WITS HEALTH CONSORTIUM

Annual Review 2020

COVID-19 Pandemic. New Normal. New Thinking.

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EXECUTIVE SUMMARY

The Wits Health Consortium (Pty) Ltd (WHC) is a private, wholly owned company of the University of the Witwatersrand (Wits), Johannesburg.

WHC was established as a result of an initiative proposed by the Faculty of Health Sciences, to unlock commercial opportunities that would provide additional sources of revenue for the Faculty and its Departments. Council approved the Faculty's proposal in October 1997 and the Company was registered in 1998.

All academic endeavors are directed, managed and controlled through the University structures with, WHC research active staff jointly appointed with the University, conducting research, managing donor-funded activities, clinical trials and pursuing entrepreneurial innovation in health related activities.

WHC operates a Shared Services Centre (SSC) and several key subsidiary businesses.

ABOUT THE COMPANY

INTRODUCTION

The Wits Health Consortium (WHC) was formed in 1998 as an entity through which the Faculty of Health Sciences is able to undertake third stream income activities. This is done while supporting academic research and the management of donor funding for research as well as related activities in the medical and health sciences industry. We have numerous research entities that we service and they operate in South Africa, across the African continent, in the US as well as Europe.

We are the enabling environment for an entrepreneurial approach to academia. We perform this role through our Shared Services Centre (SSC), which employs over 248 skilled staff. By doing what we do well, we free up our internationally renowned academics and researchers to do what they do best we enable them to pursue specialist research in their respective fields of expertise.

This report provides an overview of our operations and highlights the success of our research units and their achievements during 2020.

OVER 20 YEARS EXPERIENCE

In our two decades of operating, WHC has established a world-wide reputation for responsibly managing sponsor and commercially-funded activities worth over USD72 million annually. WHC manages around 22% of the University's total group income, with funding derived from leading international and domestic agencies, institutes, foundations and donors. These include the United States Agency for International Development (USAID), the US National Institutes of Health (NIH), the Global Fund, Clinical Laboratory Services (CLS), the Bill and Melinda Gates Foundation (BMGF), Wits Clinical Research and other sponsors.

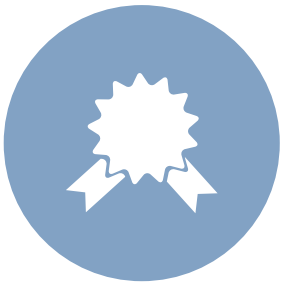
OUR SHARED SERVICES CENTRE PROVIDES THE FOLLOWING KEY SERVICES:

Financial Administration

Contract and Legal Services

IT Solutions

Human Resource Management



Training and Development

Payroll Services

Research Ethics

Grant Management

Continuing Professional Development

Given our flexible structure, our trusted management and our entrepreneurial approach, WHC harnesses the commercial potential of our scope of work by limiting any unnecessary or bureaucratic burdens. This enables clinical researchers and health academics to undertake ground-breaking projects and establish commercially-viable operations.

OUR SUBSIDIARIES

Our subsidiary companies have been created to address the needs of our divisions. Our subsidiaries are dynamic and value-adding operations that all deliver service excellence and specialist services.

ACADEMIC ADVANCE TRAINING AND DEVELOPMENT

Specialist training in the field of Clinical Research, example GCP, Human Resource Management and Critical Skills.

THIRD STREAM IT SERVICES AND SOLUTIONS

Best practice in IT systems, software, network connectivity, cloud storage and IT management solutions.

INTEGRATED HEALTH DELIVERY NETWORK

Self-funding clinical health centres and medical teaching platforms that offer affordable and quality healthcare.

UKWENZA STUDIOS DESIGN, BRANDING AND PRINT

Print media services, graphic design, multi-media productions, presentations, branding and conference packages.

OUR EXECUTIVES

- PROFESSOR MARTIN VELLER IS THE NON-EXECUTIVE DIRECTOR AND CHAIRMAN
- MR ALFRED FARRELL IS THE EXECUTIVE DIRECTOR AND CHIEF EXECUTIVE OFFICER

A SKILLED EXECUTIVE TEAM OVERSEES DAY-TO-DAY OPERATIONS OF WHC AND COMPRISES THE FOLLOWING:

MR ALFRED FARRELL	Executive Director and Chief Executive Officer
DR NTSIKELELO ITUMELENG FUNANI	Chief Academic and Clinical Officer
MR SAGIE PILLAY	Chief Operating Officer
MRS CHRISTINE GROBLER	Deputy Chief Operating Officer
MR JEAN DU RANDT	Chief Financial Officer
MR DAN MOSIA	Chief Commercial Officer
MR KARL BASSON	Chief Technology Officer (Third Stream)

MESSAGE FROM THE DEAN

PROFESSOR MARTIN VELLER

MB BCh, FCS (SA), M Med (Surg)

Non - Executive Director and Chairman of WHC

The University of the Witwatersrand is the leading research-intensive university on the African continent. This has been achieved by its success in delivering world-class academic programmes and research endeavours that have a strong focus on the global development challenges but with an emphasis on those affecting the societies within which the university is located.

The Faculty of Health Sciences, has made substantial and sustained contributions to the University goals, with an emphasis on one of the most basic of human rights, that of the realisation of the health and wellbeing of all in society. In particular, the Faculty seeks to address issues affecting the most vulnerable populations, thereby giving those affected by poverty, high burdens of disease and inequality an opportunity to thrive.

Within the Faculty, it is recognised that effective healthcare interventions are also the result of excellence in the delivery of healthcare training programmes and the ongoing expansion of an already robust research platform that contributes to the local, regional and international knowledge economy. That the Faculty has succeeded in achieving these goals is reflected in the wide and influential roles that the Faculty's academics have played in the South African response to the current Covid-19 pandemic. Many of these programmes would not have been in place without the Wits Health Consortium.

MESSAGE FROM OUR CEO

MR
ALFRED FARRELL

B Comm, B Compt (Honours), CA (SA)

Executive Director and Chief Executive Officer

Wits Health Consortium (WHC) is an entity which is wholly owned by the University of Witwatersrand Johannesburg operated for the benefit of its Faculty of Health Sciences. WHC is available for use by the Faculty as an entity through which it is able to undertake thirdstream activities related to its academic duties.

WHC is proud that our heads of divisions have chosen WHC as the entity in which to house their divisions.

BOARD OF DIRECTORS

PROFESSOR MARTIN VELLER

MB BCh, FCS (SA), M Med (Surg)

MR ALFRED FARRELL

B Comm, B Compt (Honours), CA (SA)

MR DESMOND ARNOLD

CA (SA), FCMA, AMP (Wharton)

PROFESSOR DAYNIA BALLOT

MB BCh, FCPaeds SA, PhD

DR RACHEL CHIKWAMBA

MBA, PhD (Genetics)

MR PRAKASH DESAI

B Comm, B Compt (Honours), CA (SA)

WHC has a highly-respected Board of Directors, selected for their internationally recognized academic excellence and management experience.

Our key purpose is to oversee all governance, internal controls, risk management, financial management and HR services that WHC provides to its research entities and to the University of the Witwatersrand.

PROFESSOR JOHNNY MAHLANGU

MB BCh, M Med (Haem), FCPath (SA) (Haem) (Clin Haem)

MS PHAKAMA MBIKWANA

B Comm, BCTA , EDP (Duke Corporate)

DR TSHEPO MOTSEPE

MB BCh; MA (Public Health)

PROFESSOR MARIA PAPATHANASOPOULOS

BSc (Hons), MSc, PhD

PROFESSOR HELEN REES

OBE, MB BChir, MA, MRCGP, DCH, DRCOG, MBA (Harvard)

PROFESSOR ZEBLON VILAKAZI

PHD (PHYSICS)

For detailed bio click here to read more.

OUR VISION

Vision provides DIRECTION.

To be a valued strategic partner of Faculty, recognised for the additional resources, commercial / business expertise and supplementary income we are able to make available to it.

OUR MISSION

Mission creates FOCUS.

To support the teaching, research and public health service mission of Faculty; either through the provision of commercial and administrative support for income-generating activities ancillary to the main objectives of Faculty (namely teaching, research, and the provision of medical services), or by directly engaging in teaching, research, medical service or other related activities which are complementary to the main objectives of Faculty.

OUR VALUES

Values define Behaviour.

Stewardship

We recognize our role as stewards of the Faculty's assets by managing our resources responsibly, effectively, and efficiently.

S

Employees

We are committed to the success of our employees, as they are our most valuable resource, and so provide them opportunities for development, growth and personal success.

E

Respect

We are courteous, conscientious and respectful in our dealings with our customers, employees, Faculty and the communities where we work.

R

Variety

We embrace different viewpoints and support mutually beneficial partnerships amonga diverse mix of individuals, departments, institutions, and community groups.

V

Integrity

We conduct ourselves in a fair, ethical and honest manner. We strive to make all decisions in the best interests of our customers, employees, Faculty and the communities where we work. We are accountable and answerable for our actions.

I

Customer Service

We value innovative, timely, efficient, solution-oriented, and cost-effective services and systems. We are committed to achieving the highest levels of customer satisfaction achievable, given the resources at our disposal.

C

Entrepreneurship

We foster a culture where entrepreneurship and prudent risk taking are encouraged, where the entrepreneur is able to benefit as a partner in their venture.

E

OUR FINANCIAL OVERVIEW

STATEMENT OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE YEAR ENDED 31 DECEMBER 2020

INCOME	2020	2019
	R	R
Sponsored funds received	2 464 392 514	2 477 100 897
Pharmaceutical income	88 879 949	81 601 139
Sale of goods and rendering of services	43 213 992	37 203 376
Other	5 809 064	6 137 471
Gross income	**2 602 295 519**	**2 602 042 883**
Cost of sales	(10 289 607)	(9 089 336)
Surplus before operating expenses	**2 592 005 912**	**2 592 953 547**
Operating expenses	(2 547 039 986)	(2 627 735 684)
Foreign exchange gains/(losses)	(27 446 617)	15 077 509
Operating (loss)/surplus before net finance income	**17 519 309**	**(19 704 628)**
Net finance income	42 461 378	57 653 897
Finance income	47 109 368	62 918 479
Finance costs	(4 647 990)	(5 264 582)
Surplus before income tax	59 980 687	37 949 269
Income tax expense	(453 108)	(157 124)
Surplus for the year	**59 527 579**	**37 792 145**

TOTAL COMPREHENSIVE INCOME FOR THE YEAR 2020

59 527 579

TOTAL CONPREHENSIVE INCOME FOR THE YEAR 2019

37 792 145

STATEMENT OF FINANCIAL POSITION
FOR THE YEAR ENDED 31 DECEMBER 2020

ASSETS	2020	2019
Non-current assets	R	R
Property, plant and equipment	235 378 774	232 855 783
Goodwill	485 608	485 608
Deferred tax	139 811	102 743
	236 004 193	**233 444 134**
Current assets		
Inventory	-	715 821
Trade and other receivables	457 409 892	340 430 767
Tax receivable	52 943	159 382
Cash and cash equivalents	1 541 784 566	1 088 946 030
	1 999 247 401	**1 430 252 000**
Total assets	**2 235 251 594**	**1 663 696 134**

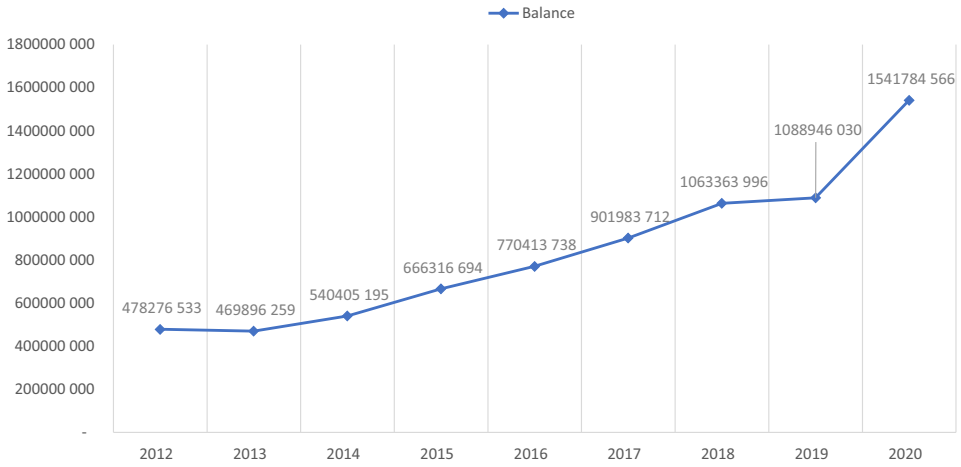
EQUITY AND LIABILITIES	2019	2019
Equity	R	R
Share capital	100	**100**
Accumulated reserves	540 038 383	494 810 804
	540 038 438	**494 810 904**
Liabilities		
Non-current liabilities		
Borrowings	18 910 452	21 453 838
Lease liability	11 505 147	18 178 761
	30 415 599	**39 632 599**
Current liabilities		
Borrowings	2 896 149	2 127 443
Lease liability	8 803 684	9 904 645
Trade and other payables	333 761 252	269 361 645
Income received in advance	1 306 753 515	833 249 617
Unallocated receipts	12 582 912	14 609 281
	1 664 797 512	**1 129 252 631**
Total liabilities	**1 695 213 111**	**1 168 885 230**
Total equity and liabilities	**2 235 251 594**	**1 663 696 134**

SUMMARY OF TOTAL EQUITY AND LIABILITIES
FOR THE YEAR ENDED 31 DECEMBER 2020

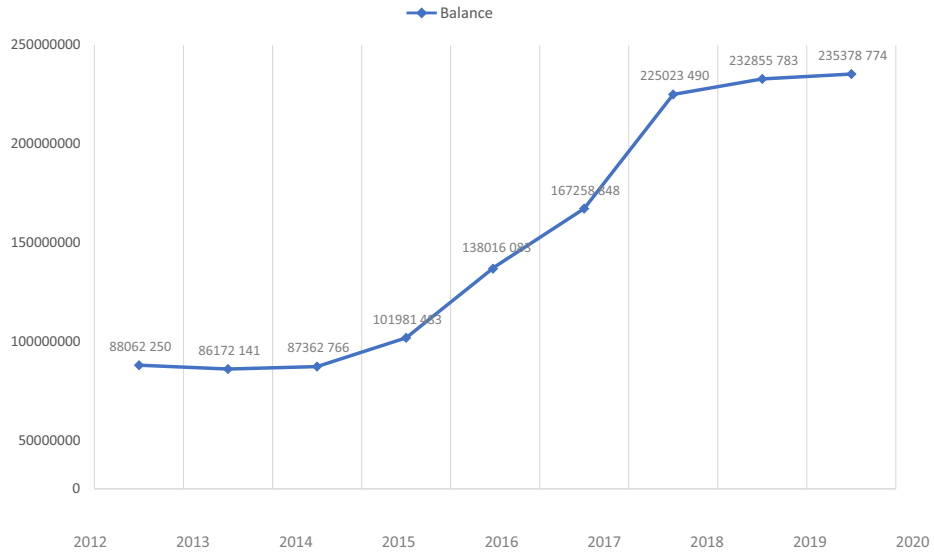
R 2 235 251 594
2020

R 1 663 696 134
2019

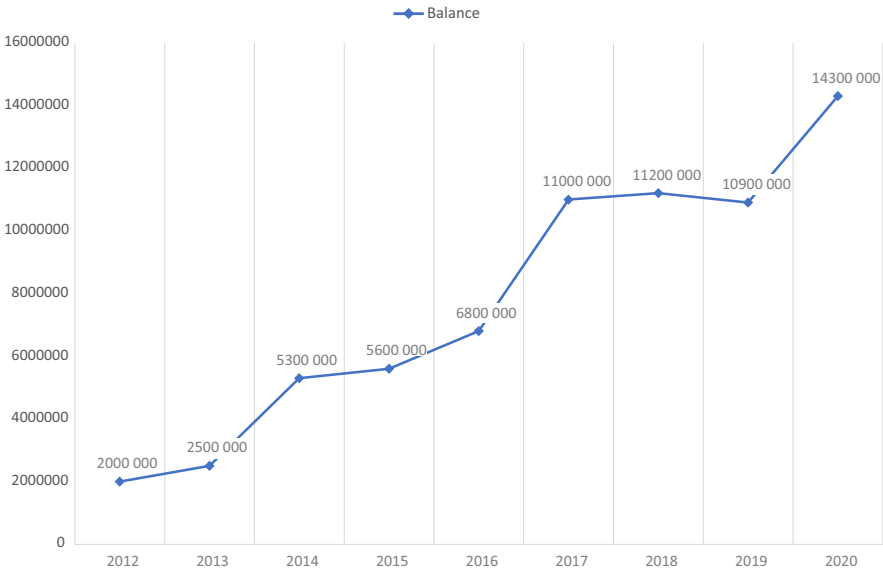
CASH BALANCE
FOR THE YEAR ENDED 31 DECEMBER 2020



PROPERTY PLANT AND EQUIPMENT BALANCE
FOR THE YEAR ENDED 31 DECEMBER 2020



DIVIDEND PAYMENTS
FOR THE YEAR ENDED 31 DECEMBER 2020



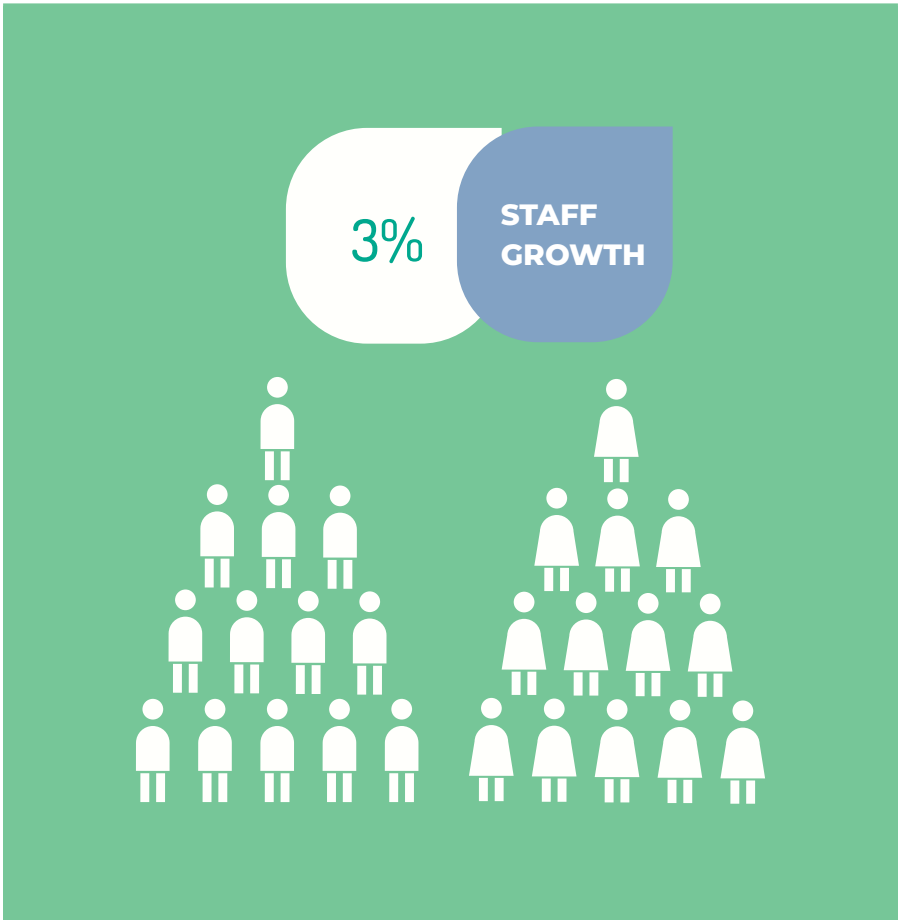
HUMAN RESOURCE OVERVIEW

Because our business is all about people and teams, effective and comprehensive HR management services are a core element of our support.

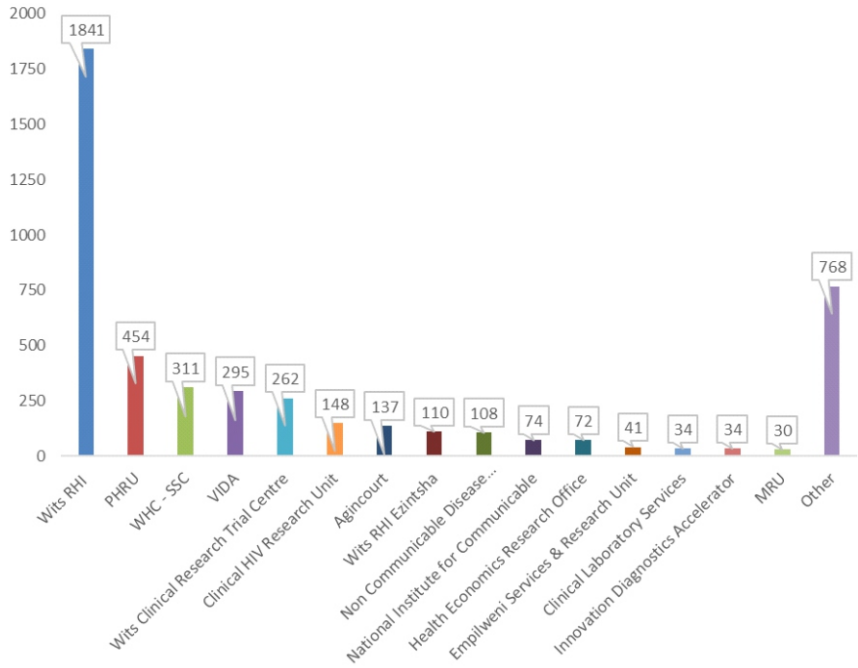
Our role is both functional and strategic.

The team consists of a group of passionate, experienced and skilled individuals who offer organisational support in the following key areas:

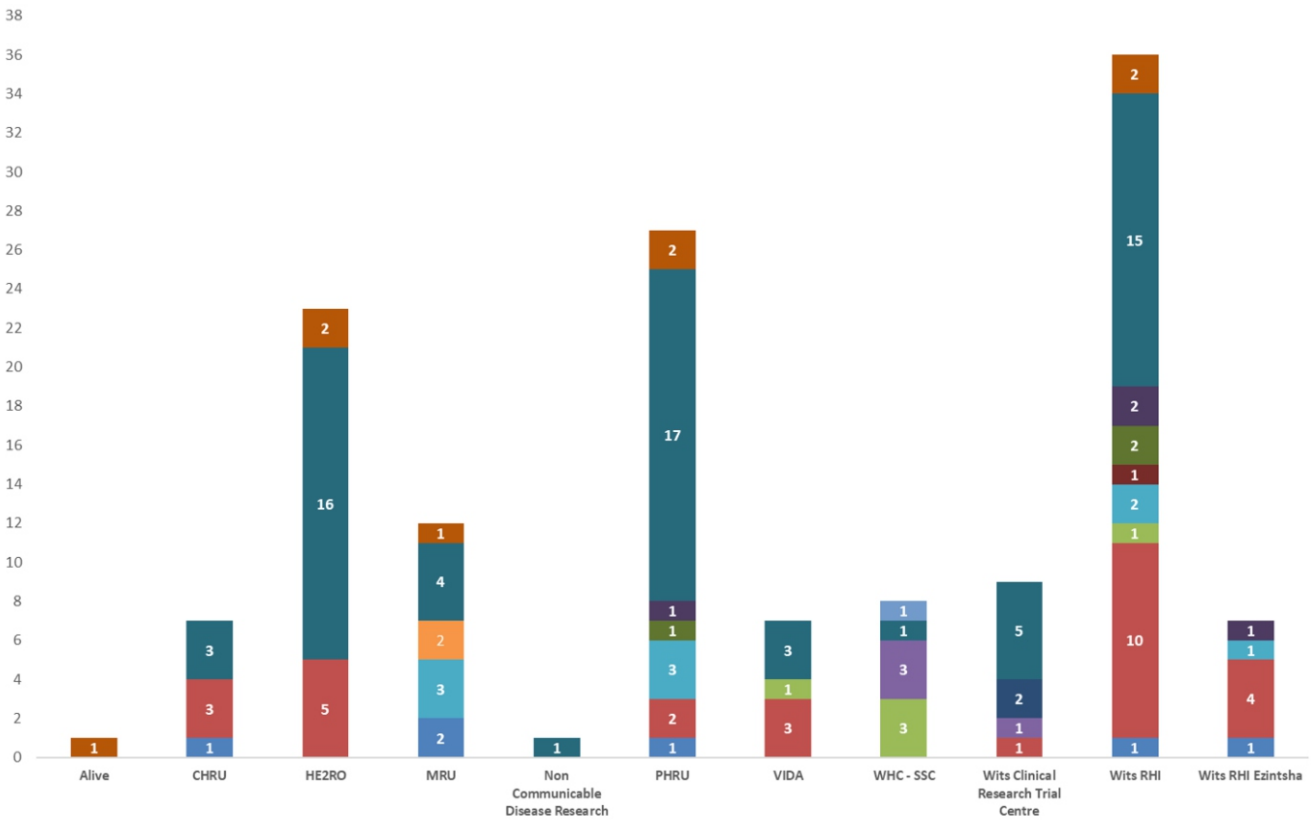
- Careers Portal
- Employee Relations
- Performance Management
- Advice and HR Consulting
- Remuneration Benchmarking
- Skills Training and Development



HEAD COUNT
FOR THE YEAR ENDED 31 DECEMBER 2020



JOINT APPOINTMENTS
FOR THE YEAR ENDED 31 DECEMBER 2020



- Associate Professor
- Associate Researcher
- External Contractor
- External Person (Support)
- Reader
- Joint Researcher
- Junior Associate Professor
- Lecturer
- Professor (Chair/Per)
- Research Professor
- Researcher
- Senior Researcher
- Visiting Lecturer

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JOINT APPOINTMENTS

WHC operates a Shared Services Centre (SSC) to support our various research entities or divisions that operate within WHC. Academically these divisions fall under their relevant university department but they are viewed as independent divisions of the WHC and managed according to structures, project plans and budgets set out by the division directors.

OUR DIVISIONS/ RESEARCH UNITS

Wits Reproductive Health and HIV Institute

PROFESSOR HELEN REES

EXECUTIVE DIRECTOR

University of the Witwatersrand
WITS RHI

Hillbrow Health Precinct 22
Esselen Street
Hillbrow
2001

Tel: +27 11 358 5300
Email: rhicomms@wrhi.ac.za
Web: www.wrhi.ac.za

WHO WE ARE

Wits RHI is a leading African research institute that forms part of the University of the Witwatersrand's Faculty of Health Sciences. The institute has a spread of activities relevant to an African academic institution.

Wits RHI is a hybrid organisation with one foot in research and the other to global health institutions. While the core focus areas we work on are Sexual Reproductive Health and HIV, Vaccine and Infectious Diseases and Other Emerging Issues, we are continuously adapting our emphasis for relevance, both in existing focus areas and in new areas of interface such as urbanisation, non-communicable diseases, and climate change. We also have leveraged our presence internationally in initiatives to curb the impact of COVID-19 in South Africa.

We use a multi-pronged approach to improve health outcomes at a national and global level, through research, technical assistance, advocacy, policy development, and health systems strengthening.

Wits RHI is a UNAIDS, World Health Organization (WHO) and South African Medical Research Council (MRC) collaborating centre as well as a United Nations Population Fund (UNFPA) strategic partner.

WITS RHI'S YEAR IN REVIEW - 2020

The year 2020 will be remembered by people across the globe as the year of the COVID-19 pandemic. As health sector researchers and professionals, we have no special claim on this memory. But we have a particular perspective on it and, in the case of Wits RHI, the pandemic presented a massive, obligatory research responsibility.

In its 27-year life, Wits RHI had never experienced a comparable demand for clinical research to help stem a deluge of illness and death. Not even the HIV pandemic had presented as concentrated a challenge in a short space of time. Vaccine-preventable diseases have long been a focus area for Wits RHI and our work has been rooted in the particular disease profile – and associated social conditions – of our country and continent. As an African research organisation, the Institute felt a special obligation to ensure that the realities of populations on our continent were factored into emerging solutions to this devastating novel coronavirus. During 2020 Wits RHI participated in a total of 15 national and international studies related to the prevention and treatment of COVID-19.

These included three vaccine trials – the South African Oxford-AstraZeneca vaccine trial, the Johnson & Johnson vaccine trial, ENSEMBLE, and the Novavax trial. On the treatment front, we played a role in the large Solidarity trial coordinated by the WHO which evaluated a variety of potential treatments for COVID-19 illness. At a national level, our research was really varied – ranging from epidemiological studies, to research on healthcare worker protection and wellbeing, and documenting best practice in testing and contact tracing.

Sexual and reproductive health and HIV prevention and treatment have been strong focus areas for the Institute's research since its inception. During the past year, there were significant developments in relation to some international clinical trials in which Wits RHI had played a role.

RESEARCH IN 2020

The success of Wits RHI as an academic institution is reflected in the 145 published academic journals, including two book chapters and 44 conference abstracts accepted in 2020. The institute has a growing postgraduate support programme with 10 PhD and 25 Masters students affiliated to it. The Institute has secured 84 active grants, making it the largest research and academic institute at the University of the Witwatersrand and the African continent. Wits RHI has demonstrated great dedication, expertise, and knowledge different fields in health progressively qualifying to compete with international research institutes. These are the core qualities that make the institute relevant, attracting partnerships and contracts locally and globally. We identify opportunities and support innovative research to enhance public health care. Our ultimate goal is to provide sustainable health care solutions to marginalised communities.

STAFFING IN 2020

The staff complement of Wits RHI continued to grow in 2020. The total number of employees was 1 882 – up about 2% on the 2019 tally – and about 88% are in permanent positions. A significant proportion of staff members are female, and the organisation prioritises transformation, ensuring development and representation of historically disadvantaged groups in leadership and management positions.

OUR KEY FOUNDER

The Reproductive Health Research Unit (RHRU) was founded in 1994 by Professor

Helen Rees as a joint initiative between the University of the Witwatersrand (Wits), Faculty of Health Sciences and the Greater Johannesburg Metropolitan Council. RHRU is now named Wits RHI.

INCOME AND SUSTAINABILITY

The success of Wits RHI rests on its sustainability and ability to secure funding from non-traditional sources.Wits RHI is donor-funded and has been fortunate in attracting support from a large number of organisations. During 2020, the Institute had 84 grants under management with a total value of about R900 million. Grants are derived from national and international institutions and include substantial support from the NDoH, NIH, BMGF, CDC, EU, WHO, USAID, Unitaid and PEPFAR.

AWARDS

Prof Rees is widely recognised for her work as a global health practitioner and has been appointed as chair and member of many international scientific committees and Boards.

She has been actively involved in national, regional, and global response efforts to COVID-19 including the development of COVID-19 vaccines, their potential rollout and utilization. As well as chairing the South African Health Products Regulatory Authority (SAHPRA) Board, she is also a member of the Ministerial Advisory Committee on COVID-19, and a member of the Ministerial Advisory Committee on COVID-19 vaccines and she Chairs the MAC COVID-19 Variant and Vaccines Technical Working Group. Prof Rees has worked extensively with WHO and other institutions in the African region and is chair of WHO's African Regional Immunisation Technical Advisory Group on Immunization (RITAG). Prof Rees has chaired the WHO's International Health Regulation (IHR) Polio Emergency Committee since 2014 and is a member of the WHO IHR Emergency Committee on COVID-19.

2020 PROJECT HIGHLIGHTS

Since the declaration of the pandemic, Wits RHI quickly responded to a clarion call to contribute towards various attempts to launch defences against the spread of COVID-19. The institute actively participated in studies and activities aimed at amongst other things, determining effective and safe COVID-19 treatments, prevention, and better understanding COVID-19 transmission. These studies and activities were facilitated at local, national, and international level through partnerships with other health organisations and countries. Wits RHI's founder, Prof. Helen Rees is internationally renowned for her research and policy work in vaccines, HIV, and reproductive health.

She chairs the principal vaccine advisory group to the World Health Organization (WHO) Regional Office for Africa, known as the African Regional Immunization Technical Advisory Group (RITAG). She is a member of the board of Global Alliance for Vaccines and Immunisation (GAVI) and she chairs GAVI's Programme and Policy Committee. She serves on the board of the Coalition for Epidemic Preparedness (CEPI) and chairs its Scientific Advisory Committee.

Prof. Helen Rees is a member of the Governance Committee in the COVID-19 Clinical Research Coalition, a member of the WHO International Health Regulations (IHR) Emergency Committee on COVID-19, as well as of the WHO Strategic Advisory Group of Experts (SAGE) on the COVID-19 Vaccine. Prof. Helen Rees is appointed to various South African ministerial committees that inform the Minister of Health on COVID-19. She also chairs the WHO IHR Emergency Committee on Polio and Co-chairs the SAGE Ebola Vaccine Committee.

She is Chair of the South African Health Products Regulatory Authority. Under the leadership of Prof. Helen Rees, Wits RHI has participated in ground-breaking COVID-19 studies and intervention. The institute's directors are currently involved in a total of 15 COVID-19 studies and initiatives. Prof. Helen Rees is the Co-Chair of the South African arm of the Solidarity trial.

The Solidarity trial is a WHO coordinated trial that will generate high quality evidence on COVID-19 treatment options. Prof. Helen Rees is also the International Coordinator for the global CROWN Coronation study. This study is aimed at looking at strategies to protect healthcare workers against the COVID-19 infection.

Wits RHI's COVID-19 projects are being spearheaded by our directors who are currently engaged in several COVID-19 studies. These are;

The Solidarity Trial
A global public health emergency trial of different treatments in severely ill COVID-19 patients receiving their hospitals' standard of care. This study aims to find out whether any of the COVID-19 treatments are effective.

CROWN Coronation: COVID-19 Research Outcomes Worldwide Network for CORONAvirus prevenTION
The main aim of the trial is to see whether Measles, Mumps and Rubella (MMR) vaccine can prevent or reduce the severity of COVID-19 in healthcare workers.

The South African Ox1Cov-19 Vaccine VIDA-Trial
A randomized placebo-controlled study to determine the safety, immunogenicity, and efficacy of a new SARS-CoV-2 vaccine called ChAdOx1 nCoV-19.

The Pregnancy Surveillance Study
The Pregnancy Surveillance Study aims to evaluate the impact of SARS-CoV-2 in pregnancy and household contacts of pregnant women, since there is insufficient research on this population.

UNITY Healthcare Worker Registry
The UNITY Healthcare Worker Registry assess the association of potential prophylactic treatments with reduced risk of COVID-19 (or SARSCoV-2 infection) in healthcare workers caring for COVID-19 patients.

The EDCTP-COREP COVID-19 Household Cluster Investigation
This study aims to determine the epidemiological parameters of COVID-19 through a household transmission study in a rural area of South Africa.

National testing and contact tracing across our PEPFAR-funded programmes: The Wits RHI PEPFAR COVID-19 Response committee
The committee serves as a nerve centre to coordinate the internal Wits RHI COVID-19 response and to leverage resources and best practices between the programmes. This committee response is guided by the Wits RHI Steering committee, PEPFAR and its agencies (USAID, CDC, UNITAID, and ELMA).

The National WhatsApp messaging and symptom surveillance programme: COVID-19 HealthCheck joint initiative
The COVID-19 Digital Risk Assessment and Mapping Tool known as HealthCheck, complements national screening efforts by allowing users to self-report symptoms and details such as age and location, for early detection, mapping, and linkage of those reporting symptoms to testing services.

Novovax
The purpose of this study is 2-fold: 1) to evaluate the efficacy, safety, and immunogenicity of SARS-CoV-2 rS with Matrix-M1 adjuvant in serologically naïve (to SARS-CoV-2) healthy human immunodeficiency virus (HIV)-negative adult subjects (Cohort 1 – HIV-negative) and 2) to evaluate the safety and immunogenicity of SARS-CoV-2 rS with Matrix-M1 adjuvant in serologically naïve (to SARS-CoV-2) medically stable HIV-positive.

ENSEMBLE
ENSEMBLE's objective is to demonstrate the efficacy of AD26. COV2.S in the prevention of molecularly confirmed moderate to severe/ critical COVID-19, as compared to Placebo, in SARS-CoV-2 Seronegative adults.

COVID Vaccine Implementation Science
A COVID-19 vaccine plan led by the Implementation Science team.

HPTN084 CoVPN Preparedness Fund
To provide support to Ward 21 CRS #31966, to strengthen their site capacity to participate in large Phase 111 efficacy trials.

COVID-19 Sero Survey
A cross-sectional COVID-19 survey involving questionnaires and sero-prevalence, with the aim of measuring and understanding COVID-19 perceptions and impacts among residents of Hillbrow.

B-Wise Social Media: Supporting SA youth with HIV edutainment bursts
This initiative enables innovative solutions focusing on the HIV prevention among vulnerable groups during the COVID-19 crisis.

The Health Care Worker Health and Wellbeing Study
This study focuses on health and mental wellbeing of health workers providing care to patients with COVID 19 in Johannesburg, South Africa: rapid needs assessment and action research.

OTHER RESEARCH INITIATIVE HIGHLIGHTS FROM WITS RHI:
AMP Study
AMP Study Wits RHI is also pleased to be part of the recently disseminated AMP results. New results from two proof-of-concept studies (HVTN 704/HPTN 085 and HVTN 703/HPTN 081- the AMP Studies) demonstrate that infusions of the broadly neutralizing monoclonal HIV antibody (bNAb) VRC01 can prevent some HIV infections.

HTPN 083
On 22 May 2020, the HIV Prevention Trials Network (HPTN) hosted the preliminary results of HPTN 083, a global randomized, controlled, double-blinded study that compared the safety and efficacy of long-acting injectable CAB LA to daily oral TDF/ FTC (Truvada) for PrEP. The study showed that CAB LA lowered HIV incidence among cisgender men and transgender women who have sex with men. HPTN 084 is the first study to compare the safety and efficacy of CAB LA to daily oral TDF/ FTC for HIV PrEP among cisgender women. A discussion on its importance to HIV prevention for cisgender women will follow.

HPTN O84
One of our research breakthroughs was the HPTN 084 study which showed that data from the clinical trial of the PrEP regimen of CAB LA injections once every eight weeks was safe and superior to the daily oral TDF/ FTC, currently used for HIV prevention among women in sub–Saharan Africa. Overall, HPTN 084 enrolled 3,223 cisgender women at research sites in Botswana, Eswatini, Kenya, Malawi, South Africa, Uganda, and Zimbabwe.

IMPAACT P1093

Shandukani Research Centre is proud to have been part of the clinical trials leading up to the registration of this dispersible tablet. Data from IMPAACT P1093 and the ODYSSEY (PENTA20) study have informed the US FDA decision to approve the first-ever dispersible tablet formulation of Tivicay PD (dolutegravir) tablets for children as young as four weeks of age and weighing at least 3 kg (or about 6.5 pounds). The study has enrolled more than 180 children at 34 research sites in Botswana, Brazil, Kenya, South Africa, Tanzania, Thailand, Uganda, the U.S., and Zimbabwe. This approval is a crucial milestone in providing easier and more optimal HIV treatment options for children worldwide, which is a key pillar of the IMPAACT Network's mission.

My PrEP Mobile Application

The development of the My PrEP Journey mobile application was carried out in close collaboration with the South African NDoH and its partner implementing organizations, Unitaid, She Conquers SA, Wits RHI and WHO. Version 1 is only for PrEP users who have initiated on PrEP through Project PrEP's facilities and mobile clinics and are registered by the demand creation team using patient ID's and are rewarded with mobile data to continue their journey with ease. Version 2 has increased the number of daily activities on the app with more notifications, quizzes, and social media sharing. Periodic draws will take place, and users who are most active on the app will win a prize.

OPTIONS

Another successful study from Wits RHI was the research from the OPTIONS study which resulted in the prequalification of the non-profit IPM dapivirine ring for women's HIV prevention. The dapivirine ring is a monthly vaginal ring to reduce women's HIV risk. WHO prequalification brings the dapivirine ring an important step closer to being made available to women, who want and deserve new choices in HIV prevention.

The Wits RHI Research Centre

The Wits RHI Research Centre was selected to be a site for the Gilead Phase 3 trial of Lenacapavir, Descovey and Truvada for HIV prevention. This is a large trial that will assess injectable and oral PrEP in young women and the Research Centre team is happy to have been selected for it.

Shandukani Research Centre

Wits RHI's Shandukani Research Centre has completed enrolment of over 900 participants into three separate COVID-19 vaccine studies, namely the ChAdOx1, Novavax and ENSEMBLE trials. On 28 January 2021, Novavax announced that their vaccine showed 60% efficacy for the prevention of mild, moderate, and severe COVID-19 disease in the 94% of the study population that was HIV-negative, in South Africa. This is the first COVID-19 vaccine for which we now have objective evidence that it protects against the variant dominating in South Africa. On 29 January 2021, Johnson and Johnson announced that its single dose vaccine was 85% effective in preventing severe disease and hospitalisation against multiple variants 28 days after vaccination. The Oxford-AstraZeneca vaccine team published preliminary results indicating 70% efficacy in preventing COVID-19 infection in The Lancet journal on 08-Dec-2020, however, this did not include data from the South African sites yet.

Zoli Study

The Ward 21 Clinical Research Site (CRS) research division is excited to announce the Wits RHI site activation of the STIZOLI_001 study which aims to assess the efficacy of a potential new antibiotic, Zoliflodacin, to treat uncomplicated gonorrhoea. This phase III trial will take place in the Ward 21/

Hugh Solomon Building CRS. Wits RHI is one of three South African sites working with sponsors from The Global Antibiotic Research and Development Partnership (GARDP) in launching this phase III trial of Zoliflodacin, in South Africa as well as the United States, the Netherlands and Thailand. Gonorrhoea is a crucial public health challenge in South Africa with rising concerns around antimicrobial resistance and we look forward to contributing to the science of gonorrhoea management.

Key Populations Programme

The Key Populations programme has developed Africa's largest sex worker prevention, care, and treatment program, with over 3,000 SW and 500 transgender individuals on ART and an average viral load suppression of 88% across the two key populations. We operate PEPFAR's first dedicated transgender health centres on the African continent. In collaboration with trans-led organizations, we have innovated clinical guidelines for gender affirming health-care services within an integrated HIV healthcare package at primary healthcare level, promoting service uptake and sustainability. The transgender programme provides an opportunity to evaluate the integration of gender affirming healthcare services and existing HIV prevention and treatment services. To date, 379 trans individuals are receiving hormone therapy through the programme.

C100

Despite all efforts to increase access to HIV prevention and ART in South Africa, incidence of HIV infection continues to be unacceptably high with an estimated 220 000 new infections per year. There is an urgent need to develop new interventions with a longer duration of action than the currently available PrEP which is based on a daily oral regimen.

The 3BNC117 and 10-1074 are two of the most potent broadly neutralizing antibodies (bNAbs) available. The combination of these two antibodies, which target two nonoverlapping epitopes on HIV-1 gp 120 provides higher breadth and potency than either antibody alone. The C100 study is situated at the Hugh Solomon Building in Hillbrow.

B-Wise

In late 2019 and early 2020, the NDoH conducted multiple stakeholder engagements to reimagine their B-Wise platform (www.bwisehealth.com). B-Wise is the official NDoH youth health platform. The Wits RHI team sits on the B-Wise 2.0 steering committee formed at the conclusion of the stakeholder engagements and has provided support in the redevelopment of the B-Wise website from strategy to implementation through technical support for content creation, brand strategy, chatbot development and marketing campaigns. The aim of the stepped care model is to reduce burden on the health care system, by channelling young people in South Africa up and down the model as their needs require and offering multiple virtual points of service that may not need human clinical intervention, or towards clinical interventions where necessary. Since re-launch in late August 2020, the SteerCo is actively involved in continuing to improve the new B-Wise platform, and is continuously integrating innovations into the platform, in a collaborative approach with NDoH, Wits RHI, WHO, CHAI, AVAC and LoveLife.

Clinical HIV Research Unit

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WHO WE ARE

The Wits Clinical HIV Research Unit (CHRU) and the Health Economics and Epidemiology Reasearch Office (HE2RO) aim to deliver excellence and quality clinical epidemiological and health economics research, services and support.

CHRU is based in Johannesburg at the Helen Joseph Hospital and HE2RO's headquarters are in Sandringham in Johannesburg and in Durban at the King Dinuzulu Hospital Complex and the HE2RO satellite sites are based in Giyani and Tzaneen.

2019 SATELLITE SITES

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CHRU Port Elizabeth
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WHO WE ARE

The Health Economics Research Office (HE²RO) is part of the University of the Witwatersrand's Faculty of Health Sciences.

An internationally recognized research and technical assistance unit, HE²RO delivers clinical, epidemiologic and health economic research services.

The unit also ensures that research information is invested at an operational level for the prevention, treatment and management of HIV and associated diseases.

The Health Economics and Epidemiology Research Office (HE2RO) aims to conduct applied, policy- and program-relevant research and evaluation on issues of public health importance in South Africa. It focuses on understanding the economic and epidemiological consequences of the HIV, TB, and NCD epidemics and other public health problems and the effectiveness, benefits, and costs of interventions.

HE²RO's headquarters are in Parktown, Johannesburg with sites based in Giyani and Tzaneen.

2020 PROJECT HIGHLIGHTS

In 2020, HE²RO continued to expand its research and evaluation projects in South Africa and its neighbouring countries. By the end of the year, HE²RO had 23 grants for research projects and associated studies underway. The highlights of the year are described below.

EVIDENCE (Evaluations to Inform Decisions using Economics and Epidemiology)

EVIDENCE is a 5-year cooperative agreement with USAID. As HE²RO moved into year 2 of this activity, 24 different studies and projects were conducted in 2020 resulting in 48 publications. Some of the highlights of the EVIDENCE studies included:

Thusa Thuso Motivational Training

Motivational interviewing (MI) counselling is a directive and collaborative counselling approach that could enable lay counsellors to effectively assist patients to navigate barriers to accepting and remaining on lifelong antiretroviral therapy (ART) successfully. An Intervention Mapping protocol was used to develop a contextually relevant MI training program for lay HIV counsellors, incorporating current evidence and theory-based behavioural change methods, and stakeholder participation. From this we developed the Thusa-Thuso "helping you help" training and support program to impart MI counselling skills in lay HIV counsellors for improved ART uptake and retention in care in the treat-all era. In addition to formal lectures, the Thusa Thuso program uses contextually-relevant modelling videos and places a strong emphasis on practical mentoring in the class and on-the-job settings, with competency assessment and feedback using the Motivational Interviewing Treatment Integrity (MITI) coding system. Finally, the training includes a much-needed wellness support component consisting of journaling for self-care and debriefing sessions.

The program has now been rolled out across PEPFAR supported districts through district support partners (DSP). In 2020, the HE²RO Thusa-Thuso team provided trainings-of-trainer (TOT) to trainers from BroadReach healthcare, ANOVA, Right to Care (RTC), MatCH and Wits Reproductive Health and HIV Institute (Wits RHI). The DSPs are now cascading the training to lay HIV counsellors in their assigned districts.

Same-day ART initiation

We conducted two studies to determine the changes in the time to ART initiation and patient attrition across the three most recent HIV treatment policies in South Africa. The results show that:

1. ART initiation trends show a positive move towards earlier ART initiation during the Universal Test and Treat (UTT) and Same-day Initiation (SDI) of ART periods, although there is a need to pay attention to patients who show little social preparation for HIV testing and mobile populations to reduce the number of patients deferring initiation up to six months
2. Patient attrition under UTT proved higher than that of previous periods. Patients initiating first-line therapy under the treat-all policy may often start treatment in better health and don't perceive a direct benefit to treatment which may deter consistent engagement in HIV treatment programmes.
3. Nearly two-fifths of HIV positive patients are likely to disengage from care by 12 months after HIV diagnosis under the new SDI policy and this is a cause for concern.
4. Our findings also highlight important gaps in the drive to achieve the ART initiation target with a need for further engagement with health care providers and improved promotion of the SDI provision to increase patient demand for early and lifelong ART (Onoya 2021).

PREDICT

We applied machine learning to routinely-collected patient visit and laboratory data from two Right to Care supported districts in the Free State and Mpumalanga province to build a predictive model of loss from ART care with a primary outcome of clinic attendance within 28 days of a scheduled clinic visit. Using additional social and behavioural data from the SLATE I and SLATE II trials conducted by HE²RO, we developed patient profiles to stratify into risk categories. During 2020, we worked with the teams at Palindrome, Right to Care and Indlela to develop a tool to deliver this risk score into the hands of health care workers and design a behavioural nudge that can be paired with the risk score to enhance the uptake of appropriate adherence interventions for at-risk patients. Field testing is planned to commence during the course of 2021.

PrEP

A study designed to estimate the costs and outcomes associated with providing pre-exposure prophylaxis to various populations using the service delivery models currently available in South Africa. The costs are estimated based on patient-level resource usage and outcomes are based on persistence 12 months after PrEP initiation. By the end of 2020, the study had collected patient-level resource data on more than 550 patients across 5 service delivery models and sites. Cost data collection has started and patient data collection continues in 2021.

TRANSLATE

The TRANSLATE modelling framework translates the results of qualitative and DCE studies into the expected cost and impact of various proposed interventions. It was used to translate the expected impact of facility-level attributes in increasing HIV/contraceptive service uptake for youth into a cost-effectiveness analysis (CEA). We used the CHoiCE discrete choice experiment (n=805) conducted in Gauteng which found that staff attitude, confidentiality, Wi-Fi, subsidized food, afternoon hours and youth-only services were preferred attributes. These preferences were used to estimate the incremental change in the uptake of services adapted for preferred attributes. Factors that have the greatest projected impact on the uptake are friendly healthcare providers and confidential services both of which are considered non-modifiable. For preferences that are modifiable, the order of interventions on the cost-effectiveness frontier are Wi-Fi + youth-only services (ICER US$7 per additional youth accessing services), Wi-Fi + youth-only services + food (ICER US$9), followed by Wi-Fi + youth-only services + extended afternoon hours (ICER US$32)

Geospatial modelling and estimates

Working with Prof. Gesine Meyer-Rath from HE²RO and Leigh Johnson from UCT, over the last two years, Dr Jeff Eaton and colleagues at Imperial College London have developed the Naomi model to produce district-level HIV estimates for South Africa and a number of other countries. The most recent public estimates, from March 2020, are available on a website developed by the project [http://www.hivdata.org.za/]; estimates for Sept 2020 incorporating the impact of COVID-19 on HIV service provision are currently being reviewed. The work on the Naomi model will be taken forward under a new grant, together with future updates to the Thembisa model (producing HIV estimates for South Africa at the national and provincial level) and HE²RO's ongoing work on economic analyses, budgets and allocative efficiency modelling for the country's HIV response. The project (called Project Linganisa, after the isiZulu word for 'estimate'), will also produce an extension of the Thembisa model to include TB (in both people living with and without HIV) as well as the country's first TB allocative efficiency model.

Scale-up of TPT preventative therapy among PLHIV

Costing and budget impact modelling of existing work by DSPs to support scale-up of TPT preventative therapy among PLHIV. Activities include determining barriers and facilitators to TPT use in outpatient settings, estimating points of loss to care in the cascade of IPT preventative care, identifying opportunities to intervene, describing the proportion of ART patients who complete IPT and factors associated with poor completion rate (by district), and preferences of users for attributes of TPT regimens and service delivery models available.

TB National Cost Model

Costing service delivery and optimising interventions for different populations and geographic locations. Activities support data required for the TB National Cost Model and TB Investment Case.

DR-TB Cohort

Ongoing development of a long-term DR-TB cohort dataset to support analyses on cost, outcomes and long-term consequences of drug-resistant TB treatment. HE²RO has updated an information system rolled out at HJH TBFP and potentially other sites to enable clinic staff to schedule visits and allows real-time monitoring of visits and tracing of missed visits - improving patient management and treatment outcomes using evidence generated from the cohort.

TB TREATMENT OUTCOMES FOR ADOLESCENTS AND YOUNG ADULTS

A study in collaboration with investigators from Sahlgrenska University Hospital in Sweden, Boston University, and the University of Stellenbosch, to describe the knowledge, risk perception, and health-seeking behaviour of adolescents and young adults attending tertiary institutions in Johannesburg, South Africa. Over half of the students had poor knowledge of TB or HIV and around 40% of students perceived their risk of acquiring HIV or TB as high. Campus health services could address many of these barriers and reduce the negative impact of care-seeking for this population.

Another study explored how TB treatment outcomes differed across detailed age groups. The results highlighted that young adults (20-24 years of age) in urban areas of Gauteng experience a disproportionate burden of loss to follow-up and low coverage of ART among co-infected patients. ART coverage among HIV co-infected patients was highest for young adolescents (64.3%) and lowest for young adults (54.0%) compared to other age groups (all over 60%).

Budget Impact of the all-oral short-course regimen for rifampicin-resistant tuberculosis

A 5-year budgetary impact and cost analysis per successful treatment outcome of four regimens: 1) injectable aminoglycoside (IA) long-course, 2) all oral long-course, 3) IA short-course, and 4) all oral short-course. Despite the high cost of bedaquiline (BDQ), a BDQ based shortened regimen for the treatment of MDR/RR-TB would result in improved treatment outcomes and a 23-25% (compared to IA long-course) cost saving per year over a 5-year time horizon for South Africa.

Although USAID remains HE²RO 's primary funding source, grant funding has diversified considerably. Highlights of studies awarded under other donors include the following;

AMBIT

(Alternative Models of ART Delivery: Optimizing the Benefits) - a research and evaluation project to understand the scope and impact of differentiated service delivery (DSD) models for HIV treatment. In 2020, the AMBIT team began data collection in

the project's three focus countries, South Africa, Malawi, and Zambia, under the GREAT (Gathering Records to Evaluate Antiretroviral Treatment) protocol to access and analyze existing medical record data of patients enrolled in DSD models. A new multi-country protocol, known as SENTINEL, was developed to collect primary data from a sample of healthcare facilities to complement electronic medical record data. Work also continued on a mathematical model, known as ADAPT (Alternative Delivery of ART oPTimization), to help guide the DSD model mix and maximize the potential benefits of DSD expansion while minimizing costs.

EQUIP

Economic evaluations of differentiated service delivery (DSD) models for HIV treatment in Lesotho, Malawi, Uganda, Zambia, and Zimbabwe. In 2020, HE²RO completed studies of the costs and outcomes of routine differentiated service delivery for HIV treatment in Zambia and Uganda and conducted the economic evaluations of DSD model trials in Lesotho, Malawi, Zambia, and Zimbabwe. The studies all found that DSD models for stable ART patients produce non-inferior or slightly better rates of patient retention in care, compared to conventional service delivery. Cost results were mixed: models that did not truly "de-intensify" care but rather shifted patient/provider interactions to other locations or times generally cost a little more than conventional care, while models that incorporated six-month dispensing did reduce the average number of interactions required per year and were generally slightly less expensive than conventional care. Where data on patients' own costs of seeking treatment were collected, they showed substantial savings to patients who participated in most DSD models.

TB Sequel

A socio-economic sub-study of TB Sequel, an ongoing multi-country, multi-center observational cohort study that aims to advance the understanding of clinical, microbiologic, and host immune factors affecting the long-term sequelae of pulmonary TB. In 2020, the HE²RO team presented results at the 51st Union World Conference on Lung Health, highlighting that even before starting treatment, TB has a substantial impact on the individual and their household's financial status. Results showed that a third of patients reported a moderate to severe economic impact of TB; 7% used their savings while 4% borrowed money to help pay for pre-treatment expenses. Patients who have a poor health-related quality of life at the start of TB treatment were more likely to have sub-optimal adherence during TB treatment. They also report a high prevalence of depression at the start of TB treatment (34%), and while psychological measures improve with each month on TB treatment, there are still patients (15%) who continue to report a low mental component summary (MCS) score and psychological distress after treatment completion. Untreated depression in people with tuberculosis is associated with worse treatment outcomes, poorer quality of life, and greater disability.

Indlela - Behavioural Insights for Better Health

In January 2020 we launched the Indlela project, a collaboration between HE²RO and the University of Pennsylvania's Center for Health Incentives and Behavioural Economics (CHIBE). Indlela aims to build capacity to design and test nudges and other behavioural solutions to improve the effectiveness of the public sector in delivering health care and achieving better health outcomes for HIV in South Africa. An External Advisory Board (EAB) was appointed with representatives from

government departments, IAS, SANAC, USAID and CDC, Discovery Health and a number of academic, research and implementing organisations and institutions from around South Africa and the USA. The Indlela team also disseminated three quarterly newsletters and developed 3 tip sheets including a guide on behavioural interventions for HIV service delivery during the COVID pandemic. Initial webinars to show how behavioural economics can be applied to HIV prevention and treatment were conducted, followed by a workshop series launched in December 2020 with over 30 representatives from 21 organisations to build capacity in behavioural economics concepts and guide the development of behavioural insights tests. Individual consultations were also held with several organisations and three behavioural insight test projects are already under development.

COVID-19 Response

A HE²RO team led by Prof. Meyer-Rath has been part of the SA National COVID Modelling Consortium alongside MASHA (UCT), SACEMA (Stellenbosch University) and NICD since early March 2020 and is regularly consulted by NDoH, National Treasury and the various Ministerial Advisory Committees on COVID (of which Dr Jacqui Miot and Prof. Gesine Meyer-Rath are appointed as members). Alongside the epidemiological modelling, HE²RO led the development of the National COVID-19 Cost Model, in collaboration with other institutions, which has been used to assist national and provincial Departments of Health and Treasuries in resource allocation and budgeting for the health COVID-19 response. More recently, on request from NDoH and National Treasury, HE²RO has become involved in the COVID vaccine modelling and costing with funding from USAID (EVIDENCE and EQUIP Health Project), and has been tasked with developing and updating the country's COVID-19 vaccination budget. Other contributions the HE²RO and BU teams have made to the COVID response is working on optimising testing prioritization algorithms and conducting economic evaluations on various pharmaceutical interventions for COVID.

The Birth-to-2 cohort in Limpopo

A cluster-randomized trial integrating a package of home-based early childhood interventions into existing community health worker protocols in South Africa The study is designed to evaluate the impact and scalability of an innovative package of home-based interventions designed to improve early childhood health and development. Over 500 community healthcare workers (CHW) and over 1,000 caregiver/child pairs from Greater Tzaneen and Greater Giyani, Limpopo province have been enrolled and followed from birth. Early results show that a parent support curriculum delivered by CHWs during monthly home visits significantly improved child neurodevelopment at 17 months of age and follow up to 36 months of age is currently underway.

There are three sub-studies nested within the larger trial:

1. Measuring infant neurocognitive development: EEG and eye-tracking in South Africa
2. Child Nutrition, Systemic Inflammation, and Cognitive Development in South Africa
3. Religious Beliefs and Cognitive Development in a Cohort of Rural South African Children

NEW GRANTS IN 2020

ENCORE

Evaluating UTT with an Integrated National HIV Cohort to Optimize S. Africa's HIV

Response (ENCORE) - updating the NHLS National HIV Cohort through the UTT era and linking it with data from South Africa's facility-based ART monitoring and evaluation system. The National HIV Cohort developed in collaboration with the National Health Laboratory Service (NHLS) and Boston University, enables longitudinal follow-up of all patients nationally from clinical presentation to viral suppression regardless of where they seek care. The cohort is unique in its ability to follow patients who transfer to other facilities without informing their prior clinic. We will use this integrated cohort to quantify losses at each stage of the UTT cascade and to assess system wide retention and transfer in the UTT era. We will then evaluate the impact of two UTT policies – eliminating CD4 criteria and implementing same-day ART – on time from clinical presentation to ART uptake, retention, and viral suppression.

Integrating U=U into HIV Counselling in South Africa (INTUIT-SA)

A formative research study to develop an app-based video intervention that will provide information on the prevention benefits of ART in South Africa and foster HIV prevention altruism. The study pilots an intervention in a clinical trial of recently diagnosed HIV patients to assess feasibility and acceptability, impact on treatment-as-prevention (TasP) knowledge and attitudes, and ART uptake and adherence through six months (primary outcome). The study builds on a longstanding collaboration between Boston University and HE²RO.

CETA

A randomized controlled trial of HIV-infected women to evaluate the impact of the Common Elements Treatment Approach (CETA), an evidence-based intervention comprised of cognitive-behavioural therapy elements, at improving HIV treatment outcomes among women with HIV who have experienced intimate partner violence (IPV) and have an unsuppressed viral load on HIV treatment. The study also identifies mediators and moderators of CETA's effect on retention and viral suppression and assess the cost and cost-effectiveness of CETA vs. active control at increasing the proportion who are retained and virally suppressed by 12 months.

National HIV Pregnancy Cohort

This project will expand on the South African National HIV Cohort. to use routinely-collected laboratory data to develop a cohort of pregnant women living with HIV in South Africa. The aim is to describe key treatment milestones, including engagement in antenatal care, initiation of ART, HIV viremia, and continuity of HIV care in the postpartum period. The study also measures the effect of system-wide factors impacting continuity of care among pregnant women, assesses policies of expanded treatment access on continuity of care using regression-discontinuity analyses and assesses mobility and its effect on the continuity of care during and after pregnancy. Individual-level risk factors for loss from HIV care are identified in order to develop targeted interventions to improve engagement in HIV care.

HIV Case Studies

In 2020, HE²RO conducted a case study of how data from cost analyses and other economic evaluations is used to inform health policy in the areas of HIV, TB, and sexual and reproductive health in South Africa. We summarise results across the process of implementing a new intervention, barriers to the use of cost data and suggested solutions, and the transferability of experiences to the planned South African implementation of universal

health coverage (UHC). Based on this rich data, we suggested concrete steps towards the improvement of economic data use in the planning and the establishment of structures mandated under the transition to UHC.

OTHER HIGHLIGHTS: MENTORSHIPS IN 2020:

Principal Researchers from HE²RO supervised 6 PhD students and 3 Master's students from local and international universities in 2020 with 1 MSc (Epidemiology) completed Cum Laude. In addition, we hosted 3 Fogarty fellows as an international research site of the HBNU Fogarty Global Health Training program.

58 staff members completed the TRREE e-learning module on the Introduction to Research Ethics in 2020 as part of the ongoing-capacity building efforts at HE²RO.

STAFFING IN 2020:

Researchers from HE²RO continue to play active roles in national think tanks and working groups including the National TB Patient Cost Survey Technical Advisory Group (Denise Evans), National TB Think Tank - Optimizing TB Treatment Outcomes and TB Epidemiology Modelling and Health Economics Task Team (Denise Evans), Differentiated Models of Care Technical Working Groups (Sophie Pascoe), Global DSD Research Collaborative (Sophie Pascoe), HIV Think Tanks (Gesine Meyer-Rath, Joshua Murphy, Lise Jamieson, Caroline Govathson and Amy Huber), Council for Medicals Schemes Costing Committee PMB Review (Jacqui Miot), National Medicines Pricing Committee (Jacqui Miot) and others.

HE²RO has also been leading in advising the South African government on aspects of the COVID-19 response, including as part of the Ministerial Advisory Committee on COVID-19 (Jacqui Miot and Gesine Meyer-Rath), several work streams of the Ministerial Advisory Committee on COVID-19 Vaccines (Gesine Meyer-Rath), and the COVID-19 Costing Committee (Jacqui Miot, Gesine Meyer-Rath and Kerensa Govender,). Gesine Meyer-Rath, Lise Jamieson and Brooke Nichols are additionally part of the South African COVID-19 Modelling Consortium.In response to the COVID-19 pandemic, HE²RO worked with the National TB Think Tank “Optimizing TB Treatment outcomes” to describe the impact of the lockdown and pandemic on TB patients, identify opportunities that arose from the COVID-19 response and explain how these could be used to address TB in South Africa. HE²RO also chaired a session during the TB Union Conference on the epidemiological and economic burden of post-TB.

Perspectives from this meeting were published in IJTLD and discusses priorities and gaps in addressing post-TB lung health. Researchers across HERO presented and conducted seminars at the 20th International Conference on AIDS and Sexually Transmitted Infections in Africa (ICASA), CROI 2020, AIDS 2020-virtual as well as other international and local conferences and workshops. HE²RO staff continue with national and international collaborations. HE²RO published 48 peer-reviewed journal articles in 2020. The total grant income for HE²RO in 2020 exceeded R79 million.

HE²RO KEY FUNDERS:

USAID remains HE²RO 's key funder both through the EVIDENCE award as well as under the EQUIP Health Project. In addition, the Bill and Melinda Gates Foundation (BMGF) has provided funding for 2 studies, including the launch of a behavioural economics unit in collaboration with the University of Pennsylvania for 2020 and we received funding from the NIH for three R01 and one R34 studies.

SA MRC Centre for Health Economics and Decision Science-Priority Cost Effective Lessons for System Strengthening SA

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WHO WE ARE

PRICELESS SA undertakes research and provides evidence that demonstrates how to improve health and life expectancy in South Africa and across sub-Saharan Africa. Our priority areas are: maternal and child health, non-communicable diseases, nutrition in the first 1,000 days, preventing road traffic injuries and deaths, health-promoting polices, and health systems and health systems reform.

PRICELESS SA is the leading Southern African institution for formal, degreed postgraduate teaching in health economics and decision science. We also offer a series of short courses and workshops on vaccine economics targeted for policymakers, public health professionals and academics.

PRICELESS SA engages with policymakers, the public and the media to strengthen insight and expertise for setting priorities for South African health.

PRICELESS SA publishes widely and often in peer-reviewed academic journals, and contributes opinion pieces in the mainstream media.

Our multidisciplinary team includes health economists, clinicians, and researchers with backgrounds in sociology, anthropology, epidemiology, health services and law.

RESEARCH IN 2020:

In 2020 PRICELESS published 22 peer reviewed articles on a range of topics from health economic methodology, the evaluation of the Health Promotion Levy, community perspectives relating to mother and child health service prioritization, cost and ethical issues relating to COVID 19.

OUR KEY FOUNDERS

The PRICELESS research unit was founded in 2009 by Prof Hofman and was nested in the MRC/WITS Agincourt unit 2013. In 2020 Prof Hofman was awarded PRICELESS was awarded the prestigious Vice Chancellors Social Impact Research illustrating the value of the work of PRICELESS for the health of South Africans and beyond.

COVID 19 WORK

From the beginning of the pandemic PRICELESS has provided technical support in many areas of the COVID-19pandemic, engaged continually with media to enable interpretation of complex issues, supported advocacy for safer behaviours (such as hand washing), costing of various options of ICU care, and engaged in discussions about ethics, rights and fair distribution of resources in the time of COVID-19. In addition staff have volunteered in various capacities.

MENTORSHIPS IN 2020

In 2020, the second cohort of students started the Wits MPH in Health Economics. One member of PRICELESS staff completed her PHD, one started her PHD and PRICELESS had one Post Doc Fellow. Six Masters students and 3 doctoral students are being mentored by PRICELESS staff.

STAFFING IN 2020

In 2020 PRICELESS engaged Petronel Kruger, a public health lawyer, Lee Randall – a Post Doc fellow, Dr Teurai Rwafa as a senior researcher as well as Patience Mushamiri and Natasha Mazonde as research assistants.

MatCH Research Unit Department of Obstetrics and Gynaecology

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WHO WE ARE

MRU is affiliated to the University of the Witwatersrand's Faculty of Health Sciences, the School of Clinical Medicine and to the Department of Obstetrics and Gynaecology. MRU is based in Durban and our research is carried out at our site, in the surrounding communities and in health facilities depending on the project.

Using a range of methodologies, we conduct behavioural, operations and clinical research, actively partnering and involving communities and local structures. We also provide technical assistance, partnering with various stakeholders including the Department of Health and other NGOs to affect policy change and enhance best practice. We work with diverse partners, collaborators and donors, including local and internationally based universities and research centres.

In 2020 MRU published 24 articles in peer-reviewed journals and presented our work at a range of virtual international conferences and meetings.

Research in 2020

In 2020, we learnt how to manage our research studies during the COVID-19 pandemic. MRU made plans to continue all our studies during the various lockdowns to ensure staff and participant safety was prioritized. Strategies employed included converting some on-site study visits to telephonic follow-ups, implementing strict social distancing in our offices, staff rotation, sanitization and PPE protocols. Staff and participants are monitored for symptoms on a daily basis. We liaised with the University of the Witwatersrand Human Ethics Committee (HREC) and the South African health Products Agency (SAHPRA) to communicate our strategies and changes required for our studies.

Highlights of our active studies by topic area in 2020 are detailed below:-

HIV Prevention

We continued our programme of work in Pre-exposure prophylaxis (PrEP) for HIV Prevention. One of these ground breaking studies at MRU which completed recruitment in 2020 is being carried out in collaboration with the University of Alabama. This five-year NIH grant was awarded for the Zivikele ngaphambi kokukhulelwa (ZINK): Protecting yourself before pregnancy study which is offering PrEP as part of a safer conception package.

Analysis and dissemination continued on a completed NIH funded study - Siyaphanta, Siyavimba! Which explored female sex workers' (FSW) knowledge, attitudes, and experiences with pre-exposure prophylaxis (PrEP) and treatment as prevention (TasP), and other prevention options.

A successful seed application for a joint collaboration with researchers at Queens University, Belfast was awarded in 2020 to MRU. This study is exploring women's preferences and attitudes to different vaginal ring product attributes. The planned focus group discussions (FGDs) were postponed in 2020 due to COVID and rescheduled for 2021. The team at Queens developed vaginal rings in different sizes, colours and fragrances to be shown to women and their opinions on the product attributes and preferences will be discussed. This seed grant aims to lead to longer term collaboration through joint funding applications between both MRU and Queens.

We conducted a national on-line condom perception survey to assess user knowledge, attitude and perceptions of the public sector male and female condoms - Max and Maxima.

Maternal health in HIV positive women

We completed enrolling in our NIH funded study - PEPEHC (Evaluation of Postpartum Engagement in HIV Care) which aims to estimate the rate of attrition from HIV care and to identify factors associated with attrition from and retention in HIV care during the postpartum period. The study enrolled 473 currently pregnant women, living with HIV and currently pregnant. Participants are followed up over a period of two years. An additional COVID component was added to assess the impact of the pandemic on study participants in HIV care.

We are collaborating with the Wits Clinical HIV Research Unit in a study looking at the acceptability of combination treatment for cervical precancer in South African women living with HIV. MRU is involved in supporting the qualitative component of the formative Research for this study.

Contraception

We continued to write up the results of the ECHO Trial (The Evidence for Contraceptive options and HIV Outcomes): A Multi-Center,

Open-Label, Randomised Clinical Trial Comparing HIV Incidence and Contraceptive Benefits in Women using Depot Medroxyprogesterone Acetate (DMPA), Levonorgestrel (LNG) Implant, and Copper Intrauterine Devices (IUDs). This trial compared the risks of HIV acquisition between women randomised to Depot Medroxyprogesterone Acetate (DMPA), Levonorgestrel (LNG) implant, and copper IUDs. Additionally we followed up a sample of 434 women who completed the ECHO trial in a new study:- CUBE: Contraceptive use dynamics beyond the ECHO trial: This study assessed long-term (24 months) user experiences and method continuation from the two MRU ECHO KZN sites (Durban and Edendale) and the ECHO Zambia site. An additional COVID component was added to assess the impact of the pandemic on uptake and continuation of contraception.

Our condom research programme continued enrollment in the female condom contraceptive efficacy (CoCo) study. Women are being randomized to one of three female condom types and are followed up monthly.

KEY POPULATIONS

The HIDE study:- Hidden Epidemic: Using respondent-driven sampling to engage people who inject drugs in South Africa into the HIV continuum. This study aims to understand the HIV prevention and treatment needs of this population and how to better engage them into care. It will employ qualitative methods to assess access to and acceptability of HIV prevention and treatment services among People Who Inject Drugs (PWID) in KwaZulu-Natal.

MENSTRUAL MANAGEMENT

Our menstrual management programme continued through 2020, with menstrual cup education and distribution activities in eThekwini schools and an evaluation of menstrual health management in female learners in KwaZulu-Natal, Eastern Cape and Gauteng.

MRU continued to provide support to the Provincial and National Departments of Health (DoH) (SRH) in policy and programme issues in the area of sexual and reproductive health.

OUR KEY FOUNDERS

Prof Jenni Smit, Prof Mags Beksinska and Ms Zonke Mabude.

MENTORSHIPS IN 2020

MRU focused on capacity building and training of researchers locally, regionally and internationally during 2020 with three PhD students (one in Uganda), and one Masters study being supervised by MRU researchers. Due to COVID-19 we were unable to host students physically at our site,however we continued to work with interns from previous years to analyse and write up papers.

STAFFING IN 2020

Our team consists of highly skilled research, clinical, laboratory, community, data and administrative staff from a wide range of backgrounds including clinical, behavioural and social sciences.

Health Systems Enablement and Innovation Unit

CO DIRECTORS

Health Systems Enablement & Innovation

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WHO WE ARE

Health Systems Enablement & Innovation (HSEi), a syndicate under the Wits Health Consortium, supports national health systems in South Africa and across the African continent through research, professional advice, service and healthcare delivery systems redesign.

We study enablement amongst individual patients, patient populations, health services and health systems with a focus on underserved and vulnerable populations. We harness ideas and initiative and test alternatives as the health systems prepare for universal health coverage.

HSEi offers a highly specialized service, leveraging off the cumulative experience and expertise of the specialists in the unit. We are not just researchers and scientists but reliable partners, experts and activists uniting behind the restoration of dignity and care of marginalized populations.

We are innovators of healthcare systems that prioritize the support of national health systems to achieve their goals. We explore alternative health care delivery models to promote access to equitable quality health care in particular for under served populations. We are always keen on the alternative solution and ensure long term value for our clients.

Our motto is "Dignity Through Healthcare!"

WHERE WE OPERATE

In addition to our head office operations in Gauteng, South Africa, HSEi operates in Kwa- Zulu Natal, Eastern Cape, Gauteng and Mpumalanga.

OUR APPROACH

HSEi works with partners to produce innovative healthcare delivery solutions. We do not just produce knowledge, we document each alternative approach. We endeavor to become the bridge between the privileged and the underserved. We understand that healthcare systems are in need of transformative and sustainable solutions. We acknowledge potential and have created enabling specialist structures and strategies in place to ensure that health systems realise their true potential. We care about our patients and have a deliberate focus on vulnerable populations.

OUR FOUNDERS

HSEi is led by two dynamic health practitioners and thought leaders, Dr Itumeleng Funani and Dr Wezile Chitha. Together, they desire for HSEI to remain synonymous with excellence in transforming health systems. Dr Funani has served as a technical advisor for the HIV, AIDS, STI and TB cluster and as technical advisor to the office of Director General, National Department of Health. Dr Chitha has served in several capacities in the public health sector, academic health governance, clinical governance and health systems management. The vision of HSEi is supported and translated by a multidisciplinary team of project staff, researchers and clinical specialists.

OUR PROGRAMMES

HSEi runs three programmes, namely the clinical service programme, research programme and capacity building, health systems strengthening & technical support programme.

CLINICAL SERVICE PROGRAMME

ETHEKWINI ONCOLOGY SERVICE

KZN Department of Health has experienced challenges in three Oncology centres, namely Inkosi Albert Luthuli Central Hospital, Addington Hospital and Grey's Tertiary Hospital. All three centres are supposed to offer a comprehensive package of both chemo and radiation therapy but rapidly growing demand for the services and shortage of oncologists left the Department with critical backlogs of patients requiring access to the oncology services.

The HSEi, in partnership with the KZN Department of Health, provided Oncologists to provide specialist cancer services in Inkosi Albert Luthuli Central Hospital, Addington Hospital and Grey's Hospital since 2018. The mandate focused on clinical support, providing oncologists, and providing project management and administration support.

The services commenced from April 2018 to October 2020. Oncologists were allocated at Inkosi Albert Luthuli Central Hospital and Addington Hospital as an intervention in response to a crisis precipitated by the collapse of cancer services in the region since 2016/7. Following HSEi intervention, services were stabilized, all relevant oncology clinics became fully operational and continued to manage to improve the lives of many patients that were affected by oncology service failure and disruptions in the KZN Province. Through the HSEi, the dire situation was turned around to assist the KZN DoH to achieve its mandate and mission to develop and implement a sustainable, coordinated, integrated comprehensive cancer care to the people of KZN.

MPUMALANGA ONCOLOGY INITIATIVE

The project aims to provide comprehensive oncology services to Mpumalanga's population of more than 4 million. We have started at Rob Ferreira Hospital. Prior to 1 August 2019, patients diagnosed with cancer had to be all referred to Pretoria, Steve Biko Academic Hospital (SBAH) for further care.

The patient morbidity was further exacerbated by transporting these sick patients from early hours of the morning from Mpumalanga to Gauteng province. It is against this background that Mpumalanga department of health pursued this project as an urgent intervention to find expertise and provide the much-needed oncology services to the province. The HSEi took the challenge of introducing expertise to the project and setting up a tertiary oncology service from scratch. The service is an outpatient chemotherapy service and meets all minimum requirement. Staff appointed included 4 oncology trained nurses including operational manager, the 2 professional nurses, 2 medical officers and 2 oncology consultants daily. For admin support 4 clerical support with administrative duties, patient appointment bookings and follow-up dates scheduling.
Fifteen months since its inception, the unit started seeing 27 patients on the first month in August 2019, to 294 patients in August 2020, and that has escalated to 382 patients seen per month as in November 2020. There is a teaching of medical officers and nurses by oncologists to fast track skills transfer to the team. We are now working with province to develop the radiation, provide access to quality palliative care and decentralize cancer care to Witbank Hospital and district health services.

DECENTRALISED CANCER CARE PROGRAMME

Comprehensive oncology care services in the Eastern Cape were only limited to the western and the central regions of the province, namely Port Elizabeth with their hospital in Livingstone and East London in Frere Hospital respectively. The eastern region of the Eastern Cape comprises of the former rural Transkei, which is characterized by poverty, poor infrastructure and low illiteracy, is serviced by the Nelson Mandela Academic Hospital with no comprehensive oncology department. This hospital services a population of almost 3,5 million and has a drainage of 24 referring hospitals (district and regional). Prior to the implementation of the programme, patients used to receive only chemotherapy service from oncology trained nurses based on a prescription that was done in East London, 250km away. The goal of initiating the cancer care programme in April 2018 was to establish a centre of excellence in oncology care that will address earlier detection of lung and other cancers, provide more accurate diagnosis, provide better palliative treatments and improve morbidity and mortality rates. The funder, Bristol Myers and Squibb foundation (BMSF) aimed to support access to much needed oncology care. Prior to the initiation of the project all patients diagnosed with cancer would travel to East London, 250km away to Frere hospital to seek oncology care and treatment.

The project has appointed 1 oncology specialist, with 5 medical officers, 6 chemotherapy trained nurses, 2 allocated pharmacists that were trained in pharmacy oncology, an appointed social worker, a psychology counsellor, nurse navigators for the patients, as well as data capturers. At the start of the project, in April 2018, 50 patients were seen per month. In 2020, the clinic services 369 patients per month.

Chemotherapy is offered to 94 patients a month. Five referring hospitals, namely Mthatha General Hospital, St Barnabas Hospital, St Elizabeth Hospitals, Madzikane kaZulu Hospital and St Patrick's Hospital are being capacitated (with equipment, ICT and staff) to provide decentralized cancer services including follow-up chemotherapy and palliative care. Outreach services including screening campaigns, counselling services and follow-up psychosocial support have been implemented to promote awareness, early diagnosis and provide psychosocial support to patients and their families. The common cancers seen include the breast, cervix, prostate, Kaposi sarcoma and esophagus and lung cancer.

MPUMALANGA RADIOLOGY SERVICE

Owing to the lack of radiologists in Mpumalanga, the provincial department of health resolved to explore alternative ways to provide a radiologist led clinical service to support its health services. This resulted in the partnership with HSEi for the provision of radiology services in two tertiary hospitals (Rob Ferreira Hospital and Witbank Hospital) and two regional hospitals (Ermelo Hospital and Themba Hospital). This prompted the DOH to source out radiology services from the private sector. The scope of work was as follows: Take responsibility for imaging radiology services, administration of day-to- day operations of radiology departments, analysis, review and evaluation of hospital need, implement workflows to ensure safe and efficient operations and ensure delivery of world class radiology services by providing on ongoing training of staff and review protocols.

Since its inception in March 2020, the project can account the following achievements: registration of radiology equipment with Radiation board of South Africa, set up of teleradiology services that connect the Ermelo, Witbank, Rob Ferreira and Themba hospitals , the placement of radiologists in all 4 hospitals daily, afterhours radiologist coverage including weekends and public holidays, accessibility of radiologists clinical consultations (clinicians can interact with radiologists during working hours and afterhours), transversal training of radiographers and professional leadership and support. The province now provides a 24-hour radiologist service for its tertiary and regional hospitals. We are now working with the province to expand the radiology service to Mapulaneng Regional Hospital.

Capacity building, Health systems strengthening & Technical support (CHEST) Programme

The HSEi played a critical role in strengthening the capacity of the provincial health platforms to provide tertiary and regional hospital services and support development of district health services. Our support is provided on request, in support of the development of Centres of Clinical Excellence and strengthening of the health service delivery platform. For example, at the request of the province, we have documented a case study of the provincial response to the COVID-19 in Mpumalanga.
As a value-add to the development of Centres of Clinical Excellence in Oncology and Radiology, we have implemented a focused Clinical Governance Development and Support programme for oncology (both Mpumalanga and Eastern Cape) and radiology (Mpumalanga).

In order to strengthen the capacity quality cancer care, we have implemented an Oncology Clinician Training Programme for Healthcare Providers in Mpumalanga (Rob Ferreira Hospital and its drainage area) and Eastern Cape (Nelson Mandela Academic Hospital and its drainage area) through the

support of BMSF. This included palliative care training, breast cancer training and cervical cancer training.

In order to prepare for the strengthening of oral health services in Mpumalanga, HSEi worked together with the School of Oral Health Sciences to conduct the Oral Health Audit and initiated Maxillo-facial Specialist Outreach to Rob Ferreira Hospital. We are now working with the province on oral health priorities and development of implementable action plans from the audit.

RESEARCH PROGRAMME

(i) Public hospitals, clinical management systems and universal health coverage The primary purpose of the proposed research is to generate knowledge and build capacity in public hospitals, clinical management systems, hospital services and governance in health as the country prepares itself for the national health insurance. This project locates itself in two rural provinces with a high degree of under-development and marginalization, namely Eastern Cape (Nelson Mandela Academic and St Elizabeth Hospitals) and Mpumalanga Provinces (Witbank and Themba Hospitals). The HSEI in collaboration with the South African Medical Research Council (SAMRC) intends to conduct research in public hospitals, clinical management systems and universal health coverage. The Research Programme includes four pillars, namely, Hospital administration, clinical management systems, hospital services strengthening and hospital governance.

(ii) The Hospital as a learning organisation This project, a collaboration between HSEi and Knowledge Management for Health Research Unit (KM4HRU), seeks to explore the understanding of learning organisations in the hospital context. It looks at what systems are there to enable the learning of healthcare professionals within the hospital. For example, healthcare delivery relies heavily on knowledge and evidence-based medicine, the delivery of care relies on the cooperation of several partners that need to exchange their knowledge in order to provide quality care and that exchange of knowledge can only happen in a learning organisation where people are willing to share knowledge. This study is envisaged that it will contribute toward providing rich knowledge on the learning practices of health professionals, and to create hospitals that are learning organisations in the South Africa context. Practically, we expect that the findings will provide guidance for development of guidelines and policies on learning hospitals.

(iii) Information behaviour of health professionals in the hospital setting This is a collaborative research project between HSEi and KM4HRU that seeks to explore and understand the information behaviour of health professionals in the hospital setting. The study is motivated by the "Health Information for all by 2015" under the aegis of Global Healthcare Information Network. Moreover, the South African health information policy advocates for access to reliable health information for health professionals. The researchers believe that understanding information behaviour of health professionals will assist in the provision of relevant information for them.

Additionally, the understanding of information behaviour of health professionals will also contribute to the governments preparations for the enrolment of the national health insurance which will require a national health system that produces quality health outcomes. It is also envisaged that knowledge on

information behaviour of health professionals will assist information providers such as health science libraries and health resource centres to re- engineer their services to suit information seeking behaviour of health professionals.

(iv) Cancer Health Economics, Analysis of Policy & Evaluation Research (CHEAPER) Programme

The HSEi, in partnership with the Bristol Myers Squib Foundation (BMSF), intends to undertake health economics, analysis of policy & evaluation research in the area of cancer. CHEAPER will focus on building capacity, conducting research and producing local knowledge on cancer focusing on health policy, financing, economic evaluations and care delivery systems. The partnership with BMSF intends on promoting health equity and improving the health outcomes of underserved populations in the African continent through the application of health economicsanalyses, systems and tools on cancer. CHEAPER draws inspiration from BMSF global efforts including, amongst others, The Secure the Future Initiative and The Bridging Cancer Care Initiative.

The initial focus of this research programme will be to: partner with BMSF and focus on lung cancer health economics, policy and systems research; build capacity (skills, systems and tools) for conducting cancer health economics & policy research; establish baseline and create a common understanding of the national cancer plans, cancer services, and cancer care delivery systems and strategies; determine current funding strategies, sources and arrangements for cancer care; conduct costing studies for lung cancer care and compare to costs associated with common cancers; conduct a prospective analysis of provider costs and out-of-pocket costs associated with cancer care and conduct research and/or document cancer care delivery systems and their contribution to health systems strengthening.

(v) Decentralized Cancer Care

The Mpumalanga and Eastern Cape Provinces are confronted by the similar challenges. They lack the infrastructure, resources and expertise to provide quality, safe and accessible radiotherapy, chemotherapy, palliative care services and surgical cancer services. Patients from rural communities, who generally cannot afford private health care and are dependent on state health services for cancer care, are compelled to travel long distances to the urban-based tertiary cancer care centres to access cancer care. Patients, their caregivers and/or the state incur high costs in pursuit of access to cancer care. There is a need to look at alternative models of cancer service delivery that will, amongst others, make use of technologies, task-shifting, mobile healthcare delivery solutions and community-based care delivery to strengthen health systems, improve access to high-quality cancer care, reduce costs of accessing cancer care and improve health outcomes. The study seeks to conduct a baseline assessment of the demographic, epidemiological and clinical profile of various cancers, describe existing model of delivery of cancer care and explore the feasibility, implications, essential strategies and outcomes of decentralizing cancer care delivery in the Eastern Cape and Mpumalanga Provinces.

Perinatal HIV Research Institute

PROFESSOR NEIL MARTINSON

EXECUTIVE DIRECTOR

PHRU
IMPROVING LIFE THROUGH RESEARCH
Perinatal HIV Research Unit of the University of the Witwatersrand

WHO WE ARE

Perinatal HIV Research Institute (PHRU) is a large clinical research unit with capacity to conduct a range of observational and clinical trial studies in multiple research sites across South Africa. Although our primary research site remains Soweto after 23 years. We also conduct clinical and community research in Gauteng, Limpopo, North West and Free State, provinces where we are growing capacity.

The Perinatal HIV Research Unit (PHRU), improves life through research. PHRU'sresearch scope spans HIV and TB prevention and treatment and has an emergingfocus on mental and cognitive disorders, cancer and diabetes.

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Vaccines and Infectious Diseases Analytics Research Unit

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WHO WE ARE

Wits VIDA Research Unit conducts cutting-edge scientific research. Our aim is to continue to save lives across Africa and low and middle-income countries (LMIC) through translational research that informs local and global policy recommendations on infectious diseases and the use of next-generation and novel vaccines. Formerly known as the Respiratory and Meningeal Pathogens Research Unit (RMPRU) and founded in 1995, the Vaccines and Infectious Diseases Analytics (VIDA) Research Unit of the University of the Witwatersrand is an internationally recognised, African-led research unit in the field of epidemiology of vaccine preventable diseases, and clinical development of life-saving vaccines.

Under the guidance of Professor Shabir Madhi, a globally-recognised leader in the field of paediatric infectious diseases and the Dean of the Faculty of Health Sciences at the Wits University, Wits VIDA is conducting translational research on vaccine preventable diseases and training the next generation of clinician scientists.

Wits Clinical Research Unit

DOCTOR AYSHA BADAT

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WHO WE ARE

With WHC providing the core infrastructure, WITS CLINICAL RESEARCH is free to focus on conducting quality research in the fields of cardiology, cardiovascular risk factors (hypertension, smoking cessation, obesity, hypercholesterolemia, and diabetes), endocrinology, rheumatology, oncology, infectious diseases, respiratory, nephrology, gastroenterology, urology, surgery, vaccines and general medicine.

Our team of dedicated physicians and site staff are based at the Charlotte Maxeke Johannesburg Academic Hospital and the Chris Hani Baragwanath Academic Hospital in order to cover the high-density population located in the City of Johannesburg to the greatest extent. This large geographical coverage, along with an extensive patient database, and passionate recruiters at academic and government hospitals, day hospitals and local physicians, ensure for successful patient enrolment in the studies at WCR.

Adherence to Good Clinical Practice Guidelines (ICH GCP) and South African Guidelines is first and foremost at WCR, and site Standard Operating Procedures reflect this commitment

Medical Research Council / Wits Rural Public Health and Health Transitions Research Unit

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WHO WE ARE

The MRC/Wits Rural Public Health and Health Transitions Research Unit (the MRC/Wits-Agincourt Unit) is located in rural northeast South Africa, close to the Mozambique border.

The unit includes the Agincourt health and socio-demographic surveillance system (HDSS) as a longitudinal research platform established in 1992.

The Medical Research Council / Wits Rural Public Health and Health Transitions Research Unit (Agincourt) aims to better understand the dynamics of health, population and social transitions in rural South and Southern Africa in order to mount a more effective public health, public sector and social response. We support advanced research training and develop systems to render data more widely available

Clinical Laboratory Services

MR SULIMAN MINTY

CHIEF EXECUTIVE OFFICER

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WHO WE ARE

Clinical Laboratory Services (CLS) is a division of the Wits Health Consortium of the University of the Witwatersrand School of Pathology, Johannesburg South Africa. It was established in the year 2000 by the Head of Research at CLS, Prof Wendy Stevens to offer diagnostic laboratory services for clinical trials, research studies and hospitals linked to the academic complex.

As CLS is committed to supporting research and ensuring we have a strong academic link. All revenue generated at CLS is fed back into the School of Pathology to grow all disciplines of pathology and research within the University of the Witwatersrand.

Wits Pathology, the division of CLS dealing with private patients, was opened on the 8th January 2004. It is positioned to offer a specialized diagnostic pathology academic service to the clinician and provide a professional, caring environment to the patient. The DGMC (Donald Gordon Medical Centre) is geared to offer super specialty medicine such as Oncology, Surgery, Hepatology, Nephrology, Medicine, Orthopaedics and Transplantation. The academic Transplant division headed by Prof Russell Britz/Prof Jean Botha is in line with international standards and adheres to the International criteria.

Empilweni Services and Research Unit

PROFESSOR ASHRAF COOVADIA

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WHO WE ARE

The Empilweni Services and Research Unit (ESRU), situated at Rahima Moosa Mother and Child Hospital in Johannesburg - South Africa, is comprised of a research clinic as well as a clinic offering routine services.

ESRU is made up of +-30 research staff including academic, administrative and technical staff. ESRU has been functioning as a research entity for the last 13 years, and have produced over 140 publications.

Whilst the unit started out with a focus on HIV it has increasingly acquired the skills and appetite for research in other areas such as Tuberculosis. The unit will actively encourage research into other childhood infectious diseases and infectious diseases in pregnant women.

With the unit seeing itself as being the 'home' of the Paediatric Infectious Disease Sub-specialty Training programme within the Department of Paediatrics and Child Health at Wits, the future looks set to ensure that there is a natural convergence of training, service and research within the site.

EZINTSHA

PROFESSOR WD FRANCOIS VENTER
DIVISION HEAD

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WHO WE ARE

Ezintsha works to improve aspects of health care in the public sector, with a particular focus on treatment optimisation, drug access and medical technologies in the areas of HIV and non-communicable diseases (NCDs). Based on our experience, expertise and success, we aim to find ways to move the needle on global health. As a result, what we learn informs public health policy and practice in South Africa, the Southern African region, and in other parts of the world.

We apply new technology to health-related problems, and work to extend access to effective drugs so that quality health care and medicine is available to everyone.

Ezintsha is a newly formed sub-division of Wits Health Consortium, which is part of the University of the Witwatersrand, based in Johannesburg, South Africa.

RESEARCH HIGHLIGHTS IN 2020

Ezintsha continues to lead the ADVANCE study, which has informed international and local HIV treatment guidelines. The study, conducted in inner-city Johannesburg, enrolled 1053 participants into three treatment arms in order to investigate better options for first-line treatment for people living with HIV, and specifically analysed the (at the time) standard treatment regimen of tenofovir disoproxil fumarate (TDF), emtricitabine (FTC) and efavirenz (EFV), also known as TEE, to two newer antiretrovirals, namely dolutegravir (DTG), which replaces EFV, and tenofovir alafenamide (TAF), which replaces TDF. The newer regimens have been shown in other studies to have side effect and resistance benefits, but had not been studied in an African population.

In 2019, the 48-week outcome results were published in the New England Journal of Medicine (NEJM). In 2020, the 96-week data was published in The Lancet HIV. The study showed that a dolutegravir-containing antiretroviral treatment (ART) performs as well as the efavirenz-containing regimens, with the dolutegravir arms achieving rapid suppression of the virus.

The study has also established that the newer antiretrovirals, DTG and TAF, especially when used in combination, cause weight gain, particularly among African women.

The weight gain signal has emerged as a major concern in the treatment of HIV-positive people, and may be the major long-term clinical challenge in this population. As a result, the study was extended to 192 weeks in order to gather additional data.

In 2020, we continued our work on HIV treatment optimisation, evaluating several novel antiretroviral agents in clinical trials in local populations, including beginning to assess the feasibility of long-acting injectables. With the emergence of the COVID-19 epidemic, the division urgently undertook evaluations of prevention and treatment options for SARS-CoV-2, as well as using our diagnostics team to evaluate COVID-19 self-testing.

Ezintsha has a long-term portfolio of work relating to non-communicable disease and HIV self-care, and the use of medical technologies and diagnostics. We have continued to lead the South African initiative in HIV self-testing, ensuring that tests on the market in South Africa are well regulated, user-friendly and of appropriate quality. Representation on the technical working groups of the WHO and the South African National Department of Health for HIV Self-testing has meant Ezintsha researchers are at the coal-face of shaping national and global regulation and policy.

Digital Health (or mHealth) tools have been the cornerstone of the innovation within the division and have been central to the access to, and optimisation of, these medical technologies. Ezintsha implemented behavioural studies to understand South Africans' experiences during the COVID-19 pandemic. These comprised using digital health platforms to assess early stage adherence and COVID compliance, and, technology behaviour and health communication. Ezintsha also collaborated with PRICELESS SA on two studies, one pertaining to food security, and the other measuring health opportunity costs of COVID-19 on non-COVID-19 health services.

Ezintsha, in collaboration with University Medical Centre Utrecht, Emory University and Harvard University was awarded a five year grant from the NIH's National Heart, Lung, and Blood Institute (NHLBI) and Fog-

arty International Center (FIC), for the **I**ntegrating **H**IV and h**EART** health in **S**outh **A**frica **(iHEART-SA)** project.

Under the leadership of multiple Principal Investigators Profs Francois Venter (Ezintsha (Wits)), Mohammed Ali (Emory University) and Vincent Marconi (Emory University), the iHEART-SA team will implement and evaluate clinical and data interventions which will be co-designed with the relevant local and international stakeholders. These interventions will be initially implemented in the Johannesburg inner city and scaled up to rural KwaZulu-Natal.

This project is highly significant for South Africa. Comparatively South Africa has a successful HIV programme however there are shortfalls in healthcare for cardiovascular disease (CVD). People with HIV bear at least twice the risk of CVD compared to HIV-negative adults. Through iHEART-SA, the project team hope to not only strengthen clinical care and data capacity but also that of research and training, through the provision of implementation science and epidemiology short courses and multiple doctoral fellowship opportunities. Self-management of hypertension and diabetes will also feature – which is pivotal to adherence particularly in a time of pandemic, where access to and provision of care is compromised.

ACADEMIC OUTPUT

Ezintsha has a total team of around 100. 12 team members were studying in 2020. Ezintsha produced 33 peer reviewed publications, many of which featured in high impact journals such as The Lancet, and PLoS. Team members profiled our work in 31 international and national conference presentations.

OUR SENIOR TEAM

Ezintsha is led by a group of South African academics and health professionals, headed by **Professor WD Francois Venter, MD, FCP, PhD.**, working alongside:

- Dr Nomathemba Chandiwana, Senior Research Clinician
- Dr Samanta Lalla-Edward, Head of Research Development
- Mary Edwards, Head of Funding
- Holly Fee, Head of Strategic Development
- Nkuli Mashabane, Head of Strategic Research Operations;
- Mohammed Majam, Head of Medical Technologies;
- Dr Simiso Sokhela, Head of Clinical Research;
- Celicia Serenata, Head of Treament Optimisation & Drug Access

Medical Entomology Research Group

PROFESSOR LIZETTE KOEKEMOER

EXECUTIVE DIRECTOR

WHO WE ARE

The Wits Medical Entomology Research Group (MERG) investigates the transmission and control of malaria in African mosquito populations and is affiliated to the Wits Research Institute for Malaria and the National Institute for Communicable Diseases.

The Medical Entomology Research Group consists of researchers specializing in medical entomology and especially those insect species that transmit disease-causing pathogens to humans.

Our team is made up of leading international researchers, professors and up-coming scientists.

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RESEARCH IN 2020

During 2020 the Medical Entomology Research Group (MERG) published 22 scientific papers in peer reviewed international journals, and contributed to two policy. Various research projects were successfully initiated or completed under the leadership of senior scientists. MERG supervise 30 post-graduate students during this reporting period.

TRANSMISSION BLOCKING STUDIES TO IDENTIFY NEW TARGET DRUGS FOR MALARIA (PROF LIZETTE KOEKEMOER)

The Drug Discovery and Development Centre (H3D) at the University of Cape Town (UCT), in collaboration with the Medicines for Malaria Venture (MMV), and the South African Malaria Transmission-Blocking Consortium (SAMTC), has had a successful track record, over the last several years, of delivering lead compounds for potential treatment of malaria. The MERG provided vital support in evaluating the reduction in transmisison to main African malaria vector species through a standard membrane feeding assay. The South African Malaria Drug Discovery (SAMDD) project aims to identify antimalarial compounds that have asexual blood stage (TCP1) and transmission-blocking (TCP5) activity against Plasmodium sexual stages and the mosquito.

CHALLENGES WITH COLONIZATION OF THE MAJOR AFRICAN MALARIA VECTOR SPECIES, AN. FUNESTUS (PROF LIZETTE KOEKEMOER)

Anopheles funestus is a major malaria vector in Africa, yet it tends to be refractory to colonisation, limiting research on this species. MERG collaborated with the Ifikara Health Institute in Tanzania on a Bill & Melinda Gates funded project.

MOLECULAR IDENTIFICATION OF MALARIA VECTORS FROM BURINDI, MOZAMBIQUE, ANGOLA AND NAMIBIA (PROF LIZETTE KOEKEMOER, DR YAEL DAHANAND MS BIANCE E SILVA)

Malaria vector species are often morphologically similar and molecular identification is imperative to distinguish between vector and non-vector species. Most African countries lack the facilities to conduct these assays and the MERG is therefore vital in providing support for vector incrimination to guide country-specific vector control programs.

INSECTICIDE RESISTANCE ANALYSIS IN ZAMBIA (PROF MAUREEN COETZEE)

International Centre of Excellence in Malaria Research (ICEMR): lead by the Johns Hopkins Malaria Research Institute (USA), carrying out surveillance for insecticide resistance in Zambia (2017-2023).

ADVANCE STUDIES OF THE STERILE INSECT TECHNIQUE TO CONTROL OUTDOOR BITING MALARIA VECTORS (DR GIVEMORE MUNHENGA)

This is a multi-instituitional funded long-term project to test the feasibility of using the Sterile Insect Technique (SIT) against mosquito malaria vectors in the local context. Current activities include studies to optimise adult sterile male mosquito rearing in preparation of a small-scale pilot field demonstration. This will address technical and operational applicability of the technology under a South African setting. These optimisations included validation of mass-rearing equipment, sex separation strategies, and bulk irradiation protocols. Furthermore, the team developed a quality assurance system to be used during mosquito mass production. Conditions suitable for handling, transport and release of sterile males are also under investigation. An extensive community engagement to prepare the community for pending sterile male releases was also carried out during 2020. International

Atomic Energy Agency, Department of Science and Innovation, National Research Foundation and University of Glasgow jointly fund these activities.

VECTOR STUDIES IN SOUTH AFRICA AND ZIMBABWE (DR GIVEMORE MUNHENGA)
This project is a multi-county research initiative sponsored by Bill and Melinda Gates Foundation. The research activities include investigating genetic variability in relation to anthropophilic behaviour of An. arabiensis populations from South Africa and Zimbabwe.

MOSQUITO SAMPLING TECHNIQUES EVALUATION (DR GIVEMORE MUNHENGA)
This is an operational research project in Mpumalanga comparing novel mosquito sampling methods against traditional sampling techniques in a field setting.

IDENTIFYING THE ENTOMOLOGICAL DRIVERS OF MALARIA TRANSMISSION IN SOUTH AFRICA (PROF BASIL BROOKE)
NHLS Research Trust sponsored project designed to use surveillance techniques to better understand the dynamics of malaria transmission in South Africa.

WHO MULTI-CENTRE STUDY ON DETERMINATION OF INSECTICIDE DISCRIMINATING CONCENTRATIONS FOR MONITORING OF RESISTANCE IN MOSQUITOES (PROF BASIL BROOKE)
Sponsored by WHO, this project aims to design discriminating dosages for the assessment of insecticide resistance in pathogen transmitting mosquitoes.

THE EFFECT ENVIRONMENTAL CONDITIONS ON MEMBERS OF THE ANOPHELES GAMBIAE COMPLEX
(DR SHUNE OLIVER)
The effects of various environmental stressors on members of the An. gambiae complex found in South Africa are being investigated including how this change the epigenetic landscape of these mosquitoes. The role of gut bacteria and impact on insecticide resistance is also under investigation.

LIST OF FUNDERS
B&M Gates Foundation
International Atomic Energy Agency
Department of Science and Technology
National Institute of Health
National Research Foundation
South African Medical Research Foundation
National Health Laboratory Service
Research Trust World Health Organization.

Prof Maureen Coetzee is the founder of the Medical Entomology Research Group and was the first syndicate head.

MENTORSHIPS IN 2020
In 2020 MERG actively supported post graduate emerging researchers. Several PhD and MSc candidates were provided with mentorship during their studies.

STAFFING IN 2020
MERG consists of three scientists with international standing, four scientists with significant national standing and a number of upcoming junior scientists and research assistants/technicians.

Antimicrobial Resistance

ASSOCIATE PROFESSOR

NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

Head Office
The National Institute for
Communicable Diseases,
Block D- Centre for Healthcare-
Associated Infections,
Antimicrobial Resistance and
Mycoses (CHARM)

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WHO WE ARE

AMR division is established at CHARM, as a host of two national reference laboratories and is supported by an epidemiology section. The Centre was designated as a World Health Organization (WHO) Collaborating Centre for antimicrobial resistance (AMR) in June 2017.

AMR division aims to conduct public health surveillance and research on antimicrobial resistance; to support the development of guidelines and policies based on studies evidence and improve access to quality diagnostics.

AMR is a major focus area of the South African Department of Health and the NICD. CHARM works on AMR in bacterial and fungal pathogens causing human infections in healthcare facilities and in the community, spanning the public- and private health sectors. The Centre is supporting the "One Health" programme including surveillance for AMR in humans and animals.

RESEARCH IN 2020

CHARM leads the national effort to conduct surveillance for AMR infections through the establishment of a national diagnostic laboratory surveillance network. Several approaches are currently used for laboratory-based surveillance:

National or sentinel surveys: bacterial and fungal isolates cultured from patients with bloodstream infections are submitted to CHARM's reference laboratories for identification, antimicrobial susceptibility testing and genotyping;

Enhanced surveillance: detailed clinical information is collected from patients admitted to sentinel hospitals who meet the surveillance case definitions throughout GERMS programme with aims to improve neonatal and child health by gaining a deeper understanding of the burden and aetiological factors of neonatal sepsis in urban and rural sub-Saharan Africa through the development of a two-tiered surveillance programme, with a focus on neonatal sepsis occurring at secondary-level institutions.

Electronic surveillance: data from public- and private-sector diagnostic laboratory information systems are compiled annually and reported as tables and resistance maps.

Our projects include i) Antimicrobial resistance prevalence and transmission between animal feed and humans, ii) Fleming Fund Regional Grants I l — Grant 1: External Quality Assessment (EQA) Africa; iii ATLAS study.

I. Our study entitled **"Antimicrobial resistance prevalence and transmission between animal feed and humans"** aim to determine the prevalence of AMR, measure the association between antimicrobial usage and the emergence of AMR, as well as to determine the risk of transmission of AMR genes between the farm environment, farm employees and animals in pig farms in South Africa. The objectives of the study are:

1. To describe and quantify antimicrobial usage at selected farms according to antimicrobial class and their indication for use (therapeutic, prophylactic or growth promotion) to ultimately define the selective pressure.
2. To culture and identify Campylobacter species (spp.), Enterococcus spp., Escherichia coli and non-typhoid Salmonella spp. from pig fecal droppings and self-collected human rectal swabs. Antimicrobial susceptibility testing will be performed and the mechanism of resistance will be defined according to medically important antimicrobials.
3. To use molecular methods to directly detect antibiotic resistance genes from pig fecal droppings and self-collected human rectal swabs.
4. To compare the genes found in the crude, uncultured sample to the laboratory-isolated organisms, which will provide information on the extent of resistance reservoirs.
5. To type indicator organisms of human and animal origin to determine strain diversity and molecular epidemiology.
6. To test retail meat (i.e. pork chops) for the presence of indicator organisms [i.e. Campylobacter spp., Enterococcus spp., Escherichia coli and non-typhoid Salmonella spp.], their susceptibility and antibiotic residues.

ii. **Fleming Fund Regional Grants I l — Grant**

1: External Quality Assessment (EQA) Africa:

A. The Fleming Fund represents the UK Government's investment into improving laboratory capacity for diagnosis and surveillance of anti-microbial resistance (AMR) in low-income countries where AMR

has a disproportionate impact (the "Fleming Fund"). The Fleming Fund will do this through support to implementation of AMR National Action Plans by making investments in:

- building laboratory capacity;
- collecting drug resistance data;
- enabling the sharing of drug resistance data locally, regionally and internationally;
- collating and analysing data on the sale and use of antimicrobials medicines, particularly antibiotics;
- advocating the application of these data to promote the rational use of antimicrobials for human health, animal health and agriculture; and shaping a sustainable system for AMR surveillance and data sharing.

The Project will use a "One Health" approach which encompasses work in human, animal (agriculture) and environmental health. This approach recognises that the nature of drug resistant infections and their spread often involved pathogens which spread to and from animals (for example, pigs and poultry) to humans; and that environmental exposure to antimicrobial agents is a key factor in driving the emergence and spread of drug resistant infections.

B. The African Society for Laboratory Medicine (ASLM) and its consortium partners, have been awarded a Fleming Fund Grant for the provision of activities to improve the quality of laboratory bacteriology diagnostics for AMR with EQA for pathogen identification and antibiotic susceptibility. ASLM as the lead grantee has entered into an Agreement with Mott MacDonald (the "Mott MacDonald") acting on behalf of the Secretary of State for Health Services of the United Kingdom (the "Authority") dated the 9th September 2019 for the provision of these activities, which includes ASLM entering into this agreement with the Wits Health Consortium (Pty) Ltd (WHC) and AMR division at CHARM in relation to the allocation of the Fleming Fund.

iii. This is a **multi-year initiative to develop a scalable surveillance platform** using Pfizer's Antimicrobial Leadership Testing and Surveillance (ATLAS) core methodology, supported by a robust public-private partnership that expands surveillance capacity in Low and Middle Income Countries (LMICs).

This ATLAS Satellite program will enable additional studies to be undertaken, all based around the core of the ATLAS methodology. It will begin with a Pilot Phase to demonstrate success of the methodologies, prior to wider engagement with other regions. The ATLAS Satellite Program Pilot will have three elements, or work streams:

- Microbiological (AMR) Study
- Epidemiological Data Collection
- Local Microbiology Database

AMR division will perform all reference work for this project. This AMR Satellite Program Pilot is being conducted in Ghana, Kenya, Malawi, and Uganda. Each country will have 1-2 laboratory sites in hospitals where existing laboratory infrastructure can be utilized.

NATIONAL AND INTERNATIONAL COMMITTEES

A/Prof Perovic is:

a. National Advisory Committee (NAC) on Antimicrobial Susceptibility Testing subcommittee of SASCM, chair since 2014
b. Member of Ministerial Advisory Committee on AMR, 2016 ongoing

c. Deputy chair for Global Antimicrobial Resistance Partnership (GARP) chapter in South Africa, 2011
d. Deputy chair of Global Antibiotic Resistance Partnership (GARP) South Africa.
e. Member of WHO Strategic and Technical Advisory Group on Antimicrobial Resistance (STAG-AMR) 2013-18
f. Member of WHO GLASS since 2013 onwards
g. Member of SAGE IVD WHO, 2017 to 2019
h. Panel member for NRF rating specialist committee, 2013-2019
i. Global Health Security Agenda (GHSA) AMR action stream - Co-chair action package for AMR-ongoing
j. Member of Technical Advisory Group to adviSE THE FLEMING FUND TEAM, 2016-2020

CONFERENCES;
None face to face except webinair

OUR KEY FOUNDERS
CHARM is receiving a wide distribution of grant awards that includes, MRC, Bill and Milinda Gates foundation, UK Fleming Fund, WHO and the NHLS.

MENTORSHIPS IN 2020
One PhD registration and number of projects prepared for publication.

STAFFING IN 2020/21
We have a multi- disciplinary group consisting of technicians, technologists, scientists, pathologists and epidemiologists.

MYCOLOGY

DIVISION HEAD

NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

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WHO WE ARE

The Mycology Division aims to improve the outcomes of people affected by serious, life-threatening fungal diseases in South Africa and the African region through public health-focused epidemiological, clinical and basic science research and innvovation. Our work also stretches to other important infectious diseases.

The Mycology Division was established in 2016 and is affiliated to the Schhol of Pathology in the Faculty of Health Sciences, University of the Witswatersrand and to the Cnetre for Healthcare - Associated Infections Antimicrobial Resistance and Mycoses (https://www,nicd.ac.za/centres/centre-for-healthcare-associated-infections-antimicrobial-resistance-and-mycoses/) at the National Institute for Communicable Diseases.

The Division was initially established to support grant-funded investigator and student-led project.

RESEARCH IN 2020

CAST-NET

The CAST-NET study is a multi-year observational programmatic study that seeks to evaluate the effectiveness of South Africa's national cryptococcal antigen screening and pre-emptive treatment programme, in order to improve HIV care and survival of persons living with advanced HIV disease. This project is supported by an NIH R01 grant (2016-2022); PI: NP Govender.

In Part 1, we have conducted a retrospective cohort study of approximately 3000 cryptococcal antigen (CRAG)-positive participants (screened positive in 2017-2019 in 27 sub-districts) and used retrospective record review and several other routine data sources to document the clinical care of participants and their 6-month outcomes.The division partnered with Epicentre Health Research to collect data at facilities. A team of medical officers in the Division is currently abstracting data from patient records for data analysis.

Part 2 of the CAST-NET study (to be implemented in 2021) will be a pragmatic cluster-randomized trial, with the aim to assess whether a health systems intervention at healthcare facility level (mediated through informal appointment of a "crypto" champion) could improve initiation of pre-emptive fluconazole therapy among newly-diagnosed persons with antigenaemia. We will also compare 6-month cryptococcal meningitis-free survival among people with antigenaemia at intervention versus control facilities.

PrE-AIM

The Process Evaluation Assessing Implementation and Mechanisms (PrE-AIM) study is a mixed-methods process evaluation nested within the CAST-NET study and was designed to understand how South Africa's national cryptococcal antigen screening programme has been implemented and incorporated into routine HIV care. The mixed-methods approach uses quantitative surveys and qualitative in-depth interviews to collect data on health facility processes, healthcare worker experiences, and other contextual factors with the aim of better understanding how differences in CrAg screening implementation and adoption affect provider action on positive CrAg test results.

Surveys are currently being administered to healthcare workers from 440 health facilities participating in the CAST-NET study, and key findings are being further explored through in-depth interviews and observations in 6 purposively selected sub-districts. The findings from this sub-study will provide context to the results of the CAST-NET study and will inform possible areas for improvement of the national screening programme in the future.

Baby GERMS

Neonatal deaths account for almost half of deaths in children under 5 years, with infections being the third largest contributor after prematurity and intrapartum complications. Baby GERMS is the first population-based surveillance programme on neonatal infections in Africa and was set up in the latter half of 2019 with funding from the Bill and Melinda Gates Foundation (BMGF). The aim is to provide a baseline description of the aetiology, antimicrobial susceptibility profile and clinical characteristics of culture-confirmed neonatal bloodstream infections and meningitis in South Africa. Through this surveillance programme, we will identify modifiable risk factors which could be targeted to reduce neonatal morbidity and mortality in South Africa. Baby GERMS has been acknowledged as a major new source of strategic data by the National Neonatal Task

Force, which was launched in September 2019 to provide technical advice and guidance on surveillance for neonatal sepsis, infection prevention and control, neonatal infection case management, antimicrobial stewardship and containment of neonatal unit outbreaks. By the end of 2020, national surveillance data from 2014-2019 for approximately 45 000 laboratory confirmed cases of neonatal infection were collated and analysed. Clinical data collection on 935 laboratory-confirmed neonatal infection episodes occurring between October 2019 and September 2020 at 6 provincial/ regional hospitals was also completed and data are being analysed.

DATCOV

In March 2020, DATCOV, a national surveillance system, was established by NICD to monitor COVID-19 hospital admissions in South Africa. While achieving complete coverage of all public and private hospitals in the country, DATCOV had challenges with data completeness and data quality. The Division therefore established an enhanced sentinel surveillance project, funded by the BMGF, in collaboration with the International Severe Acute Respiratory and Emerging Infections Consortium.

The first objective of this project is to understand the contribution of NCDs, HIV, and TB to COVID-19 mortality. Seventeen study sites were selected in six provinces, and COVID-19 patients were enrolled during the second (and subsequent waves) of the epidemic in South Africa. An interim analysis has revealed the prevalence of pre-existing, newly diagnosed or undiagnosed co-morbidities, their level of control and their impact on mortality.

KEY FUNDERS IN 2020

US National Institutes of Health Bill and Melinda Gates Foundation

MENTORSHIPS IN 2020:

The Division supported several post-graduate students in 2020.

STAFFING IN 2020

CAST-NET

In 2020, nine staff members were supported by the project: Greg Greene (project manager/ epidemiologist), project administrator, research assistant, field project coordinator, epidemiologists x2, medical epidemiologist, medical officer x2. Each of the team members play a significant role in ensuring that the project meets its objectives and goals.

Baby GERMS

The programme is nested within the GERMS-SA surveillance programme at the NICD and led by project manager, Dr Susan Meiring. Through the division, we hired research assistants to collect data at sentinel hospital sites and a project administator, epidemiologist, medical scientist and medical officer.

DATCOV

Led by Dr Waasila Jassat, the study employed a project manager and an epidemiologist and eight qualified nurse as surveillance officers in 14 sentinel hospital sites in the country.

PrE-AIM

The sub-study is nested within the CAST-NET study and led by Greg Greene, CAST-NET project manager/epidemiologist as a doctoral research project with assistance from CAST-NET personnel and supervision by CAST-NET Principal Investigator, Nelesh Govender.

African Network for Improved Diagnostic, Epidemiology and Management of common Infectious Agents

PROFESSOR NICOLA PAGE

ASSOCIATE PROFESSOR

NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
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WHO WE ARE

The South African partners of the ANDEMIA project, funded by the German Federal Ministry of Education and Research (BMBF), are the Centre for Enteric Diseases at the National Institute for Communicable Diseases (NICD) and the Centre of Viral Zoonosis, Department of Medical Virology, University of Pretoria.

The Centre for Enteric Diseases focusses on diarrhoeal disease surveillance, public health orientated research, outbreak investigation and response, reference laboratory services, regional technical and laboratory testing assistance, delivered by a small team of specialists with extensive experience in enteric diseases.

The Centre of Viral Zoonosis conducts research on emerging neurological arboviruses and respiratory diseases affecting humans and animals. The main research themes include defining the epidemiology, pathogenesis and control mechanisms to emerging and zoonotic viruses, virus discovery, development of diagnostic tools and molecular epidemiological studies in clinical cases in humans and animals.

RESEARCH IN 2020:

Sentinel surveillance was established at Kalafong, Matikwana and Mapulaneng hospitals in July 2018 and is ongoing. After consent, patients meeting the case definitions are enrolled and appropriate specimens (nasopharyngeal/ oropharyngeal swab, stool and blood) are taken along with completion of a standardized case investigation form.

During 2019, 1503 cases were enrolled onto the study with the majority (54%; 812/1503) enrolled from Kalafong Hospital and the remainder from Mapulaneng (24%; 361/1503) and Matikwana (22%; 330/1503) hospitals. Respiratory cases made up most of the disease burden (43%; 658/1503) with AFDUC (28%; 426/1503) and GTI (28%; 419/1503) identified at lower levels. The study will continue until the end of 2021 with controls enrolled during 2021.

OUR KEY FOUNDERS

Nicola Page is a principal scientist (BSc(Agric) Microbiology cum laude, BSc(Agric) Hons Microbiology, MMed (Medical Virology), MPH (Field Epidemiology) cum laude, PhD (Medical Virology)) at the Centre for Enteric Diseases. She also holds an extraordinary professor position within the Department of Medical Virology at the University of Pretoria.

Marietjie Venter is a professor (BSc Molecular Biology cum laude, BSc Hons Genetics cum laude, MSc Genetics, PhD Medical Virology) at the University of Pretoria.

MENTORSHIPS IN 2020

In 2019, the project mentored four students, two PhD and two MSc candidates. Sarah Gallichan completed her MSc project "Snapshot of South African Salmonella: Development of a sensitive tool to investigate the distribution of Salmonella Enteritidis clades in 2012 and 2013" in 2019. The PhD candidates, Siobhan Johnstone and Kathleen Subramoney, obtained approvals for their project protocols and a new MSc candidate was recruited (Richard Madimabe) for 2020.

In addition, a molecular training course was offered to partner ANDEMIA students and scientists, held at the NICD from 27th May to 7th June 2019. The course provided hands-on laboratory training, lectures on diarrhoeal diseases, respiratory diseases, good laboratory practice, real-time PCR concepts and an introduction to biosafety and biosecurity. The students who successfully completed the course included Adjaratou Traore (University of Bouaké, Cote d'Ivoire), Alama Nicoles (Institut National de Recherche Biomédicale, Democratic Republic of Congo), Arsene Zongo (Center Muraz, Burkina Faso), Eddy Kiganda Lusamaki (Institut National de Recherche Biomédicale, Democratic Republic of Congo), Safiatou Karidoula (University of Bouaké, Cote d'Ivoire) and Yacouba Sawadogo (Center Muraz, Burkina Faso).

STAFFING IN 2020

The project currently employs the project principal investigator, three surveillance officers located at each of the sentinel site hospitals, two data clerks and a laboratory assistant. All posts were filled in 2019.

Wits Health Hubb

LISA WARE
DIRECTOR

WHO WE ARE

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The Centre of Viral Zoonosis conducts research on emerging neurological arboviruses and respiratory diseases affecting humans and animals. The main research themes include defining the epidemiology, pathogenesis and control mechanisms to emerging and zoonotic viruses, virus discovery, development of diagnostic tools and molecular epidemiological studies in clinical cases in humans and animals.

RESEARCH IN 2020:

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OUR KEY FOUNDERS

Nicola Page is a principal scientist (BSc(Agric) Microbiology cum laude, BSc(Agric) Hons Microbiology, MMed (Medical Virology), MPH (Field Epidemiology) cum laude, PhD (Medical Virology)) at the Centre for Enteric Diseases. She also holds an extraordinary professor position within the Department of Medical Virology at the University of Pretoria.

Marietjie Venter is a professor (BSc Molecular Biology cum laude, BSc Hons Genetics cum laude, MSc Genetics, PhD Medical Virology) at the University of Pretoria.

MENTORSHIPS IN 2020

In 2019, the project mentored four students, two PhD and two MSc candidates. Sarah Gallichan completed her MSc project "Snapshot of South African Salmonella: Development of a sensitive tool to investigate the distribution of Salmonella Enteritidis clades in 2012 and 2013" in 2019. The PhD candidates, Siobhan Johnstone and Kathleen Subramoney, obtained approvals for their project protocols and a new MSc candidate was recruited (Richard Madimabe) for 2020.

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STAFFING IN 2020

The project currently employs the project principal investigator, three surveillance officers located at each of the sentinel site hospitals, two data clerks and a laboratory assistant. All posts were filled in 2019.

RESEARCH IN 2020

Research in adolescents and youth in Soweto shows that young people struggle to engage in health as a result of structural, social and economic barriers1,2. The Hubb strives to remove many of these barriers for young people and to evaluate the impact on their health. Our first cohort started in October 2020 with baseline fitness and cardiometabolic testing, which has been repeated now at 6 months and will be evaluated again at 12 months, with results published in Q4 2021.

OUR KEY FOUNDERS

The Health Hubb was the brainchild of Lisa, Del and Lethu with support from Prof Shane Norris, other members of the Great Leap Forward team (Maureen Joffe, James Ashton) and the Development Bank of Southern Africa (DBSA) social development investment team.

In 2021, the Hubb will move into the brand new Jabulani Sports Complex in Soweto, with NGO implementation partners Amandla and R-Labs to deliver health, digital and physical activity programmes with the local community.

MENTORSHIPS IN 2020

The 2020 Hubb youth cohort recruited as health advocates were previously NEET living in Soweto. These 20 young people are just over half way through their NQF Community Health Work training and have been doing well in their theoretical and practical training, with a class average of 86% and above. Youth are also trained in brief behaviour change counselling creating health promotion officers more effective at supporting healthy behaviour change within the community and improving learners' general communication skills. We also train Health Advocates to conduct research, data collection, and on research ethics and Good Clinical Practice (GCP). Additionally, two of the Hubb team are working on their Masters research on various aspects of the Health Hubb.

STAFFING IN 2020

In 2021, the Hubb employed 20 youth that were previously NEET, one full-time operations manager, one part-time community engagement officer, one part-time psychologist and a part-time stakeholder management specialist. As well as convening a Stakeholder Advisory Group.

1. Ware LJ, Prioreschi A, Bosire E, et al. Environmental, Social, and Structural Constraints for Health Behavior: Perceptions of Young Urban Black Women During the Preconception Period—A Healthy Life Trajectories Initiative. Journal of Nutrition Education and Behavior. 2019.

2. Cohen E, Ware LJ, Prioreschi A, et al. Material and Relational Difficulties: The Impact of the Household Environment on the Emotional Well-Being of Young Black Women Living in Soweto, South Africa. Journal of Family Issues. 2020;41(8):1307-1332.

Carbohydrate and Lipid Metabolism Research Unit

PROFESSOR FREDERICK RAAL

UNIT DIRECTOR

WHO WE ARE

The focus of Carbohydrate & Lipid Metabolism Research Unit includes the epidemiological, clinical and biochemical aspects of common diseases affecting lipid, and glucose metabolism in the different ethnic groups of Southern Africa.

These include familial hypercholesterolaemia and other dyslipidaemias, insulin resistance, diabetes mellitus as well as other related metabolic disorders.

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The Unit is well recognized both nationally and internationally for their work on familial hypercholesterolaemia, and has one of the largest cohorts of homozygous FH patients in the world. The Unit has contributed, and continues to contribute to the management of these unfortunate patients.

The Unit publishes over 15 articles per year many in high impact journals. This year 3 articles have been published in the New England Journal of Medicine with Professor Raal as first author of two of the manuscripts. Professor Raal has supervised over 30 MMEDS and 7 PhDs.

SPECIAL ACHIEVMENTS DURING 2020

Professor Raal has been the most cited researcher in the Faculty of Health Sciences, University of the Witwatersrand for the past 5 years. He was listed as one of the most highly cited researchers who have produced papers ranking in the top 1% of citations in their field worldwide by the Web of Science Group for 2019. The Unit continues to research novel therapies such as antisense apo B-100 and PCSK9-inhibitor monoclonal antibody therapy and more recently siRNA PCSK9-inhibitor (inclisiran) and ANGPTL3-inhibitor (evinacumab) therapy in patients with familial hypercholesterolaemia. Professor Raal gave late breaker oral presentations at the virtual ACC, EAS and AHA Congresses in 2020.

CHALLENGES

The Unit is essentially a one man show with little contribution from other members of the Division of Endocrinology. No funding is received from the University and all is derived from Clinical Trials and the Evan Stein FH Centre.

GAUTENG RESEARCH TRIANGLE GRT-INSPIRED NODE

PROFESSOR DAVID EVERATT

HEAD OF DEPARTMENT

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WHO WE ARE

GRT comprises three universities, names the University of Johannesburg, the University of Pretoria and the University of the Witwatersrand. The GRT-Inspired node is one project of the GRT, and took shape around the successful bid in response to a tender issued by SAPRIN (the South African Population Research Infrastructure Network). The tender was issued to create the first urban node in the SAPRIN family of Health and Demographic Surveillance Sites (HDSS) - in Gauteng.

GRT-Inspired will complement the existing rural network of SAPRIN nodes that include Agincourt, in Bushbuckridge District, Mpumalanga (established in 1992 with a current population of 115,000), the DIMAMO HDSS in Dikgale District, Limpopo (established in 1996, with a current population of 35,000) and the Africa Health Research Initiative in uMkhanyakude District, KwaZulu-Natal (established in 2000, with a population of 165,000). The GRT-INSPIRED node will include a population of at least 100 000 in Gauteng.

The South African Population Research Infrastructure Network (SAPRIN) is a major long term investment into a national research infrastructure funded by the national Department of Science and Innovation (DSI) and hosted by the SAMRC. It falls under the South African Research Infrastructure Roadmap (SARIR), through which DSI is establishing world-class scientific research infrastructure in a range of key sectors, including humans and society.

OBJECTIVES OF THE RESEARCH

GRT-INSPIRED was awarded the tender in April/May 2020, and the impact of Covid-19 on government funds as well as processes (with staff working from home) led to some to-and-fro but by mid-2020 the agreement was confirmed and work began. Much of the work was inevitably in set-up, but all partners wanted to hit field as soon as the pandemic permitted.

GRT-INSPIRED (the clue is in the acronym) is self-consciously an urban node, and deliberately spread across different urban forms in order to try and capture vital statistics from the most densely populated spaces in Africa – where Wits and UJ will be tackling the Hillbrow sub-place (UJ from the south, Wits from the north) – to formal township and backyard dwellings (and an informal settlement) in west Atteridgeville, to Melusi, an informal settlement that had not existed at the time of the 2011 Census but now holds more than 40 000 people.

The objectives are divided into three main areas: the SAPRIN focus on population health, social wellbeing and economic wellbeing; and then our locating of these concerns in an urban frame that looks at variables such as class formation, migration and the impact of urbanity on health outcomes.

POPULATION HEALTH

a. To obtain accurate data on population dynamics (births and deaths by cause) to enable the close monitoring of a range of health and development indicators, and to compute precise individual exposure periods that support advanced studies in a range of fields; these speak to critical life course stages including childhood, adolescence, adulthood and later life phases.
b. To obtain accurate measures of disease burden and risk factor prevalence in key tracer domains, namely, HIV, hypertension and body-mass index.
c. To obtain accurate measures of individual and population-level access to health services, both directly through interviews and indirectly through record linkage.
d. To monitor vaccine coverage rates through individual interviews and recording information from Road-to-Health Cards of all children aged 6 years and younger.
e. To monitor food security through household interviews.

SOCIAL WELLBEING

a. To track household dynamics over time on the whole population of households through careful monitoring of births, deaths, residence status, and in- and out-migrations.
b. To keep track of all individuals' residence status and migration events in the study populations.
c. To monitor education status and education outcomes at the level of individuals, schools, and the links between them.

ECONOMIC WELLBEING

a. To monitor asset ownership and socio-economic status, including modern assets, fuel used for cooking, heating and lighting, access to water and sanitation, ownership of transport and quality of housing.
b. To keep track of labour status at the individual level for all people aged 15 years and older.
c. To keep track of the uptake of social protection measures through individual and household interviews, and through links with the Department of Social Development databases.

URBANITY

a. To develop an urban module that complements the existing SAPRIN set of instruments.
b. To monitor, measure and analyse specific urban challenges to health (such as sub-

stance use, temperature change, extreme weather events, class stratification, informality, movement within and across Gauteng as well as boader migration, etc.)

c. To work with future urban nodes – Cape Town and eThekwini – to ensure that SAPRIN has a well-balanced view of urban and rural issues as 1% of the national population comes under surveillance, over time.

STAFFING IN 2020

GRT-Inspired Head Office
Project Lead / Principal Investigator:
Prof David Everatt
Data Manager: Ms Memory Mhembere

Wits RHI
WITS RHI Executive Director:
Professor Helen Rees
Principal Investigator:
Dr. Thesla Palanee-Phillips
Technical Advisor: Prof Matthew Chersich

University of Johannesburg
Principal Investigator: Prof Tobias Barnard
Sub-Investigator: Prof Annie Temane

University of Pretoria
Principal Investigator: Prof Jannie Hugo
Project Manger: Prof Rhena Delport
Community Engagement: Ms. Edith Madela-Mntla
Finance Grants Manager: Mr. Ronald Moshweu

RECRUITMENT
Appointment for Project Administrator start date 01 January 2021.
Recruitment for fieldworkers will commence from January 2021.

Anatomical Pathology

HEAD OF DEPARTMENT

WHO WE ARE

The Department of Anatomical Pathology is a service, teaching and research division.

Research in the Department is undertaken as part of postgraduate training and also in collaboration with outside entities for the purposes of clinical trials.

Room 3L25
Third Floor
Wits Medical School

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RESEARCH IN 2020

Between 2019 and 2020 the Department authored and co-authored 32 publications.

The department was involved in the following research projects.

1. CHAMPS
2. Covenant
3. Trauma study
4. MHAVE study
5. FIND
6. EXHALE

OUR KEY FOUNDERS:

Research work is supported through grants from the Bill and Melinda Gates Foundation, NIH, NHLS Research Trust and other funding for Postgraduate research.

MENTORSHIPS IN 2020

As this is a new initiative mentorship opportunities are still to be explored.

STAFFING IN 2020

All research in the department is conducted by NHLS/Wits staff who are current with GCLP and Ethics training.

INFORMATION FOR 2020

NATIONAL/ INTERNATIONAL COMMITTEES

International Society of Nephrology (ISN)
- Member of the Executive Committee
- Member, ISN Africa Regional Committee
- Member, Awards Committee
- Steering Committee Member, Emerging Leaders Program
- Chair Scientific Program Committee, Frontiers in Nephrology Conference

African Association of Nephrology
Executive Council member

South African Nephrology Society
Executive Council member

National Kidney Foundation of South Africa
- Member of selection committee for research awards
- Member of Council of Management
- Board of Directors

WITS UNIVERSITY COMMITTEES

Faculty of Health Sciences Committees
Executive Committee Members, Faculty Graduate Studies Committee

School of Clinical Medicine
- Chair, Graduate Studies & Research Committee
- Chair, Plagiarism Committee
- Chair, Mentorship Programme

CONFERENCES ATTENDED

Russian Dialysis Society, Moscow, March 2020
- The Global Burden of Chronic Kidney Disease (CKD)
- Prevention Programs- The Solution for CKD

STUDENT SUPERVISION- DEGREES AWARDED

- Dr Riju Thomas. MMed 2020. Audit of Acute Rejection in Renal Allografts.
- Prof AM Meyers, MD 2020. The Pivotal Role of a Kidney Stone Clinic In the Management and Prevention of Recurrent Calcium Oxalate Nephrolithiasis

PUBLICATIONS

1. COVID-19 Pandemic: Is Africa Different? Bamgboye EL, Omiye JA, Afolaranmi OJ, Davids MR, Tannor EK, Wadee S, Niang A, Were A, Naicker S. J Natl Med Assoc. 2020 Nov 2:S0027- 9684(20)30345-X. doi: 10.1016/j.jnma.2020.10.001. Online ahead of print. PMID: 33153755.
2. Strategic plan for integrated care of patients with kidney failure. Harris DCH, Davies SJ, Finkelstein FO, Jha V, Bello AK, Brown M, Caskey FJ, Donner JA, Liew A, Muller E, Naicker S, O'Connell PJ, Filho RP, Vachharajani T; Strategic Plan Working Groups. Kidney Int. 2020 Nov;98(5S):S117-S134. doi: 10.1016/j.kint.2020.07.023. PMID: 33126957
3. Meaning of empowerment in peritoneal dialysis: focus groups with patients and caregivers. Baumgart A, Manera KE, Johnson DW, Craig JC, Shen JI, Ruiz L, Wang AY, Yip T, Fung SKS, Tong M, Lee A, Cho Y, Viecelli AK, Sautenet B, Teixeira-Pinto A, Brown EA, Brunier G, Dong J, Scholes-Robertson N, Dunning T, Mehrotra R, Naicker S, Pecoits-Filho R, Perl J, Wilkie M, Tong A. Nephrol Dial Transplant. 2020 Nov 1;35(11):1949-1958. doi: 10.1093/ndt/gfaa127. PMID: 32712672
4. Design and methods of the prevalence and pharmacogenomics of tenofovir nephrotoxicity in HIV-positive adults in south-western Nigeria study. Hassan MO, Duarte R, Mabayoje VO, Dickens C, Lasisi AO, Naicker S. BMC Nephrol. 2020 Oct 16;21(1):436. doi: 10.1186/s12882-020-02082-3. PMID: 33066744.
5. International consensus definitions of

Renal Research Group; The Kidney Fund

HEAD OF DEPARTMENT

WHO WE ARE

Renal Research Group awareness, care of and education about the kidneys.

Our aims are the prevention or early diagnosis of kidney disease and ensuring proper treatment in accredited facilities.

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clinical trial outcomes for kidney failure: 2020. Levin A, Agarwal R, Herrington WG, Heerspink HL, Mann JFE, Shahinfar S, Tuttle KR, Donner JA, Jha V, Nangaku M, de Zeeuw D, Jardine MJ, Mahaffey KW, Thompson 70 Sunwold D, Vorster H, Warren M, Damster S, Malik C, Perkovic V; participant authors of the International Society of Nephrology's 1st International Consensus Meeting on Defining Kidney Failure in Clinical Trials. Kidney Int. 2020 Oct;98(4):849-859. doi: 10.1016/j.kint.2020.07.013. PMID: 32998816

6. Nephrology in Africa: forgotten no more. Naicker S, Jha V. Kidney Int. 2020 Oct;98(4):804-806. doi: 10.1016/j.kint.2020.07.016. PMID: 32998806.
7. Hepcidin and GDF-15 are potential biomarkers of iron deficiency anaemia in chronic kidney disease patients in South Africa. Nalado AM, Olorunfemi G, Dix-Peek T, Dickens C, Khambule L, Snyman T, Paget G, Mahlangu J, Duarte R, George J, Naicker S. BMC Nephrol. 2020 Sep 29;21(1):415. doi: 10.1186/s12882-020-02046-7. PMID: 32993549.
8. Association of chronic inflammation and accelerated atherosclerosis among an indigenous black population with chronic kidney disease. Hassan MO, Dix-Peek T, Duarte R, Dickens C, Naidoo S, Vachiat A, Grinter S, Manga P, Naicker S. PLoS One. 2020 Jul 10;15(7):e0232741. doi: 10.1371/journal.pone.0232741. eCollection 2020. PMID: 32649699.
9. The Novel Coronavirus 2019 epidemic and kidneys. Naicker S, Yang CW, Hwang SJ, Liu BC, Chen JH, Jha V. Kidney Int. 2020 May;97(5):824-828. doi: 10.1016/j.kint.2020.03.001. Epub 2020 Mar 7. PMID: 32204907. Supportive care for end-stage kidney disease: an integral part of kidney services across a range of income settings around the world. Hole B, Hemmelgarn B, Brown E, Brown M, McCulloch MI, Zuniga C, Andreoli SP, Blake PG, Couchoud C, Cueto-Manzano AM, Dreyer G, Garcia Garcia G, Jager KJ, McKnight M, Morton RL, Murtagh FEM, Naicker S, Obrador GT, Perl J, Rahman M, Shah KD, Van Biesen W, Walker RC, Yeates K, Zemchenkov A, Zhao MH, Davies SJ, Caskey FJ. Kidney Int Suppl (2011). 2020 Mar;10(1):e86-e94. doi: 10.1016/j.kisu.2019.11.008. Epub 2020 Feb 19. PMID: 32149013.
10. Supportive care for end-stage kidney disease: an integral part of kidney services across a range of income settings around the world. Hole B, Hemmelgarn B, Brown E, Brown M, McCulloch MI, Zuniga C, Andreoli SP, Blake PG, Couchoud C, Cueto-Manzano AM, Dreyer G, Garcia Garcia G, Jager KJ, McKnight M, Morton RL, Murtagh FEM, Naicker S, Obrador GT, Perl J, Rahman M, Shah KD, Van Biesen W, Walker RC, Yeates K, Zemchenkov A, Zhao MH, Davies SJ, Caskey FJ. Kidney Int Suppl (2011). 2020 Mar;10(1):e86-e94. doi: 10.1016/j. kisu.2019.11.008. Epub 2020 Feb 19. PMID: 32149013.
11. Challenges for sustainable end-stage kidney disease care in low-middle-income countries: the problem of the workforce. Swanepoel CR, McCulloch MI, Abraham G, Donner JA, Alrukhaimi MN, Blake PG, Bunnag S, Claus S, Dreyer G, Ghnaimat MA, Ibhais FM, Liew A, McKnight M, Mengistu YT, Naicker S, Niang A, Obrador GT, Perl J, Rashid HU, Tonelli M, Tungsanga K, Vachharajani T, Zakharova E, Zuniga C, Finkelstein FO. Kidney Int Suppl (2011). 2020 Mar;10(1):e49-e54. doi: 10.1016/j.kisu.2019.11.007. Epub 2020 Feb 19. PMID: 32149008 .
12. Biomarkers for Diagnosis and Prediction of Outcomes in Contrast-Induced Nephropathy. Banda J, Duarte R, Dix-Peek T, Dickens C, Manga P, Naicker S. Int J Nephrol. 2020 Jan 24;2020:8568139. doi: 10.1155/2020/8568139. eCollection 2020. PMID: 32411464
13. Establishing a Core Outcome Set for Peritoneal Dialysis: Report of the SONG-PD (Standardized Outcomes in Nephrology-Peritoneal Dialysis) Consensus Workshop. Manera KE, Johnson DW, Craig JC, Shen JI, Gutman T, Cho Y, Wang AY, Brown EA,

Brunier G, Dong J, Dunning T, Mehrotra R, Naicker S, Pecoits-Filho R, Perl J, Wilkie M, Tong A; SONG-PD Workshop Investigators. Am J Kidney Dis. 2020 Mar;75(3):404-412. doi: 10.1053/j.ajkd.2019.09.017. Epub 2020 Jan 16. PMID: 31955922

14. How to estimate glomerular filtration rate in sub-Saharan Africa: design and methods of the African Research into Kidney Diseases (ARK) study. Kalyesubula R, Fabian J, Nakanga W, Newton R, Ssebunnya B, Prynn J, George J, Wade AN, Seeley J, Nitsch D, Hansen C, Nyirenda M, Smeeth L, Naicker S, Crampin AC, Tomlinson LA. BMC Nephrol. 2020 Jan 15;21(1):20. doi: 10.1186/s12882-020-1688-0. PMID: 31941441 ton R, Ssebunnya B, Prynn J, George J, Wade AN, Seeley J, Nitsch D, Hansen C, Nyirenda M, Smeeth L, Naicker S, Crampin AC, Tomlinson LA. BMC Nephrol. 2020 Jan 15;21(1):20. doi: 10.1186/s12882-020-1688-0. PMID: 31941441
15. APOL1 Genetic Variants Are Associated with Serum-Oxidized Low-Density Lipoprotein Levels and Subclinical Atherosclerosis in South African CKD Patients. Hassan MO, Duarte R, Dickens C, Dix-Peek T, Naidoo S, Vachiat A, Grinter S, Manga P, Naicker S. Nephron. 2020;144(7):331-340. doi: 10.1159/000507860. Epub 2020 Jun 11. PMID: 32526749
16. Interleukin-6 gene polymorphisms and interleukin-6 levels are associated with atherosclerosis in CKD patients. Hassan MO, Duarte R, Dickens C, Dix- Peek T, Naidoo S, Vachiat A, Grinter S, Manga P, Naicker S. Clin Nephrol. 2020 Supplement-Jan;93(1):82-86. doi: 10.5414/CNP92S114. PMID: 31426909
17. HIV/AIDS and chronic kidney disease. Naicker S. Clin Nephrol. 2020 Supplement-Jan;93(1):87-93. doi: 10.5414/CNP92S115. PMID: 31397267.

OTHER RESEARCH UNITS

BATHO PELE BREAST UNIT

The Batho Pele Breast Unit operates from the Chris Hani Baragwanath Hospital in Soweto. This unit is dedicated to the treatment of all breast-related diseases, especially cancer. We have no waiting list and we offer the following services:

- A specialist consultant-driven service
- Prompt assessment and diagnostic procedures
- A multidiscipline approach to ensure the best care for all patients
- Specialised expertise in oncoplastic breast conserving surgery
- Personalised follow up
- Commitment to training of both undergraduate and post-graduate doctors and nursing staff
- We do epidemiology, health system strenthening and molecular biology grant funded research

WDGMC TRANSPLANT UNIT

The Wits Donald Gordon Medical Centre's (WDGMC's) Transplant Unit is a leading centre in liver, kidney and simultaneous kidney-pancreas transplantation. Porfessor Jean Botha leads the unit and has performed many pioneering transplant surgeries. The unit seeks to transform the South African organ transplant landscape.

Currently, this is the only Transplant Unit doing living donor liver transplantation and pancreatic transplantation in Southern Africa. In striving to promote and develop the discipline of organ transplanation in South Africa, the Unit is able to successfully transplant solid organs in both children and adults.

The unit is affiliated to the School of Clinical Medicine and the Department Internal Medicine - Hepatology.

WCR-LIPIDS

THE WCR-Lipids Unit is affiliated to the Department of Medicine in the Faculty of Health Sciences at the University of the Witswatersrand. Our focus includes the epidemiological, clinical and biochemical aspects of common diseases affecting lipid and glucose metabolism in the different ethnic groups of Southern Africa. These include familial hypercholesterolemia and other dyslipidemias, insulin resistance, diabetes mellitus as well as other related metabolic disorders.

The Unit is well recognized both nationally and internationally for its work on familial hypercholesterolaemia (FH), and has one of the largest cohorts, if not the largest cohort, of homozygous FH patients in the world. The Unit has contributed, and continues to contribute, to the management of these patients. Although only a small Unit, the Unit has been involved in over 40 clinical trials with novel lipid-modifying agents over the past 25 years.

WITS ENTERPRISE

WITS Enterprise is a private company, owned by the University of the Witwatersrand, mandated to market and commercialise the University's intellectual capital. WITS Enterprise comprises four units, which each provide dedicated and strategic services that are aligned with the objective to optimise the University's impact on society. These include Innovation Support, Research Support, The Entrepreneurial Wayz and Short Courses. Wits Enterprise offices are situated in the PDH on East Campus.

RURAL HEALTH ADVOCACY PROJECT

The Rural Health Advocacy Project (RHAP) is affiliated to the Wits Centre for Rural Health in the Department of Family Medicine. The Project advocates for equitable access to quality healthcare for rural communities across South Africa.

Informed by the voices of rural healthcare workers and communities on the ground, partner organisations, stakeholders and researchers, RHAP uses its urban-based access to decision-makers to conduct advocacy, generate debate, monitor implementation of health policies in rural areas, support pro-equity government interventions, and influence decision-making that is in tune with rural realities. While small in size, RHAP is large in reach through its innovative programmes and strategic partnerships and networks across the country.

The RHAP focuses primarily on issues affecting access and equity within the primary health-care context, ranging from access to healthcare workers in rural areas to adequate budgets and rural-friendly policies.

The RHAP was founded in 2009 by the Wits Centre for Rural Health and the Rural Doctors Association of Southern Africa, who remain among RHAP's core partner organisations to date.

Centre for Excellence for Biomedical TB Research

The Centre for Excellence for Biomedical TB Research (CBTBR) falls under the University of the Witwatersrand's Department of Molecular Medicine and Haematology. Tuberculosis (TB) is not a scourge of the past but a resurgence has been observed world-wide. TB can also occur in the context of poor socio-economic conditions as an HIV co-infection. In addition, with growing drug-resistance in TB, a better understanding of the disease is needed.

The CBTBR is actively involved in many aspects of this endeavour. The WITS node of CBTBR, under Professor Kana, partners with The University of Cape Town and The University of Stellenbosch to investigate the microbiology of the bacteria that cause the disease - Mycobacterium tuberculosis – along with their disease manifestations in humans.

The CBTBR WITS Node has a particular interest in the following areas:

- Electron Flux
- DNA Repair
- Peptidoglycan
- Cryptic Bacteria in Patients

WITS HEALTH CONSORTIUM

Other Hubs

Address: 272 Bronkhorst Street South Block, Brookfield Office Park, Nieuw Muckleneuk, Pretoria, 0075

Address: New Nurses Home, Chris Hani Baragwanath Hospital, 26 Chris Han Road, Diepkloof, Soweto, 1860
GPS: -26.261192, 27.942682

Address: 251 Mahatma Gandhi Road, Durban, 4091

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