to assess competency in terms of the Unit Standards for Entry Level Pharmacists (2000). The professional portfolio is based on the Competence Standards for Pharmacists. Interns are required to demonstrate competence by providing reflection and evidence regarding these standards. In addition the interns are assessed on their professional and personal development during the course of the internship by their tutor. These assessments are submitted directly to the SAPC by the tutor.

After successful completion of the internship, pharmacy graduates are eligible for limited registration as a pharmacist for pharmaceutical community service. Community service can only be undertaken in public sector institutions such as public hospitals and health centres, military defence force hospitals and clinics or pharmacies in state prisons. Placement for the community service year is controlled by the national and/or provincial Department of Health, and placements are generally in under-serviced or rural regions. All pharmacy graduates in South Africa are required to complete a year of community service before applying for full registration as a pharmacist.

#### *New Zealand*

Pharmacy education is provided at two institutions, the University of Otago and The University of Auckland; approximately 220 students graduate annually. The New Zealand Qualifications Authority (NZQA) quality assures secondary and some tertiary qualifications and education providers, evaluates overseas qualifications and administers the New Zealand Register of Quality Assured Qualifications and the National Qualifications Framework and sets standards for education and training in New Zealand (New Zealand Qualifications Authority, 2006). However, the Committee on University Academic Programmes (CUAP) approves all university-based qualifications and provides quality assurance. Pharmacy education falls under the auspices of the Council of Pharmacy Registering Authorities Inc (COPRA) (Australia and New Zealand) of which the Pharmacy Council of New Zealand is an associate member (Council of Registering Authorities Inc., 2006). New Zealand and Australia Pharmacy Schools Accreditation Committee (NAPSAC) has responsibility for the conduct of pharmacy school and registered degree course activities on behalf of COPRA. Its recommendations on accreditation are subject to approval by the Council. Accreditation of new schools of pharmacy involves preliminary approval, provisional and full accreditation processes. Inspection of established pharmacy schools occurs regularly.

New Zealand pharmacy graduates are required to register with the Pharmacy Council as intern pharmacists. The Intern Training Programme is a prescribed qualification of the Council and is conducted by the Pharmaceutical Society of New Zealand Inc. Each graduate is required to complete a minimum period of 44 weeks in a supervised training programme and must work under supervision for a minimum of 35 hours per week in a community or hospital pharmacy. Graduates have recently been permitted to undertake a 'split-internship' which involves at least three days per week in a community pharmacy and two days per week in other pharmacy sectors such as industrial pharmacy, academia or the Ministry of Health. All intern sites have to be approved by the Council and the pharmacist responsible for supervising the intern, referred to as the 'preceptor,' must be approved by the Council and undertake specified training and assessment. Interns submit four assignments during their internship year and complete three appraisals with their preceptor. Assessment is conducted by the Pharmaceutical Society on behalf of the Pharmacy Council, using Observed Structured Clinical Evaluation (OSCE) techniques and an interview. After successful completion of all aspects of the programme, determined by the Pharmacy Council Pre-registration Assessment Board, an intern can be transferred to the New Zealand Pharmacy Council register of pharmacists.

#### *Undergraduate Curricula*

Undergraduate curricula must provide graduates with skills, knowledge and attitudes to enable them to practise as pharmacists according to the standards set by the profession. Each institution has the autonomy to develop degree programmes that meet these standards although there may be variation within programmes. In both countries, pharmacy undergraduates are expected to have a thorough knowledge of pharmacology, drug interactions, side effects, pharmacy practice, law and ethics, research methods, communication skills, medicines information, extemporaneous compounding, and pharmaceutical dosage forms and stability (more detailed undergraduate curricula can be obtained from the author). Pharmacy students in both countries have the opportunity of membership with local pharmacy student associations and the International Pharmaceutical Students' Federation (IPSF).

#### **Externships**

Externships offer experiential learning to students in a hospital, community or industrial pharmacy environment. Both the universities in New Zealand have a structured externship programme in community pharmacy as well as placements in a hospital environment. Students have to work (unpaid) for a certain number of hours in an approved site and complete specified tasks on aspects of pharmacy practice. In South Africa all institutions have structured externship programmes which are integrated into the undergraduate curriculum (Table II). With the exception of Rhodes University and the University of the Witwatersrand, all institutions formally assess the externship tasks and/or include the marks assigned for the externship tasks in the final mark for the course. NMMU has implemented an externship programme which involves 280 hrs of exposure to clinical sites during the 2nd to 4th year of study. In addition to these externship hours, 4th year students, as part of their Applied Pharmacology course, spend three mornings a week for one semester (168 hours) in an approved hospital site attending

Table II. Experiential learning experience in South African and New Zealand undergraduate programmes

| INSTITUTION                                     | EXPERIENTIAL LEARNING |  |
|---|-----------------------|--|
|   | TOTAL (hrs)           | DESCRIPTION  |
| <b>SOUTH AFRICA</b>                             |                       |  |
| University of Limpopo<br>(Medunsa Campus)       | 490                   | 1 <sup>st</sup> yr: 70hrs in primary health care clinics<br>2 <sup>nd</sup> yr: 140hrs in industry<br>3 <sup>rd</sup> yr: 140hrs in community practice<br>4 <sup>th</sup> yr: 140hrs in hospital practice  |
| North West University<br>(Potchefstroom Campus) | 120                   | 2 <sup>nd</sup> yr: 40hrs in community or hospital practice<br>3 <sup>rd</sup> yr: 40hrs in community or hospital practice<br>4 <sup>th</sup> yr: 40hrs in community or hospital practice  |
| Nelson Mandela Metropolitan<br>University       | 280                   | 2 <sup>nd</sup> yr: 80hrs in community practice<br>3 <sup>rd</sup> yr: 80hrs in community or hospital practice<br>4 <sup>th</sup> yr: 80hrs in community or hospital practice<br>plus 40hrs in either 2 <sup>nd</sup> , 3 <sup>rd</sup> or 4 <sup>th</sup> year. |
| Rhodes University                               | 200                   | 2 <sup>nd</sup> yr: 100hrs in community or hospital practice<br>3 <sup>rd</sup> yr: 100hrs in community or hospital practice   |
| University of Kwa-Zulu Natal                    | 60                    | 3 <sup>rd</sup> yr: 30hrs in community practice<br>4 <sup>th</sup> yr: 30hrs in hospital practice  |
| University of the Western Cape                  | 144                   | 2 <sup>nd</sup> yr: 48hrs in community practice<br>3 <sup>rd</sup> yr: 48hrs in community or hospital practice<br>4 <sup>th</sup> yr: 48hrs in community or hospital practice  |
| Witwatersrand University                        | 264                   | 2 <sup>nd</sup> yr: 32hrs in community or hospital practice<br>3 <sup>rd</sup> yr: 64hrs in community or hospital practice<br>4 <sup>th</sup> yr: Tues & Thurs mornings (3hrs) in public sector clinics (28 weeks)   |
| <b>NEW ZEALAND</b>                              |                       |  |
| University of Auckland                          | 73                    | 2 <sup>nd</sup> yr: 8hrs in community practice<br>3 <sup>rd</sup> yr: 16hrs in community and 7 hrs in hospital practice<br>4 <sup>th</sup> yr: 35hrs in community and 14hrs in hospital practice   |
| Otago University                                | 121                   | 2 <sup>nd</sup> yr: 16hrs in community practice<br>3 <sup>rd</sup> yr: 35hrs in community practice<br>4 <sup>th</sup> yr: 35hrs in community and 35hrs in hospital practice  |

ward rounds, discussing pharmacotherapy, and counseling patients under supervision.

#### Programmes for indigenous people

Pharmacy undergraduates at NMMU and at the UoA have the opportunity to engage in unique programmes focused on health needs of indigenous people. At the UoA, all second-year pharmacy undergraduates are required to complete an interprofessional learning programme with second-year medical and nursing students, which focuses on the health needs of Maori, the indigenous people of New Zealand. At NMMU, students have the opportunity to visit remote rural areas on board the Phelophepa Health Train, and as members of a multi-disciplinary team comprising undergraduate students and qualified doctors, nurses, pharmacists, dentists and allied health professionals, they observe and assist with delivering health care to the indigenous people in rural areas of South Africa.

#### In summary

Graduates of both institutions used as examples in this article

are equipped to enter the internship/pre-registration programme in their respective countries. Both countries have specific assessment criteria for the internship programme although these may be implemented in different ways. It is important that pharmacy curricula respond to both local and global influences (Shaw, 2000) and the Maori Health Week initiative and the Phelophepa Health Train are unique examples of exposing undergraduates to the health needs of indigenous people, in addition to the knowledge and skills of a pharmacy programme. Differences between the countries are to be expected; New Zealand is pioneering methods for proving competence linked to compulsory annual pharmacy registration. South Africa has addressed the shortage of pharmacists in public and rural areas by enforcing community service prior to full pharmacy registration. However, in both countries the tertiary institutions, with the statutory and professional organizations, provide undergraduate education that equips graduates with the knowledge, skills and attitudes to enter the profession and provide a quality health service to the public.

### Acknowledgements

Bronwyn Clark and Claire Paget-Hay of the Pharmacy Council of New Zealand  
John Shaw, Professor of Pharmacy, University of Auckland.  
Sue Putter, Rational Pharmaceutical Management Plus.  
Maree Jensen, University of Auckland, for providing background information.  
Members of academic institutions for providing information for this article.  
The University of Auckland, where Dr Kairuz was employed at the time of preparing this article.

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