

FACULTY OF HEALTH SCIENCES

DEAN: PROFESSOR SA MADHI MBBCh MMed PhD (Witwatersrand) FCPaeds(SA) MASSAf RSSAf TWAS CBE

Doctor of Philosophy

ABDULLA, Saira	<i>Public Health</i>
THESIS: Strengthening integrated community-based collaborative care for people living with serious mental illness in South Africa: A mixed-methods analysis This thesis examines the barriers, facilitators, and strategies for strengthening integrated community-based collaborative care for people living with serious mental illness in South Africa, using a mixed-methods approach in two integrated primary healthcare clinics in Sedibeng. Supervisors: Professor J Goudge, Adjunct Professor L Robertson and Dr S Kramer	
CHIWAMBUTSA, Shingirai Melidith	<i>Human Genetics</i>
THESIS: Pharmacokinetic-pharmacogenetic modelling of tamoxifen in African women with breast cancer for individualised therapy This study examined how genetic variation in enzymes involving tamoxifen metabolism and the use of co-medications influence endoxifen exposure in breast cancer patients of African ancestry. A population pharmacokinetic-pharmacogenetic model was developed to predict endoxifen levels and to inform precision dosing. The findings of this study demonstrated the impact of CYP2D6*17 and CYP2D6*29 in reducing the exposure levels of endoxifen in breast cancer patients on tamoxifen of African ancestry. The study emphasised the importance of integrating pharmacogenetic information in tamoxifen dosing strategies to improve treatment outcomes. Supervisors: Professor C Masimirembwa and Professor P Ruff	
DAVID, Anura	<i>Haematology and Molecular Medicine</i>
THESIS: Overcoming barriers in the diagnostic pipeline to improve the diagnosis of tuberculosis (TB) This thesis investigated novel approaches to affordable and accessible diagnosis of tuberculosis in SA. Findings demonstrated the ability to diagnose TB off a tongue swab and alternative molecular testing platforms in the laboratory. Collectively this work contributed to the World Health Organisation recommendations for testing and towards changing policy in SA to find more TB and treat faster. Supervisors: Professor W Stevens and Professor L Scott	
DE VILLIERS, Martjie	<i>Nursing Education</i>
THESIS: The development of a model of care for a selection of South African adult cancer survivors and their families This doctoral research developed a comprehensive model of care to address the multidimensional needs of a select group of adult cancer survivors and their families in South Africa. Using a multi-phase, mixed-methods approach, the study identified physical, psychological, social, and spiritual challenges across survivorship phases. Grounded in empirical evidence, the model emphasises coping, adaptation, and continuity of life following cancer. The work makes a significant contribution to patient- and family-centred care, informing practice, policy, and future research in oncology and survivorship care contexts. Supervisor: Professor JE Maree	

GENT, Vicky Angela Anisa	<i>Immunology</i>
THESIS: Evaluation of Group B Streptococcus proteins as maternal vaccines candidates This thesis investigated novel vaccine candidates against Group B Streptococcus (GBS), a leading cause of severe infections in newborns and young infants. Using genomic analysis, clinical studies and experimental models, the research evaluated gbs2106, a highly conserved and immunogenic protein associated with protection against neonatal GBS disease. The findings advance understanding of maternal vaccine development strategies and provide important evidence to support the development of next-generation vaccines aimed at preventing GBS infections in mothers and their infants. Supervisors: Professor SA Madhi and Professor G Kwatra	
JAGLAL, Prenika	<i>Paediatrics</i>
THESIS: A decade of microbiological profiling and antimicrobial testing strategies of multidrug resistant isolates from paediatric patients in Soweto, South Africa This doctoral study investigated paediatric bloodstream and cerebrospinal fluid infections over a 10-year period at Chris Hani Baragwanath Academic Hospital, analysing 58,000 clinical cultures to evaluate disease burden and antimicrobial resistance patterns. The research demonstrated rising infection rates and substantial multidrug resistance. Laboratory analyses identified tigecycline and meropenem as the most effective combination against multidrug-resistant gram-negative bacteria, while whole-genome sequencing detected colistin-resistant high-risk clones. These findings support unit-specific antibiograms, strengthened antimicrobial stewardship, ongoing microbiological surveillance, and improved infection control practices. Supervisors: Professor S Velaphi, Professor C Menezes and Professor K SweSwe-Han	
KHOZA, Siyabonga Professor	<i>Chemical Pathology</i>
THESIS: Early detection of chronic kidney disease: The role of the urinary proteome This study identified urinary proteomic biomarkers for the early detection of chronic kidney disease (CKD). By analysing retrospective and prospective cohorts, differentially abundant proteins were identified that remained robust whether CKD was stratified by eGFR or albuminuria. Furthermore, the proteomic classifier successfully distinguished healthy controls from high-risk individuals (e.g., those with hypertension or diabetes) who still maintained preserved kidney function. These results suggest that the urinary proteome offers a non-invasive, longitudinal window into renal health, serving as a sentinel for nephropathy before traditional clinical markers present. Supervisors: Professor J George, Dr J Fabian and Dr I Govender	
MAGALUTCHEEMEE, Ramuth	<i>Virology</i>
THESIS: Epidemiology and molecular evolution of influenza A and B virus isolates from Mauritius, 2009–2019 This study investigated how influenza A and B viruses circulated and evolved in Mauritius between 2009 and 2019. Using laboratory surveillance, molecular testing, sequencing, and antigenic analyses, the research examined virus diversity, antiviral resistance, and how closely circulating strains matched recommended vaccine strains. The findings highlighted the value of continuous influenza surveillance and genomic monitoring to better support vaccine decisions, outbreak preparedness, and public health responses in tropical island settings. Supervisors: Dr. FK Treurnicht, Dr. J Sonoo and Dr M Fhooblall	
MAJAMANDA, Maureen Daisy	<i>Nursing</i>
THESIS: Development of a paediatric oncology short learning programme for nurses in Malawi This study addressed the critical shortage of specialised paediatric oncology nursing education in Malawi by developing and evaluating a short learning programme for nurses. Using an exploratory sequential mixed-method design guided by the ADDIE model, the study identified essential learning content, developed contextually relevant educational resources, and evaluated programme effectiveness. Findings demonstrated improvements in participants' knowledge, skills, and attitudes towards paediatric oncology care, highlighting the programme's potential to strengthen nursing competence and improve outcomes for children with cancer in Malawi. Supervisors: Professor JE Maree and Dr I Kearns	

MAKHULU , Edward Edmond	<i>Virology</i>
THESIS: Unravelling Microsporidia MB-Anopheles interactions: Seasonal dynamics, tissue distribution and physiological impacts in <i>Anopheles arabiensis</i> Developing Microsporidia MB as a malaria transmission-blocking control tool requires understanding its tissue tropism and host interactions. This study identifies <i>Anopheles arabiensis</i> gut and gonads as primary sites for symbiont localization. Furthermore, it demonstrates that host age, blood-feeding, and metamorphosis drive symbiont intensity. Notably, Microsporidia MB enhances female survival under nutritional stress, while its absence in offspring of infected mothers negatively impacts energy reserves. These findings elucidate Microsporidia MB-Anopheles interactions essential in the development of Microsporidia MB-based control strategies. Supervisors: Professor L Koekemoer, Dr JK Herren and Dr TO Onchuru	
MANANA , Pinky Neria	<i>Public Health</i>
THESIS: Exploring the use of creative arts as community engagement strategies in the context of a pilot Sterile Insect Technique programme in South Africa This research explored the use of culturally relevant, arts-based community engagement approaches to support the introduction of the Sterile Insect Technique for malaria control in rural KwaZulu-Natal. Using music, drama, and radio short stories, the study demonstrated how community-centred and participatory approaches can improve knowledge, foster trust, and enhance acceptance of novel public health technologies. This work contributes to the fields of community engagement, malaria elimination, and public health communication, with implications extending to other health interventions requiring community participation. Supervisors: Dr S Jewett and Dr G Munhenga	
MAZARIRE , Theresa Taona	<i>Virology</i>
THESIS: Exploring the potential of geospatial tools to understand <i>Anopheles arabiensis</i> population dynamics: Steps towards the application of mosquito sterile insect technique program in South Africa South Africa is exploring the Sterile Insect Technique (SIT) to complement current malaria vector control strategies. Effective SIT application requires detailed knowledge of the targeted mosquito population dynamics and ecology, which is difficult to obtain using ground-based physical surveillance alone. This study evaluated the efficacy of geospatial tools in modelling mosquito habitat suitability and population trends. The findings showed that geospatial technologies can be used to characterise mosquito distribution and its drivers, therefore providing baseline information for efficient SIT application. Supervisors: Dr G Munhenga and Professor S Newete	
MHLANGA , Samantha	<i>Public Health</i>
THESIS: Strengthening accommodation services for people living with serious mental illness in Sedibeng district This thesis evaluates community-based mental health accommodation services for people with serious mental illness in Sedibeng, South Africa. Using a rapid qualitative synthesis of 43 international studies and qualitative fieldwork, it highlights limited evidence from LMICs, resource constraints, and regulatory challenges. Findings show that smaller, family-size housing promotes autonomy, safety, and social inclusion, while school-like building models restrict freedom and community integration, emphasizing the need for context-appropriate, adequately funded community-based mental health accommodation systems. Supervisors: Professor J Goudge, Professor F Griffiths and Adjunct Professor L Robertson	
MOODIE , Melanie	<i>Haematology and Molecular Medicine</i>
THESIS: Genotypic characterization of the HIV-1 envelope glycoprotein from viral reservoirs in multiple anatomical compartments from decedents in the FIND2.0 cohort This thesis describes genotypic characterization of the HIV-1 reservoir in 60 deceased people with HIV-1 (38 virologically-suppressed, 22 viraemic). Proviral DNA from blood and fine-needle biopsies of 10 anatomical compartments was amplified, sequenced, and analysed in the HIV-1 envelope glycoprotein (env), yielding 218 env sequences. Analyses identified multiple organs containing intact Env that serve as hubs for HIV-1 dissemination and exchange, including across the blood-brain barrier. Evidence of viral clonality, evolution, and compartmentalization was observed, highlighting reservoir heterogeneity and its implications for HIV-1 cure strategies. Supervisors: Professor M Papathanasopoulos, Dr A Basson and Dr M Killick	

MOTSEPE, Tshepo Lillet	<i>Nursing</i>
THESIS: Improving disaster preparedness in an emergency department Emergency nurses are at the forefront of the hospital, receiving patients presenting with various ailments. Within the diversity of patient presentations, they are also faced with preparing and managing patients involved in disasters or mass casualty incidents. This study utilised a multi-method approach to develop and validate a disaster preparedness competency-based education programme. This developed programme will encourage registered nurses working in the emergency department to strengthen their disaster competencies and improve disaster preparedness through education and training. Supervisor: Professor S Schmollgruber	
NEL, Jacques David	<i>Bioethics and Health Law</i>
THESIS: Tailored and context-specific guidelines should guide intraoperative neuromonitoring in South Africa This thesis explores the implications of dominant African moral theories for creating context-sensitive frameworks for intraoperative neurophysiological monitoring in South Africa. It draws on concepts like communal personhood, solidarity, and reciprocal relationships to propose new guidelines aimed at preventing harm and improving perioperative decision-making in complex surgical environments. In addition to demonstrating how dominant African moral theories can inform the development of context-specific guidelines for intraoperative neurophysiological neuromonitoring in South Africa, the thesis also outlines the specific roles that key actors can play in the implementation of these guidelines. Supervisor: Dr C Ewuoso	
NHLEKO, Mandlakayise Lucky	<i>Public Health</i>
THESIS: Epidemiology and burden of cancer in South Africa (1997-2020): Assessment of cancer morbidity and mortality trends, determinants and economic burden in males and females This study determined cancer mortality trends, investigated factors affecting pancreatic cancer mortality, determined spatial nature of cancers, investigated cancer mortality determinants while accounting for spatial relationships and quantified health burden of colorectal cancer in South Africa. Human capital approach, retrospective and cross-sectional ecological study were employed. Analyses revealed an increase in the cancer burden. Smoking and occupations were significantly associated with pancreatic cancer mortality. Districts displayed similar and divergent patterns. Preventive measures may improve life expectancy and quality of life. Supervisors: Professor E Musenge and Dr I Edoka	
OLIVIER, Franso-Mari	<i>Physiotherapy</i>
THESIS: The growing adolescent male cricket player - the development of a framework for injury risk reduction An evidence-based framework was designed to mitigate injury risk among adolescent male cricket players during critical developmental phases. The framework was synthesised through a multi-methodological approach, incorporating a systematic review with meta-analysis, a prospective longitudinal cohort study, an exploratory qualitative investigation, and a modified Delphi consensus process. Core domains include individualised screening, neuromuscular training strategies, workload management, and stakeholder education. This framework serves as a strategic resource for refining cricket governance and coaching curricula, optimising player safety and long-term athlete development. Supervisors: Professor B Olivier and Dr. C MacMillan	
REDDY, Krishnaveni	<i>Wits Reproductive Health and HIV Institute</i>
THESIS: Feasibility and acceptability of decentralised STI-self testing and risk self-assessment among adolescent girls and young women in South Africa to trigger PrEP re-start: The PALESA study This thesis addressed the need to optimize HIV pre-exposure prophylaxis (PrEP) use among adolescent girls and young women (AGYW) in South Africa. To achieve this, a pilot randomized controlled trial was used to assess feasibility of using self-administered behavioural risk assessment and decentralized STI self-testing as mechanisms to support AGYW in self-reflection of sexual behaviour and recognition of fluctuating HIV/STI risk. Findings highlight the potential of both methods in supporting AGYW to make empowered, context-sensitive decisions related to PrEP use. Supervisors: Professor T Palanee-Phillips and Professor R Heffron	

SIBIYA, Busisiwe Gloria	<i>Public Health</i>
THESIS: Nurses' ethical dilemmas and moral distress during the Covid-19 pandemic in the central hospitals of Gauteng Province, South Africa This PhD generated new knowledge on ethical dilemmas and moral distress among South African critical care nurses during the COVID-19 pandemic. The ethical dilemmas related to patient care, teamwork and interprofessional collaboration, and the health system. The predictors of moral distress were lack of infection prevention training, collegial stigmatisation, access to personal protective equipment and hospital of employment. The study methodology and findings have global relevance, while highlighting the need for ethical health leadership, and safe and supportive practice environments. Supervisor: Professor L Rispel	
SNOYMAN, Howard Ivan	<i>Bioethics and Health Law</i>
THESIS: Towards an ethically justified legislative, regulatory and policy framework that broadens access to private health insurance in South Africa This thesis argues that there is an ethical and legal imperative on the State to amend South African legislation in such a manner that would bring about increased access to private health insurance, hence increased access to private health care, which in turn would increase the access to health care on an aggregate basis. The thesis also incorporates a critical analysis of the NHI and shows why it cannot practically achieve its objective of materially improving access to healthcare. Supervisors: Professor K Behrens and Professor R Harris	
THOMAS, Reenu	<i>Paediatrics</i>
THESIS: Clinical and microbiological epidemiology, risk factors and outcomes in neonates with sterile site infections due to carbapenem-resistant organisms This thesis examined neonatal bloodstream and cerebrospinal fluid isolates over 10 years at Chris Hani Baragwanath Academic Hospital and prospectively followed a cohort of neonates with Gram-negative infections to 18-24 months. The study demonstrated increasing Gram-negative and carbapenem-resistant infections, with high mortality and neurodevelopmental impairment rates. While carbapenem resistance was not independently associated with poorer outcomes, key risk factors for resistance, mortality, and impairment were identified, highlighting the urgent need for improved infection prevention strategies and novel antibiotic development. Supervisors: Professor S Velaphi, Professor M Sharland, and Dr M Clements	
VAN BLYDENSTEIN, Sarah Alexandra	<i>Internal Medicine</i>
THESIS: Clinical perspectives on multisystem manifestations of hypoxaemic pneumonia during the COVID-19 pandemic This thesis provides novel insights into the pathophysiology of severe hypoxaemic pneumonia during the COVID-19 pandemic within a resource-limited African setting. It demonstrates the value of lung ultrasound for bedside assessment, identifies right ventricular dysfunction as a consequence of pulmonary vascular burden, characterises the distinct thromboinflammatory abnormalities associated with COVID-19, and provides histopathological evidence supporting patient self-induced lung injury. Collectively, these findings advance understanding of acute respiratory failure and have implications extending beyond COVID-19 to the management of severe pneumonia. Supervisors: Professor S Omar, Professor CN Menezes and Professor B Jacobson	