

Faculty of Health Sciences

Research report 2013

Department of Medicine

Research report 2013

Head of Department: Professor B.M. Mayosi

Departmental Profile

The Department of Medicine is a large clinical department which plays a leading role in medical education and research, and provides clinical services to the communities of the Western Cape and, in the case of our highly specialised services, to patients throughout southern Africa. The Department consists of 21 clinical and service divisions, 11 major research units, and four affiliated departments of medicine at GF Jooste, New Somerset, Il Military, and Victoria hospitals (www.medicine.uct.ac.za). Each day, members of the department treat an average of 2,000 patients in our clinics, admit about 100 patients to our hospital services and perform over 210 medical procedures. The department offers a number of highly specialised services that are unique nationally such as allergology, bone marrow, heart, kidney, and liver transplantation, cardiac electrophysiology, endobronchial ultrasound guided bronchoscopy, and double balloon enteroscopy for visualisation of the small bowel.

There approximately 80 registrars who are training in the department, 20 of whom are from other countries such as Botswana, Ghana, Kenya, Libya, Malawi, Namibia, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe. The department produces formularies and guidelines that are used in most health facilities in South Africa, such as the *South African Medical Formulary* and *Primary Care 101*.

Departmental Statistics

Permanent and Long-term Contract Staff	2013
Professors	10
Associate Professors	7
Senior Lecturers/ Lecturers <i>Full-time</i>	27
Administrative and clerical staff	100
Total	144

Honorary Staff	2013
Honorary Professors	15
Emeritus Professors	11
Honorary Associate Professors	3
Honorary Senior Lecturers	42
Honorary Research Associates	11
Total	82

Students	2013
Doctoral	51
Masters	13
Undergraduates	1015
Total	1079

Research Fields and Staff

See Divisions and Research Units within the Department

Contact Details

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**DEPARTMENT OF MEDICINE
DIVISION OF CLINICAL IMMUNOLOGY**

Head of Division: Associate Professor S.R. Ress

Divisional Profile

The Division of Clinical Immunology undertakes a multi-disciplinary activity that includes teaching of undergraduate and post-graduate students, a clinical service involving evaluation of immune function in patients with suspected immune deficiency, and a translational research programme focussed on immunology of autoimmunity, HIV and TB.

Undergraduate teaching involves lectures in immunology to semester 3-5, 4th year, & 6th year medical student. *Postgraduate teaching* includes registrar teaching, 4 and 5 pm faculty of health science talks, and journal clubs. Research projects include immune pathogenesis of TB & autoimmunity.

Service delivery comprises in-and out-patient consultations. These entail an assessment of immune status in patients with suspected immune deficiency and autoimmune disorders. Research and Development (R&D) translational research involves the application of basic science advances and their implementation in innovative, clinically applicable diagnostic assays and assays for monitoring of disease activity. In the past clinical assessments were directly linked to specialized immune functional assays required for the comprehensive evaluation of immune status, performed by this unit. Several of these tests were discontinued with the formation of the NHLS who have been unable to offer all the required specialised, tertiary, complex immune assays which are labour intensive (unlike high throughput, routine assays which is their main focus). The interest, expertise and necessary facilities to undertake this function are all available in the department of medicine. There is an urgent need to re-establish essential, specialized tertiary tests that are required both for optimal care of patients, and for the maintenance of the required academic standard of a world class institute.

Divisional Statistics

Permanent and Long-term Contract Staff

Associate Professors	1
Technical Support Staff	1
Total	2

Research Fields and Staff

Associate Professor Stanley Ress
Immunology of tuberculosis; Autoimmunity

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**DEPARTMENT OF MEDICINE
DIVISION OF CLINICAL PHARMACOLOGY**

Head of Division: Professor Gary Maartens

Divisional Profile

The major research thrusts of the division are focused on drugs for malaria, tuberculosis and HIV. The research in these fields is broad and encompasses drug discovery, pharmacokinetics, pharmacodynamics, pharmacogenomics, clinical trials, adverse drug reactions, and pharmacoeconomic evaluation. The analytical laboratory plays a key research role with small animal models for drug discovery and in patient samples for drug concentrations. A large multicentre malaria clinical research group headed by Prof Karen Barnes is at the forefront of translational malaria research in Africa. The analytical laboratory has recently been awarded funding from NIH as an International Pharmacology Specialty Laboratory. Prof Helen McIlleeron heads our clinical pharmacokinetic group, which conducts a series of studies evaluating pharmacokinetic-pharmacodynamic relationships of anti-tuberculosis drugs, antiretroviral drugs, and the interaction between them in adults and children with funding. We have a pharmacometric laboratory headed by Dr Paolo Denti to perform these complex analyses. Professor Gary Maartens runs a broad research programme focused on the clinical pharmacology of HIV and tuberculosis.

Divisional Statistics

PERMANENT AND LONG TERM CONTRACT STAFF

Professors	2
Associate Professors	2
Senior Lecturer	2
Senior Research Officer	3
Medical Research Officer	2
Registrars	4
Research Fellow	1
Technical Support	14
Database Manager	2
Quality Assurance Manager	1
Information Pharmacist	5
Editor SAMF	1
Clinical Trial Monitors	1
Administrative and Clerical Staff	7
Departmental Assistance	1
TOTAL	47

HONORARY STAFF

Honorary professor	2
Honorary Lecturers	1
Honorary Research Associates	1
TOTAL	4

POSTGRADUATE STUDENTS

Post Doctoral	3
Doctoral	11

Masters	4
Honours	5
TOTAL	23

Research Fields and Staff

Barnes, KI.

Malaria: antimalarial therapy – drug development (including Phase 1 and First-in-human studies), operational and policy research. Antimicrobial pharmacokinetic studies to inform optimal dosing in vulnerable populations

Blockman, M.

Rational and cost-effective prescribing of medicines; drug utilisation review; adverse drug reaction monitoring; drug policy and regulation; human research ethics.

Cohen, K.

Antiretroviral pharmacokinetics, adverse drug reactions, and effectiveness; HIV and non-communicable diseases; anti-tuberculosis drug-induced liver injury.

Denti, P

Pharmacokinetic modelling of pharmacokinetics and pharmacodynamics of antiretrovirals, anti-tuberculosis, and anti-malarials.

Gabriels, G.

Nutritional and traditional supplements product content validity, contamination and adulteration; drugs in sport.

Maartens, G.

Adherence-resistance relationships in antiretroviral therapy; treatment algorithms for HIV-associated tuberculosis; tuberculosis preventive therapy for people living with HIV; pharmacoeconomic evaluation of antiretroviral therapy; pharmacogenomics and adverse drug reactions of antiretrovirals; HIV and non-communicable diseases.

McIlleron, H.

Pharmacokinetic-pharmacodynamic relationships of anti-tuberculosis and antiretroviral drugs; pharmacogenomics; population pharmacokinetics; drug interactions between antiretrovirals and anti-tuberculosis drugs.

Smith, PJ.

Pharmacokinetics of anti-tuberculosis and antiretroviral drugs; in vitro antimalarial assays, toxicology, drug development

Wiesner, L.

Pharmacokinetics and Pharmacodynamics of new antimalarial and anti-TB compounds in small animal models. Bioanalytics of clinical pharmacokinetic studies

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**DEPARTMENT OF MEDICINE
DIVISION OF ENDOCRINOLOGY AND DIABETIC MEDICINE**

Head of Division: Professor N.S. Levitt

Divisional Profile

The Division provides an inpatient and outpatient clinical service and sub-speciality training in adult endocrinology and diabetes. It has close clinical links with Paediatric Endocrinology and Diabetes, Reproductive Endocrinology and Chemical pathology.

Research

The Division is involved in a wide range of research activities, interacts with a number of international and local collaborators and is a member of the recently established Chronic Disease Initiative for Africa. The primary areas of research are:

Metabolic consequences of antiretroviral therapy in HIV+ patients and: A number of cross-sectional and longitudinal studies examine the metabolic consequences of HAART are still in progress. These have been funded by the World Diabetes Foundation and Department of Health.

Burden of disease: The contribution of diabetes and other chronic diseases to the overall burden of disease pattern in the South African context is being studied in collaboration with Dr Debbie Bradshaw, BOD Group, MRC and Professor Karen Hofman from the University of Witwatersrand

Phenotype of patients presenting with diabetic ketoacidosis in Cape Town. This study aims to describe the phenotype and type of diabetes in people presenting with diabetic ketoacidosis in Cape Town ; to develop standardized strategies for the safe withdrawal of insulin and prediction models to aid in identifying patients that may not require lifelong insulin

Understanding the epidemiology and health system impact of the overlap between infectious and non-communicable diseases in low- and middle-income countries. These studies are being undertaken in collaboration with the Institute of Infectious Diseases and Molecular Medicine, School of Public Health and Family Medicine, and other international members of a Worldwide University Network grant

Obesity: In collaboration with the Department of Human Biology, a number of studies are in progress. These examine the mechanisms underlying the aetiology of obesity and insulin sensitivity in black and white African women.

Addison's Disease: Cardiovascular risk factors in Addison's disease has been investigated in collaboration with the University of Gothenberg. The impact of glucocorticoid receptor polymorphisms on cardiovascular risk factors has been assessed in Addison's disease.

Health Systems Research: The Division collaborates in projects being conducted by the Chronic Diseases Initiative for Africa. These include: a pragmatic cluster randomised trial of an integrated guideline for the management of diabetes and other chronic diseases in the Eden/Overberg primary care setting,, a randomised controlled trial to evaluate the effectiveness of a group diabetic education programme using motivational interviewing in underserved communities; the development of a resource package for primary health care providers and community health workers to enable them to offer brief counselling on lifestyle, evaluation of the roles of community health workers in non communicable disease care in the primary care setting and a randomised trial of the use of mobile phone technology to enhance adherence .in people with hypertension

Diabetes in the older person In collaboration with the Division of Geriatrics, this study aims to develop a self-Management care program for Older People with Type 2 diabetes attending Community Health Centres in Cape Town

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Divisional Statistics

Permanent and Long-term Contract Staff

Professor	1
Professor (visiting)	1
Senior Lecturers	2
Senior Registrar in Training	1
Medical Officer (sessional)	1
Diabetes Specialist Nurse	2
Administrative and Clerical Staff	1
Total	8

Research Fields and Staff

Professor N S Levitt

Diabetes and hypertension health systems research, diabetes burden of disease, mechanisms underlying the metabolic sequelae of obesity, metabolic consequences of HAART and the interaction between tuberculosis and diabetes

Professor K Steyn

Hypertension health systems research, burden of chronic disease and smoking in pregnancy

Dr I L Ross

National registry for Study of Addison's Disease and polyglandular autoimmune syndrome

Dr J Dave

Metabolic consequences of antiretroviral therapy

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DEPARTMENT OF MEDICINE

HATTER INSTITUTE FOR CARDIOLOGY RESEARCH

Director: Prof. Karen Sliwa-Hähnle

Institute Profile

Under the directorship of Professor Karen Sliwa, the Hatter Institute for Cardiovascular Research in Africa (HICRA) has been expanded to encompass more clinical research. Our focus is (1) to investigate cardiac disease interlinked with pregnancy (Cardiac Disease and Maternity Group); (2) to undertake African population studies with a focus on translational research (Heart of Africa studies); (3) to develop awareness projects linked to health education in South Africa and Africa (HEDU-Africa), (4) to study the mechanisms of protecting the heart against insults such as lack of blood flow (Cardiac Protection Group) and (5) the genetic basis of cardiomyopathy and other forms of heart disease (Cardiovascular Genetics Group).

Our major goal is to deliver first-class internationally competitive research on the pathogenesis, treatment and prevention of heart disease in Africa. We have set ourselves the goal of taking a dual approach to heart disease research; at the molecular-cellular level and at the population epidemiological level.

Our vision is to facilitate national and international collaborations in its fields of expertise. In order to achieve research excellence we strive to produce work that is published in high impact factor journals and is of relevance to the society in which we live.

HICRA trains a number of Honours, Masters and PhD students in cardio-protection, cardiac signalling, cardiovascular genetics, acute heart failure, pulmonary arterial hypertension and translational preventative research. Several students from other African countries, including Nigeria, Tanzania and Cameroon, are currently undertaking PhD training under the supervision of Professor Karen Sliwa.

Research Collaborative initiatives

Local collaborations

- Prof Zilla, Dr Davies, Cardiovascular Research Unit, University of Cape Town
- Prof David Marais, Dr Blackhurst, Lipid laboratory, University of Cape Town
- Dr Roisin Kelly, Human Biology Department, University of Cape Town
- Prof Justiaan Swanevelder, Department of Anaesthesia, University of Cape Town
- Dr Tony Lachmann, Dept Obstetrics & Gynaecology, University of Cape Town
- Dr Catherine Elliot, Dept Obstetrics & Gynaecology, University of Cape Town
- Dr John Anthony, Dept Obstetrics & Gynaecology, University of Cape Town
- Dr Friedrich Thienemann, Institute of Infectious Disease & Molecular Medicine, University of Cape Town and [IntegerAFRICA](#)
- Prof Amanda Lochner, Prof Faadiel Essop, Prof Florian Bauer, University of Stellenbosch

Collaborations in Africa

- Prof Albertino Damasceno, Eduardo Mondlane University, Maputo, Mozambique
- Prof Ana Mocumbi, National Institute of Health, Maputo, Mozambique
- Prof Charles Mondo, Makerere University, Kampala, Uganda

- Prof Gerald Yonga, Nairobi, Kenya
- Prof E. Ogola, Nairobi, Kenya
- Dr R. Mvungi, Dar Es Salam, Tanzania
- Prof Mahmoud Sani, Kano University, Kano, Nigeria
- Dr O. Ogah, Lagos, Nigeria
- Dr D. Ojiji, Abuja, Nigeria
- Prof Amam Mbakwem, Lagos, Nigeria

International collaborators include:

- Prof Bernard Gersh, Prof Lori Blauwet, Mayo Clinic, Rochester, USA
- Prof D Yellon, Hatter Institute, University College London;
- Prof Simon Stewart, Baker IDI Melbourne Australia;
- Prof Denise Hilfiker-Kleiner, University of Hannover, Germany;
- Prof Michael Boehm, University of Saarland, Germany;
- Prof Salim Yusuf, McMaster University, Alberta, Canada
- Prof Marcelo Iriti, University of Milan, Italy
- Prof Anne Jonassen, University of Bergen, Norway
- Prof Richard James, University of Geneva, Switzerland
- Prof Luc Rochette, University of Burgundy, France
- Prof Michael Sack, National Health Institute, New Bethesda, USA
- Prof Hugh Watkins and Dr Martin Farrall, Department of Cardiovascular Medicine, University of Oxford, UK
- Prof Bernard Keavney and Professor Peter Avery, Institute for Life, University of Newcastle-upon-Tyne, UK
- Prof Peter Schwartz, University of Pavia, Italy
- Dr Debo Adeyemo, Howard University, Washington DC, USA
- Dr Guillaume Pare, McMaster University, Hamilton, Ontario, Canada
- Prof Jim Dale, University of Memphis, USA
- Prof Jonathan Carapetis, Menzies School of Health Research, Darwin, Australia
- Prof Abraham Haileamlak, University of Jimma, Ethiopia
- Dr Ganesan Karthikeyan, All India Institute of Medical Science, Delhi, India
- Prof Luiza Guilherme, University of Sao Paulo, Sao Paulo, Brazil
- Prof Massimiliano Gnecci, University of Pavia, Italy
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Institute Statistics

Permanent and Long-term Contract Staff

Director/Professor	1
Emeritus Professor	1
Associate Professor	1
Clinical Staff	2
Senior Lecturers	2
Senior Researcher	1
Research Staff	6
Laboratory Assistants	2
Administrative and Clerical Staff	1
Total	16

Honorary Staff

Honorary Professors	4
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Total	4
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Students

Post-Doctoral	1
Doctoral	11
Masters	3
Honours	0
Total	15

Research Fields and Staff

Prof Karen Sliwa-Hähnle (Cardiac Disease in Maternity and Heart of Africa studies)

Cardiac disease in pregnancy and heart failure.

Emeritus Professor Lionel Opie (Ischaemia)

Delineation of cellular and molecular mechanisms promoting cardiac protection

Professor Bongani Mayosi (Genetics Group Leader)

Epidemiology, genetics, and treatment of non-ischaemic heart disease

Associate Professor Sandrine Lecour (Cardioprotection Group leader)

Delineation of cellular and molecular mechanisms promoting cardiac protection with special reference to Tumour Necrosis Factor alpha

Ms Tasneem Adam

The anti-aging molecules sirtuins and their role in cardioprotection

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**DEPARTMENT OF MEDICINE
THE ALBERTINA AND WALTER SISULU INSTITUTE OF AGEING IN AFRICA/ DIVISION OF
GERIATRIC MEDICINE**

Head of Division of Geriatric Medicine: Professor M Combrinck

Head of Institute of Ageing in Africa: Dr S. Kalula

Institute Profile

The Albertina and Walter Sisulu Institute of Ageing in Africa (IAA) is a Cross-Disciplinary Group. The IAA represents a coalescence of institute – wide disciplines with a focus on ageing: specifically Geriatric Medicine; Geriatric Neurology; Geriatric Neuropsychology and Old Age Psychiatry. The International Longevity Centre–South Africa is incorporated in the Institute. The vision of the IAA is to be an academic, clinical, research and policy centre of excellence and relevance in Africa. Its mission is to facilitate the delivery of the highest standard of inter-disciplinary, in-context training for health and allied professionals and evidence-based clinical and social care for older people, whilst undertaking appropriate research and audit upon which policy and planning for older persons may be based. The mission is achieved through inter-disciplinary partnerships and teamwork, and human resources development within current legal, ethical and financial constraints. The IAA is a leader in the area of research on ageing in sub-Saharan Africa, and enjoys international recognition and acclaim.

Institute Statistics

Permanent and Long-term Contract Staff

Associate Professor	3
Senior Lecturers	3
Senior Scientific Officer	0
Medical registrars	1
Administrative and Clerical Staff	1
Total	8

Honorary Staff

Visiting Researcher	1
Senior Lecturer	3
Total	4

Students

Doctoral	2
Masters	6
Total	8

Research Fields and Staff

Dr Sebastiana Kalula
Epidemiology of dementia; falls; quality of care.

Dr Linda de Villiers

Stroke risk factors and rehabilitation; post-discharge stroke community care.

Professor Marc Combrinck

neuro-inflammation and mechanisms of neuro-degeneration with specific reference to cognitive impairment in the elderly and in HIV-associated encephalopathy.

Dr Kevin G.F. Thomas

Senior Lecturer, Department of Psychology: geriatric neuropsychology; dementia; impact of stress on memory; impact of life stressors on age-related cognitive decline.

Associate Professor John A. Joska

Senior Lecturer, Division of Neuropsychiatry, Department of Psychiatry and Mental Health: neurocognitive disorders in HIV infection.

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DEPARTMENT OF MEDICINE

DIVISION OF NEPHROLOGY AND HYPERTENSION

Heads of Division: Associate Professor B.L. Rayner

Divisional Profile

Currently the new division offers a wide range of clinical services including chronic and acute dialysis, renal transplantation, assessment and treatment of a broad range of kidney disease and resistant hypertension, 24 blood pressure monitoring renal biopsies, prevention of chronic kidney, and cardiovascular risk assessment. The unit is supported by a dedicated team of transplant surgeons. Treatment is offered to both private and indigent patients. It also offers outreach programmes to Khayelitsha Community Health Centre and GF Jooste Hospital locally, and to George Hospital, the Northern and Eastern Cape.

There is active training programme for senior registrars in Nephrology and the unit is currently training 6 nephrology fellows. The division supports the Department of Medicine training of medical students, specialist physicians, professions' allied to medicine, renal technologists and the nephrology course for nurses.

The main academic research activities of the division relate to:

1. Vitamin D and outcomes in SLE
2. systemic lupus erythematosus (SLE) registry
3. genetics of salt sensitive hypertension
4. diabetic nephropathy and treatment of type 2 diabetes
5. classification, genetics, prevalence and treatment of HIV associated nephropathy
6. renal anaemia
7. HIV associated nephropathy and chronic diseases of lifestyle
8. Tenofovir nephrotoxicity
9. physiological treatment of hypertension in indigenous people
10. ethical consideration for dialysis rationing
11. prevalence and outcome of AKI
12. assessment of adherence to anti-hypertensive treatment through drug monitoring
13. Mesangiocapillary glomerulonephritis
14. CAPD registry
15. Association of the use of TIK with hypertension and CKD
16. Epidemiology of membranous nephropathy
17. Renal denervation for resistant hypertension
18. Renal denervation for hypertension in transplant patients
19. Comparison of FGF23 blood levels in CKD patients on HD. Could differences in levels explain the vascular calcification preponderance in non- blacks?
20. Myocardial imaging in HD patients
21. Rapidly progressive glomerulonephritis
22. Diagnosis of Renal Tb in HIV+ve patients
23. Assessment of AV fistulas using MRI scanning

Divisional Statistics

Permanent and Long-term Contract Staff and students

Associate Professors	2
Senior Lecturers	3
Emeritus Professor	1
Senior registrar	6
Part-time consultant	0
Medical officers	3
Medical registrars	3
PhD Students	0
M Phil Students	3
Total	18

Research Fields and Staff

Associate Professor C.R. Swanepoel

HIV the kidney, renal anaemia, SLE, FGF-23 and renal bone disease, myocardial imaging in dialysis patients

Dr Z Barday

Kidney transplantation, renal denervation in kidney transplant patients

Dr Ike Okpechi

Lupus registry; mesangiocapillary GN, CAPD registry, Rapidly progressive GN

Dr Wearne

HIV and kidney, tenofovir nephrotoxicity, CAPD registry, HIV and diseases of lifestyle, TB and the kidney

Associate Professor Brian Rayner

Ethical considerations for dialysis rationing, acute renal failure, Physiological treatment of hypertension, Tik, hypertension and CKD, Therapeutic drug monitoring in hypertension, Renal denervation in resistant hypertension, Salt sensitive hypertension, Diabetic nephropathy, MRI scanning and AV fistulas

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DEPARTMENT OF MEDICINE DIVISION OF LIPIDOLOGY

Head of Division: Dr D. Blom

Divisional Profile

Lipidology at UCT is currently spread over two Departments. The Department of Medicine houses the Division of Lipidology (Head: Dr D. Blom) while the Lipid Laboratory is located within the Division of Chemical Pathology (Head: Professor A.D. Marais) in the Department of Clinical Laboratory Sciences. The two components of Lipidology co-operate very closely in the investigation and management of patients. The Division of Lipidology in the Department of Medicine performs the following functions within the limits of funding, staff and facilities: expert clinical consultation, clinical research including drug development studies with the pharmaceutical industry, and ultrasonography for assessment of carotid intima media thickness. The Lipid laboratory provides specialized diagnostic investigations including determination of lipoprotein particle size by non-denaturing gradient gel electrophoresis, ultracentrifugation and analysis of VLDL composition for the diagnosis of dysbetalipoproteinaemia and genotyping to detect mutations in the LDL-receptor, apolipoproteinE and lipoprotein lipase. More specialized investigations such as measurement of 7-dehydrocholesterol for the diagnosis of Smith-Lemli-Opitz syndrome, measurement of plant sterols for the diagnosis of sitosterolaemia, cell culture and analysis of other genes are performed as required. The staff, service and research are funded chiefly by contract research. The Lipid Laboratory receives limited support from the Medical research Council. The clinical research describes the severe dyslipidaemias occurring in the public health sector of the province but includes some referrals from the private sector and academic institutions in the country. Pharmaceutical studies investigate novel lipid modifying agents in severe hypercholesterolaemia, management of severe hypertriglyceridaemia, novel anti-diabetic therapies and studies of cardiovascular outcome with novel agents.

Divisional Statistics

Permanent and Long-term Contract Staff

Consultants	1
Medical Officers	2
Nursing sisters	
PGWC	1
Contract research	2
Contract Dietitian	1
Sonographers	1
Laboratory Technologists	1
Technical Support Staff	1
Administrative Staff	1
Total	11

Students

Doctoral	0
Masters	1
Total	1

Research Fields and Staff

AD Marais, DJ Blom, BC Brice, KH Wolmarans, G Solomon, RJ Jooste

Severe dyslipidaemias including Familial Hypercholesterolaemia, Dysbetalipoproteinaemia, chylomicronaemia.

KH Wolmarans, Z Behardien, DJ Blom, AD Marais

Carotid intima-media thickness in dyslipidaemic patients

DJ Blom, G Solomon, BD Ratanjee, AD Marais

Dysbetalipoproteinaemia. Lipodystrophy.

D J Blom, KH Wolmarans, BC Brice, RJ Jooste, R Taylor, AD Marais.

Anti-sense oligonucleotides for limiting LDL production in homozygous familial hypercholesterolaemia and refractory heterozygous familial hypercholesterolaemia

DJ Blom, BC Brice, KH Wolmarans, RJ Jooste, R Taylor

Microsomal triglyceride protein inhibition in homozygous familial hypercholesterolaemia

DJ Blom, BC Brice, KH Wolmarans, RJ Jooste, R Taylor

PCSK-9 inhibition for the management of severe hypercholesterolaemia

DJ Blom in collaboration with J Dave of the Division of Endocrinology and Diabetic Medicine

Lipid metabolism in patients with HIV infection receiving antiretroviral therapy

DJ Blom in collaboration with IL Ross of the Division of Endocrinology and Diabetic Medicine

Glucocorticoid receptor polymorphisms in patients with Addison's disease

DM Blackhurst, AD Marais.

Anti-oxidant effects of wine.

AD Marais, BC Brice, KH Wolmarans, DJ Blom, BD Ratanjee in Collaboration with Prof G Lambert,

Heart Research Institute, Sydney, Australia. Plasma PCSK9 levels in familial hypercholesterolaemia.

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DEPARTMENT OF MEDICINE

DIVISION OF NEUROLOGY

Head of Division: Associate Professor Alan Bryer

Divisional Profile

We operate a general clinical neurology service at Grootte Schuur Hospital. This provides a comprehensive range of clinical activities, including in-patient, consultative, and emergency services. Additionally, there is a clinical neurophysiology laboratory and a dedicated acute stroke unit, as well as specialised clinics for stroke, myasthenia gravis, HIV neurology, neuro-genetic disorders, dystonia, and epilepsy.

Areas of research include:

Stroke: Clinical and laboratory based research projects are focussed on causes of stroke in young persons. A longitudinal study of HIV-associated stroke to evaluate the underlying biological mechanisms (specifically endothelial dysfunction and ultrasonographic vascular phenotypes) was commenced in 2010 and continues to date. Our unit is developing an in-service training program for health care workers involved in stroke care in under-resourced settings. The pilot module has been completed and tested for efficacy with favourable result and currently funds are being secured to produce the remaining 9 modules.

Myasthenia gravis (MG): Clinical and Laboratory-based research projects are focussing on improving therapeutic strategies and increasing understanding of disease pathogenesis. These include the following:

1. Dr C Freeman was awarded a MMed (Psych) for the dissertation: Psychiatric manifestations in thymomatous vs. non-thymomatous MG patients. Prof Heckmann was the principal supervisor.
2. Ms J Auret was awarded MSc (Cell Biol) for her work in examining the effect which standard MG therapies have on DAF (CD55) expression and the implications for MG subjects. Principal investigator: Prof Heckmann was the principal supervisor.
3. TGFb polymorphisms and their association with extraocular muscle damage in MG are being studied; Dr M Nel (MRC award) and Dr R Rautenbach (Discovery award).

HIV/AIDS: Clinical and Laboratory-based research projects have been established to investigate the risk factors for developing neuropathy complications in HIV-infected subjects.

1. Dr J van der Watt, was awarded a PhD for the thesis entitled: HIV-associated sensory neuropathy in an African cohort; a longitudinal study of risk factors predisposing to antiretroviral induced painful neuropathy. Aspects of this work was recently published in *BMC Infect Dis* February 2014.

2. Dr C Centner was awarded a MSc (Medicine) for his work on Pyridoxine and NAT-2 genotypes as risk factors for TB-HIV-associated neuropathy. The work was published in the *IJTBLD* January 2014.

Dementia: Prof Marc Combrinck, NRF Chair in Clinical Neurosciences, Divisions of Neurology and Geriatric Medicine.

Research projects:

- 1 The role of systemic inflammation and the apolipoprotein E gene in human immunodeficiency virus-associated cognitive impairment (MSc Med student, Dr Elana van Brakel, thesis completed and to be submitted February 2014).
- 2 The association between physical neurological signs and cognitive impairment in young adults with newly diagnosed Human Immunodeficiency Virus infection (MSc student, Dr Harshadh Jeena).
- 3 The relationship between psychosocial stress, high cortisol, apolipoprotein E4, hippocampal volume and Alzheimer's disease (Ms Katharine James, graduated PhD Dec 2013).
- 4 The relationships between inflammation, neuronal loss, the apolipoprotein E genotype and cognition in community-dwelling older persons in the Cape metropole (Ms Laurian Grace graduated PhD Dec 2013).
- 5 A prospective, observational cohort study of tuberculous meningitis in adults in Cape Town (study completed, manuscript in preparation. Dr Kathleen Bateman, neurologist).
- 6 The relationships between Vitamin B12, folate, homocysteine, apoE gene and cognition in older South Africans. Dr Ilhaam Mohamed, MSc Med student, thesis completed and to be submitted Feb 2014.
- 7 The role Von Willebrandt Factor and its cleaving enzyme ADAMTS13 in HIV associated stroke. Dr Sameera Allie, MSc Med passed with distinction June 2013. Manuscript in preparation
- 8 A folder review of cases of motor neurone disease seen at Groote Schuur Hospital 2005 to 2010. Dr Amina Daude, MMed part 3, thesis completed to be submitted 2014)

Epilepsy: The Neurology Unit plans to construct a web-based distance neurophysiology course for training in electroencephalography (EEG). To this end, approximately R500,000-00 has been raised to date from the World Federation of Neurology, the International League Against Epilepsy and the Neurological Association of South Africa. It is anticipated that the majority of sub-Saharan career neurology registrars will enroll for the 6-month course and that the programme will be up and running by January 2014 and will be tested for efficacy.

Multi-media teaching: The use of clinical encounter simulations is currently being developed by Dr Lee-Pan in collaboration with Dr Rachel Weiss.

Permanent and Long-term Contract Staff

Associate Professors (Full-time)	2
Senior Lecturers (Full-time)	3
Lecturers (Part-time)	1
Total	6

Postgraduate Students

MSc Med	8
PhD	3
M. Med	3

1.1.

Grants:

MRC Self-initiated grant 2013-2015 (Prof Combrinck)

NRF research Chair in Clinical Neurosciences (Prof M Combrinck)

UCT top-up grant (Prof Heckmann)

Post-internship MRC fellowship (M Nel)

Discovery fellowships (R Raurtenbach; C Albertyn)

1.2. Research Fields and Staff

Associate Professor A. Bryer

Cerebrovascular Disease; neuro-genetics.

Associate Professor J. Heckmann

Myasthenia gravis; HIV neurological disease, HIV neuropathy, neuro-immunology; neuro-genetics.

Dr E. Lee Pan

Health systems information technology; multi-media teaching.

Dr L Tucker

Epilepsy.

Dr Bateman:

Infectious Disease Neurology, TBM, HIV peripheral nervous disease, Stroke

Research Output (Peer-reviewed)

- Mitochondrial genomics and antiretroviral therapy-associated metabolic complications in Black South Africans: a pilot study. Sinxadi P, Dave JA, Samuels DC, Heckmann JM, et al. *Aids Res Hum Retro* 2013; 29 (DOI: 10.1089/aid.2012.0373)
- Manifestations of HIV infection in the peripheral nervous system. Centner CM, Bateman KJ, Heckmann JM. *Lancet Neurol* 2013; 12: 295-309
- Chapters in Books: Tropical Neurology (Heckmann JM, Bhigjee AI) in *Manson's Tropical Infectious Diseases 23rd Edition*, Eds Farrar J et al. (2013)
- Thrombolysis for acute ischaemic stroke in South Africa. Bryer A, Wasserman S. *Int J of Stroke* 2013 Suppl A100:112-3. Doi: 10.1111/ijss. 12059. Epub 2013 May22

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