TITANIUM AWARDS

TITANIUM LIFETIME ACHIEVEMENT AWARD

PROF PRANEET VALODIA

MAY 2016

PROF PRANEET VALODIA

BPharm (UWC), MPharm (UWC), PhD (UCT), MPS

Postal Address:
P. O. Box 366
Gatesville 7766
Cape Town

Tel: 021- 638 5932 (h)
Cell: 072 0707 700
E-mail: praneetvalodia@gmail.com

TITANIUM LIFETIME ACHIEVEMENT AWARD

Category 6

Nominee: Prof Praneet Valodia

EXECUTIVE SUMMARY

Professor Praneet Valodia (PhD) is a leading voice in healthcare management in South Africa, with over 30 years' experience in managed healthcare, public health, pharmaceutical policy and training, and a strong track record in healthcare innovation.

After serving as an academic staff member for 16 years he joined Metropolitan Health in 2002, where he worked as a director of medicine risk management, clinical executive, head of product development, research and development executive, and chairman of the company's drugs and therapeutics committee.

In 2009, he was appointed in the Health Intelligence Unit at Medscheme. In 2011, he joined the Independent Clinical Oncology Network (ICON) as an executive manager for innovation and development. At ICON, he also served as the chairman of the oncology formulary committee.

In 2015, Praneet started his own business as an independent healthcare consultant and to date he has provided services in the fields of data analytics, medicine management, disease management, clinical trial evaluation, pharmaco- and health economics, innovation in healthcare, developing market access solutions for medicines, health outcomes research, advisory to pharmaceutical companies, managed healthcare and medical schemes, medicines policy to government and healthcare advocacy. He has been a member of the national Department of Health Pricing Committee appointed by the Ministers of Health since 2005.

While working in the corporate sector, UWC appointed him as an extraordinary professor five times.

Prof Valodia was one of three finalists for the 2015 Board of Healthcare Funders Titanium Lifetime Achievers Award which recognized excellence and significant

contributions to the healthcare industry in Southern Africa. In 2015, he was the recipient of the UWC Chancellor's award for outstanding alumnus in health sciences.

Praneet has worked with world renowned experts in research and has developed unique models to measure the value of healthcare interventions. His current interest focuses on the delivery of affordable and quality healthcare in South Africa. His research has been published in various accredited journals, and he has presented his findings at 60 national and international scientific and healthcare conferences.

Praneet is playing a key role in shaping the public and private healthcare arena in South Africa as a consultant in the healthcare industry.

MOTIVATION

EDUCATIONAL ACHIEVEMENTS

BPharm (University of the Western Cape) 1981
MPharm (University of the Western Cape) 1989 - Pharmacology
PhD (University of Cape Town) 1995 – Pharmacology

PhD in 1995

Certificate in Pharmacokinetics (University of California, San Francisco) 1993

Certificate in Pharmacoeconomics (World Health Organization, University of Birmingham, Tartu University, University of Newcastle) 2007

RECOGNITION OF AWARDS RECEIVED

- Appointed as a professor 6 times, once as an associate professor (2002) and 5 times as an extra-ordinary professor since 2002 for my research contribution and international recognition.

Appointed extra-ordinary professor 5 times

Pricing Committee for 4 terms

- Appointed to the Pricing Committee by the National Ministers of Health for 4 consecutive terms, 2005 to date.

- Awarded a doctorate by the University of Cape Town for my unique development of a new pharmacokinetic / statistical model in epilepsy management. This study contributed to the first publication worldwide in an accredited journal on outcomes research in managing epilepsy and presented a unique health outcomes model for managing epilepsy, 1995.

International scholarship

- Awarded a scholarship to conduct research in the United States of America for 4 months, funded by United Nations and organized by the African American Institute. Worked at the United States Food and Drug Administration and participated in clinical rotations at hospitals in Kentucky, San Francisco and Kansas City, 1993.

Editor for peer reviewed journal

- Awarded Warner-Lambert grant for research project, 1990 - 1992. One of the largest research awards for an individual project in South African history.

- Appointed to honorary editorial board of journal: Therapeutics and Clinical Risk Management. Dove Medical Press. UK. 2004 - 2011.

Best scientific publication

- Awarded first prize for the best scientific publication in pharmacy practice, 1999. Second International Conference on Pharmaceutical and Pharmacological Sciences (South Africa).

- Awarded monetary prize for Switchlab Innovation competition at Medscheme, 2011.

Innovation award

- Invited speaker, 22nd International Epilepsy Conference, Dublin, addressing 4000 delegates on the clinical management of epilepsy with phenytoin using pharmacokinetic techniques, 1997.

- Awarded first prize in company-wide quiz competition for HIV knowledge and its application, Metropolitan Health Group, 2008.

EXCEPTIONAL CONTRIBUTION

- Completed over 50 projects that are unique and contribute to global knowledge in the health care industry.

50 unique projects adding to global knowledge

- 60 conference presentations of which 13 were international conferences (5 held overseas and 8 held locally). Delivered 26 presentations in the field of managed health care.

60 conference presentations

- Developed and validated a pharmacokinetic (mathematical)[1,2] model for phenytoin (most widely used anti-epileptic drug) which could potentially benefit every person with epilepsy worldwide taking this drug, 1990 - 1995. This model termed the Parallel Michaelis-Menten and First-order Elimination model, as illustrated below, is the first model of its kind to demonstrate the value of linear clearance (renal) of phenytoin in addition to nonlinear clearance (liver). The model could potentially benefit 60 million people world-wide and was developed using non-linear mixed effects modelling.

Unique model for epilepsy

$$Cp_{ss} = -\frac{1}{2}\left[\left(\frac{Vm}{Cl} + Km - \frac{R}{Cl}\right) - \sqrt{\left(\frac{Vm}{Cl} + Km - \frac{R}{Cl}\right)^2 + \frac{4.R.Km}{Cl}}\right]$$

$$Vm = (\theta_1 * WT * \theta_3)\ \text{RACE* SMK * ALC * SEX * AGE * EXP}n_1$$

Where RACE = θ_4 if coloured, otherwise = 1
SMK = θ_5 if smoker, otherwise = 1
ALC = θ_8 if drinker, otherwise =1
SEX = θ_9 if male, otherwise = 1
AGE = θ_{10} if ≥ 65 years, otherwise = 1

$$Km = \theta_2\text{* RACE * AGE * EXP}n_2$$

where RACE = θ_7 if coloured, otherwise = 1
AGE = θ_{11} if ≥ 65 years, otherwise = 1

$$Cl = \theta_{11} * \text{EXP}n_3$$

Figure 1: Parallel Michaelis-Menten and first-order elimination model

The above model was developed based on the largest pharmacokinetic study at that

[1]P.Valodia et al. Factors influencing the population pharmacokinetic parameters of phenytoin in adult epileptic patients in South Africa. Therapeutic Drug Monitoring, 21:57-62.

[2] P. Valodia, P.I. Folb, M.A. Seymour, R. Miller, L. McFadyen. Validation of the Population pharmacokinetics of phenytoin using the parallel Michaelis-Menten and first-order elimination model. Therapeutic Drug Monitoring, 2000, 22:313-319.

time. It used over 10 000 data points personally collected by me over 2,5 years prospectively. It is the best dataset on phenytoin world-wide.

- Developed unique health outcomes models in the managed health care industry, 2005 – 2008, probably the first such system in South Africa[3].

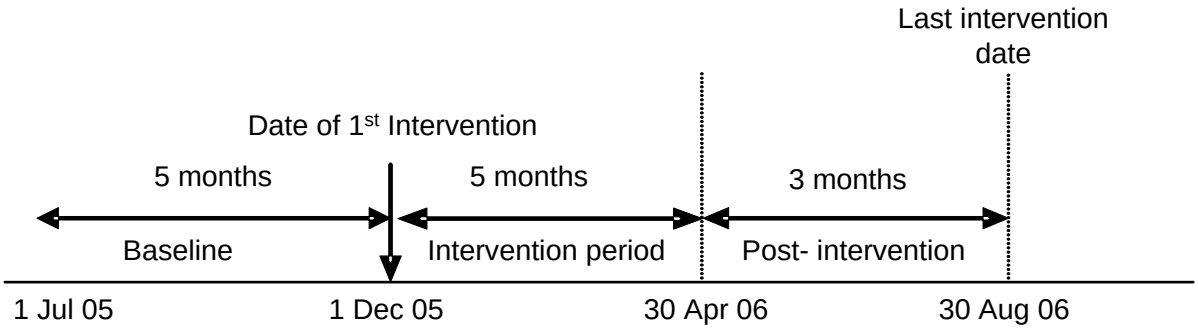

Figure 2: Method for measuring health outcomes in managed health care using variable baselines, variable intervention and post-intervention periods and the ability to track individual patients to determine the outcome of an intervention.

First outcomes model for epilepsy world-wide

- Published the first outcome model in epilepsy management worldwide[4]. This was a prospective study which was carefully designed.

Expertise in pharmaco-economics

- Recognised as an expert in the economics of medicines and key opinion leader – presented 20 invited lectures from 2005 in this field (Board of Health Care Funders, Pharmaceutical Industry Association of South Africa, Academy of Pharmaceutical Sciences, University of Stellenbosch Business School, School of Pharmacy UWC), International Society for Pharmacoeconomics and Outcomes Research, Pharmaceutical Care Management Association of South Africa, Zimbabwean Healthcare Funders).

First pharmacokinetic service for phenytoin in SA

- Implemented the first in-depth clinical pharmacokinetic consulting service[5] for phenytoin in South Africa. Vast clinical experience in the management of epilepsy at

[3] Invited article: CMS News, Council of Medical Schemes of South Africa. Measuring the value of managed health care. December 2013.

[4] P. Valodia, P.I. Folb, M.A. Seymour and B. Kies. Benefits of a clinical pharmacokinetic service in optimizing phenytoin use in the Western Cape. S Afr Med J. 1998, **88**:873-875.

[5] P. Valodia, P.I. Folb, M.A. Seymour and B. Kies. Optimization of phenytoin therapy in adults with epilepsy in the Western Cape, South Africa. Journal of Clinical Pharmacy and Therapeutics, 1999, **24**: 381-385.

specialist level, 1990 - 1992. This prospective study[4] reduced seizure frequency by 65% and reduced adverse effects from 20,5% to 3,2%. This service was based on referrals from 40 doctors in the Western Cape for optimization of the patients' treatments.

Table 1: Percentage reduction in seizure frequency

Period	**% reduction in seizures**
	n = 195
Based on first baseline period	66.0
Based on second baseline period	63,0
Based on an average of first and second baseline periods	65,0

- Developed a sophisticated isolated rat lung perfusion system, being the first such system in South Africa, 1985[6]. This system was designed to study the pulmonary uptake and metabolic effects of medicines in vitro[7].

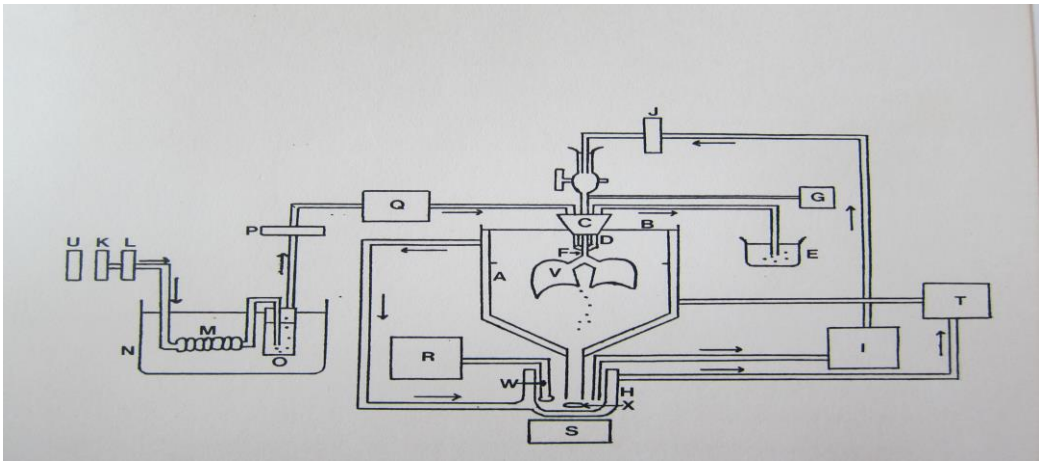

Figure 3: A schematic diagram of the recirculating isolated rat lung perfusion system for metabolic studies. The apparatus consisted of the following components: artificial thorax (A), plexiglass lid (B), rubber stopper (C), tracheal cannula (D), cylinder filled with water to provide a positive end expiratory pressure (E), pulmonary arterial cannula (F), blood pressure monitor (G), perfusate reservoir (H), peristaltic pump (I), bubble trap (J), air supply (K), air flowmeter (L), glass coils (M), water-bath (N), humidifier (O), water trap (P), ventilator (Q), pH meter (R), magnetic stirrer (S), water pump (T), CO_2 cylinder (U), lungs (V), pH electrode (W) and magnetic stirrer bar (X).

[6] P. Valodia. Selected pulmonary adverse effects induced by fenfluramine in the rat – a comparison with chlorphentermine, 1989. Master's thesis.
[7] P. Valodia and JA Syce. The effect of fenfluramine and chlorphentermine on the pulmonary disposition of ^{14}C-labelled 5-hydroxytryptamine in the isolated perfused rat lung. Journal of Pharmacy and Pharmacology, 2000, **52**: 53-55.

- Established the first Drugs and Therapeutics and Research and Development Units at Metropolitan Health.

D & T committees

- Member of 8 review groups of the International Society for Pharmacoconomics and Outcomes Research and the Disease Management Association of America. Invited to write international guidelines for these associations.

R & D unit

- Processed applications for research funding, registration of research projects and evaluated research progress reports, on behalf of 17 departments in the Faculty of Natural Sciences, UWC. Represented these departments on the Senate International Relations Committee, 1997 –2002.

- Developed many collaborative research programmes with Health System Trust, Warner-Lambert, Neurology (UCT), Pulmonology (UCT, Stellenbosch University), University of Durban-Westville, Pharmaceutical Society of South Africa, National and Provincial Departments of Health, Diabetic Medicine and Endocrinology (UCT/GSH), Department of Oncology, UCT/GSH.

ISPOR

- Member of the Provincial Drugs Coding Committee (Western Cape), Department of Health, 2001 – 2002. This committee evaluated medicines for inclusion in the hospital medicines list.

WHO

- Member and researcher – World Health Organisation Collaborating Centre for Drug Policy, Information and Safety Monitoring – based at the University of the Western Cape, 2000 – 2002. Presentation to WHO on research progress, 2001.

- Member of the Steering committee of the National Asthma Education Programme (Western Cape Branch), 1999-2001.

Steering Committee – National Asthma Education programme

- Implemented courses at Masters level in pharmaco-economics, asthma care and academic teaching at the University of the Western Cape, 2000 - 2001. Taught courses in pharmaco-economics at the University of Stellenbosch Business School to postgraduate students, 2006 - 2008.

Mechanism for drug-induced pulmonary hypertension

- Represented School of Pharmacy on the Research Capacity Development Group, UWC. This group focused on the development of research proposals in health which were multidisciplinary. The research team involved researchers in Public Health, Physiotherapy, Occupational therapy, Psychology and Anthropology, 2000.
- Expert panellist with international experts – Asthma in Africa Conference, 2001.
- Performed extensive studies to demonstrate foam cells in the alveolar sacs[8] of lungs (pulmonary phospholipidosis) in rats after 3 months of administration of fenfluramine, an appetite suppressants, intraperitoneally.

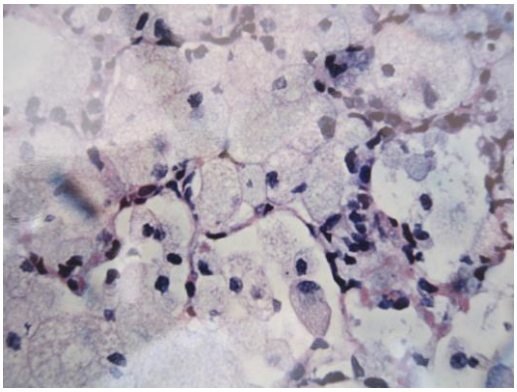

Figure 4: Foam cells in the alveolar sacs of lungs of rats treated with fenfluramine for 12 weeks.

Pulmonary phospholipidosis in alveolar sacs

- Developed a mechanism to understand drug-induced pulmonary hypertension induced by appetite suppressants[7].
- Developed techniques to measure pulmonary hypertension in rats using cardiac catheterization and an indirect assessment of right ventricular hypertrophy.

.

[8] P. Valodia, JA Syce. Selected pulmonary effects induced by fenfluramine in the rat - a comparison with chlorphentermine. Med Sci Res. 1998, **26** (7):491-493.

PRACTICAL ACHIEVEMENT

Pharmacoeconomic Guidelines

- Chaired the task team that led to the gazetting of the first guidelines for submission for pharmacoeconomic evaluation, 2013.

Adherence to asthma guidelines

- Study on the extent of adherence to standard treatment guidelines for asthma indicated that only 46% of patients were prescribed treatment correctly according to the standard treatment guidelines[9].

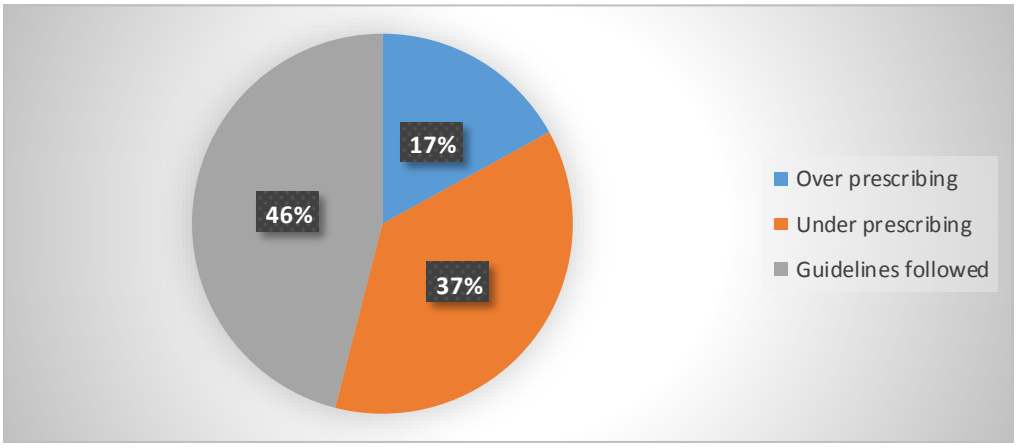

Figure 5: Extent of adherence to asthma treatment guidelines

Key successes in managed health care (2002 – 2015)
The successes were achieved due to a committed team of skilled professionals.

New medicine management system

- Implemented the enhanced medicine risk management programme within 6 months from employment in managed health care (MHC). The new medicines systems was written from the beginning and interacted on a real time basis with the claims system to perform benefit management using predictive modelling and subsequent authorization, 2002.

[9] N. Ebrahim, 2005. The pharmacoeconomic impact of non-adherence to standard treatment guidelines for the treatment of asthma in community primary health care centres in the Cape Metropolitan area. Master thesis.

Automated Health outcomes model to track individual patients

- Conceptualized and initiated the health outcomes project, successfully developed an automated health outcomes reporting system which was unique in South Africa: 2006 - 2008. The system was able to track over a million beneficiaries individually in 4 hours in an automated way and used statistical inferences for decision making. The design incorporated some of the following in an automated way: identifying the capturing of physiological outliers, filling in of missing data points in the pre- or post-intervention periods, creating of variable baselines when they are absent, last observation carried forward phenomenon for clinical data, individual algorithm for optimization period per disease, identification of overlap between intervention and post-intervention periods, statistical evaluation between baseline and post-intervention period, preparation of outcomes graphs, etc. The automated reports showed trends over time, pre- and post-intervention impact and comparison with a control group not using a managed health care intervention.

Simulated authorizations

- Developed an IT system for the automatic authorization of drugs. The medicines authorization system for one scheme was completely automated using a unique method that checked the authorization request against a simulated authorization. This was a solution for a low cost scheme option.

Real-time authorization of medicines

- Involved in the conceptualization of a real-time environment for authorization of medicines – authorization immediately transferred to claims system, 2002.

Unique Medicines quantities project

- Medicines quantities project. Developed a unique methodology which prevented the IT system from paying excessive quantities of a medicine. This was incorporated as part of the automated savings tool that was implemented. This high volume medicines clearing system determined when a patient used medicines excessively over a period of a year by instantly calculating actual medicine usage in milligrams at ATC level (including generic substitutions at patient level).

- Developed a unique medicines savings model. This model was validated and accepted by clients based on its unique approach. It was the first model of its kind to quantity intervention savings using an automated method and to validate savings as true savings using a specialized iterative method. Due to the robustness of this method it was incorporated as part of a scheme's contract and open to scrutiny.

Unique medicines intervention savings model

- Conceptualized and initiated the first 'centre of excellence' programme with a specialist unit for lipidology. It was the first project of its kind for ambulatory patients that would have demonstrated the role that managed health care can play in exceptionally high risk patients, 2007.

- Development of case manager questionnaires for the Disease Risk Management programmes with a unique focus of measuring health outcomes as a result of collecting reliable and reproducible information.

Centre of excellence

- There was a time at Qualsa when I was simultaneously performing all of the following functions: head of product managers for all Qualsa's IT developments, Clinical executive for Bankmed, Clinical executive for Pro Sano, Head of the Drugs and Therapeutics unit, Chairman of the Drugs and Therapeutics committee, Executive manager of Medicine Risk Management programme and the Executive manager of Research & Development.

- Developed a method for automation of scheme reports for disease and medicine management. A report that took 1 day to produce was automated to be produced in 10 minutes, resulting in a huge savings in health care resources.

Automation of scheme reports

- Developed a unique system to measure the impact of health care interventions and rejections by Drug Utilization Review pharmacists on medicines expenditure. This system required a unique integration and validation of authorization and claims information so that an application for authorization could be tracked sequentially from the application for authorization to payment of claims. The

challenge was to link different lines of claims and authorization information into a single view of the patient using business and statistical intelligence.

Public-private partnerships in oncology

- Developed measurement tools and reports that enabled the assessment of the impact of the outcomes of disease management programmes such as back pain and diabetes.
- Developed a model in oncology to align with the principles of the National Health Insurance programme.
- Developed and presented numerous proposals in public-private partnerships to senior government officials in 6 provinces in South Africa. This involved the development of numerous costing proposals for oncology for Public-private partnerships.

CONTRIBUTION TO SOCIAL AND ECONOMIC DEVELOPMENT

Free teaching at University for 13 years

- Despite working in the corporate managed health care sector for 13 years on a full-time basis I still managed to publish and supervise research and mark research theses. Notably, two of the theses, under my supervision and whilst working in the corporate sector achieved 'Cum laude'. Over the past 14 years I offered all the undergraduate teaching in pharmacoeconomics and supervision of postgraduate students particularly, in costing studies and health economics, to the university free of charge.

Supervision of postgraduate students

- I accepted students for studies towards masters' degrees on a full-time basis for a period of 3 years at a time. This involved meeting with students after working hours on a weekly basis, attending meetings with researchers, hospital staff and supervising the students during their hospital visits to collect data, etc. For the past 14 years, while working in the corporate sectors, I have happily interacted with students with no financial benefit accruing to me. My focus, over the past 5 years, has been in developing costing studies for diabetes and its complications and cancer in the public sector. The costing and predictive cost models that have been developed will assist budgeting and planning for the National Health Insurance.

- Invited examiner for a number of Masters and Doctoral theses.

- Invited by the Minister's Advisory Committee to make a submission on the National Control Plan for the prevention and control of cancer in South Africa.

Costing studies for diabetes and cancer

- Developed a unique system to run over 30 dispensing fee models to predict medicines expenditure. This project was intended to support government with regard to the development of dispensing fee models.

- Served as chairman of the Postgraduate Committee encouraging Metropolitan Health staff to register for Masters degrees which involved research that would be of value to Metropolitan Health. I supervised staff members for 2 hours after work once or twice per week. This served as a retention strategy to address the shortage of pharmacists in the managed healthcare environment.

Medicine Pricing models

- Co-ordination of the Essential care group of pharmacies. The group consists of 50 pharmacists who were struggling to manage their pharmacies in the lower socio-economic areas. I chaired the meetings of this group on a monthly basis to support the growth and sustainability of these businesses.

- Training and mentoring many managed health care professionals who are executives today. I have served as a mentor to many medical specialists, general practitioners, pharmacists, nurses and business people. My structured approach and in-depth understanding of research, business and strategy has been of benefit.

Mentoring

LEADERSHIP ABILITY AND CONTRIBUTION TO ENHANCING THE HEALTHCARE INDUSTRY IN GENERAL

Pricing Committee

- My 10 years of contribution to the Pricing Committee has assisted the National Department of Health in developing a transparent pricing system for medicines in South Africa. This contribution has further assisted the public of South Africa to access medicines in a more equitable manner. I have played a role in the publication of regulations related to medicine pricing in South Africa.

Chairman of Pharmacoeconomics Task Team

- As the chairman of Pharmacoeconomics Task Team of the Pricing Committee I was involved in the publication of the first guidelines for pharmacoeconomic submission which was gazetted on 1 February 2013. These guidelines are intended to make medicines affordable for the South African public.

Chairman of formulary committee in oncology

- Developed numerous health care innovations in the managed health care environment which will benefit the public of South Africa. I recently led the application of evidence-based medicine that impacted on 80% of oncologists in South Africa.

Director: Medicines Risk Management

- Produced the first health outcomes model for managed health care that was validated and comparable to international standards.

Executive: Research and Development

- Involved with developing a real-time environment for medicine authorizations that could be accessible immediately at the point of dispensing. This has greatly contributed to patient satisfaction and access to treatment.

Executive: Innovation and Development

- I am one of a few qualified researchers (PhD with 21 years of postdoctoral experience) in the managed health care environment. I was successful in demonstrating the value of research in the managed health care environment. After a few years my research contributed to the establishment of the first Research and Development Unit in the managed health care environment.

Advanced specialist: Medicines and Beneficiary management

Clinical Executive

- My greatest asset in the managed health care environment is the combination of research, clinical,

statistical and business skills. This has brought about a different perspective in innovation and development within managed health care.

- I have shared my knowledge and contributions to the industry by presenting at 28 workshops and conferences in the field of managed health care since 2002 when I joined the corporate sector on a full-time basis.

CONCLUSION

I achieved recognition and success in the industry despite the many challenges that I faced in gaining an education. The barriers in the work environment and obstacles in my career path did not deter me to strive and persevere to achieve success. I also immensely benefitted from a personal perspective by having the opportunity to assist others during this journey.