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# CHILDREN'S HEART DISEASE RESEARCH UNIT

Annual Report 2019

**Children's Heart Disease Research Unit**  
Conduct, promote and support children's  
heart research on the African continent



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# LETTER FROM THE DIRECTOR

**F**or our annual report 2017, we highlight our research endeavours in the area of children (both young and older) with heart disease over the past year - looking at congenital heart disease (CHD), grown-up congenital heart disease (GUCH) and rheumatic heart disease (RHD). CHD is the most common birth defect, with a birth prevalence of approximately 8 in every 1000 births. CHD kills more children each year than all the childhood cancers combined, yet the epidemiology of CHD in Africa remains poorly defined with a dearth of data on prevalence and predictors of mortality. Simultaneously, the population of adults with CHD is steadily increasing, and incorrect or inadequate management of this critical transition period has direct influence on maternal mortality and morbidity. RHD, an entirely preventable condition, is undergoing a renewed focus in research and scientific activism, spearheaded by researchers from endemic countries. Research to identify predictors of mortality and morbidity highlight gaps in implementation and provide evidence for improved and focused interventions for children with heart disease is urgently needed.

The Children's Heart Disease Research Unit (CHDRU) was established with the goals to:

- Conduct, promote and support children's heart research on the African continent
- Facilitate Implementation Science
- Provide postgraduate supervision and training in children's heart research
- To achieve the University of Cape Town's minimum required standards to register as an independent unit

The overarching vision, mission and values of this Unit are those of the University of Cape Town and the Department of Paediatrics and the Institute of Child Health as our primary affiliations.

In addition, the specific vision, mission and values of the CHDRU are as follows:

**Vision:**

Integrating research and clinical practice to improve the lives of all with congenital and paediatric heart disease.

**Mission:**

Conducting innovative, patient-centered and accountable research with the focus on African areas of need.

**Values:**

- Child and family-centred
- Caring and respectfulness
- Striving for excellence
- Responsibility, honesty and integrity
- Multisectoral and interdisciplinary collaboration

Our annual report for 2017 demonstrates distinct progress in many of the delineated areas. Our team has grown significantly, and we have had the opportunity to welcome



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researchers and visitors to our Unit. We now have a new office as well as new grants and projects and we look forward to presenting these to you in this report. Over the next year, we plan to extend these even further and develop new collaborations both nationally and internationally, and to demonstrate multisectoral and multidimensional translation of knowledge and science into action and policy.

I would like to thank all our staff, collaborators and in particular, our funders for their generosity, commitment and fervour for children with heart disease.

Liesl Zühlke

**Associate Professor Liesl Zühlke**



A photograph of two young children, a boy and a girl, smiling warmly. They are wearing light-colored shirts. The background is softly blurred, showing what appears to be a library or a room with bookshelves. A white horizontal bar is positioned above the title.

# INTRODUCTION

**T**his past year has been a year of rapid growth from a staff of just three in 2016, to the current 14 personnel working on various new and existing projects as the year ended in 2017. The PartneRships in COngenital HEart Disease in Africa (PROTEA) project kicked off in April, is a complex and ambitious project involving UCT personnel outside of the CHDRU in the Departments of Medicine, Surgery, Genetics and Engineering. Nursing Sister, Alexia Joachim and Dr Thomas Aldersley now assist at the monthly Grown-up Congenital Heart Disease (GUCH) Clinic at Groote Schuur Hospital where participants for the ADOLE 7C study are recruited. We are actively recruiting into the International Quality Improvement Collaborative (IQIC), soon to receive official participation status after the required site visit scheduled in early 2018 from the Boston Children's Hospital-based team in the US, based on our 2017 audit. An RHD Action Small Grants programme was launched and managed out of the Cape Town office and Dr David Watkins continues to visit the Unit from the University of Washington in Seattle for two months each year as he contributes to the scientific endeavours of the RHEACH project. We also have several clinical cardiology staff, led by Dr Lenise Swanson, supporting all the projects and ensuring that our clinical work aligns with our research objectives and plans.

Our work was presented at several national and international conferences; and we supported two local patient representatives who have personally or had family affected by heart disease, to travel to the World Congress of Cardiology in Barcelona, Spain. The unit hosted three Listen to My Heart patient events in 2017 for the established RHD patient community in Cape Town and for two new audiences – a Congenital Heart Disease group and an East African regional group of PLWRHD in Kampala, Uganda. World Heart Day was celebrated once again with festivities at the Victoria and Alfred Waterfront in downtown Cape Town.

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# MEET THE TEAM

## CLINICAL STAFF

**Dr Thomas Aldersley** first completed a Bachelor of Science honours in zoology before completing his medical degree, both of which he obtained from the University of Witwatersrand. He moved to Cape Town for his post-graduate internship and community service where he worked in paediatrics, mostly at district and secondary levels. Upon completion, he continued to work as a paediatric medical officer in both general paediatrics and neonatology.

Thomas recently joined the CHDRU team as a research medical officer, primarily working on the Congenital Heart Disease registry PROTEA, where he assists with implementation of the registry database and the enrolment of patients. He also works on the cardiomyopathy database IMHOTEP and will be involved with PANORAMA-HF, a clinical trial investigating the efficacy of sacubitril/valsartan in the treatment of paediatric patients with heart failure.

In another life, Thomas worked as a 3D computer animator, where he worked on short animations for local TV and the animated feature film *Jock of the Bushveld*.

**Dr Lenise Swanson** completed her diploma in Child Health and Development in 2006, after which she undertook her training as a general paediatrician at Tygerberg Hospital – graduating with a fellowship degree in paediatrics from the College of Medicine of South Africa in 2012. During this time, she also conducted a research project in the field of childhood nutrition for which she was awarded both an academic prize for research excellence and a Master of Medicine degree from Stellenbosch University in 2013. She has since completed her subspecialist training in Paediatric Cardiology at Red Cross Children's Hospital in 2017 and joined the CHDRU on a part-time basis in the same year. Dr Swanson's primary role within the Unit is to provide the clinical data input required for the IQIC project as well as perform clinical duties.

**Alexia Joachim** is a professional nurse who trained at the Johannesburg Hospital. Upon graduation, she began her career in the medical wards at the Red Cross War Memorial Children's Hospital and her subsequent professional experience has been primarily in paediatric subspecialties.

Alexia was a member of the Cape Town REMEDY team from 2010-2014 where she enrolled and managed local participants, as well as conducted site visits and training. She joined the Unit as a research nurse in November 2016 and is assigned to the ADOLE7C, Invictus, and PROTEA projects.



Dr Swanson's primary role within the Unit is to provide the clinical data input required for the IQIC project as well as perform clinical duties.



Dr Thomas Aldersley



Dr Lenise Swanson



Alexia Joachim



## ADMINISTRATIVE STAFF

**Susan Perkins, MS** has been with the Unit since November 2015 when Prof Zühlke was awarded a large 5-year grant to provide scientific and technical guidance to the growing global initiative to end Rheumatic Heart Disease. Susan's primary responsibility is the programmatic aspects of the RhEACH/RHD Action projects. Major projects this year included pilot testing of selected Needs Assessment Tools in rural Uganda, implementation and management of the RHD Action Small Grants Programme and organizing an RHD patient event, "Listen to my Heart" in parallel with a larger RHD Stakeholder event in Kampala, UG. Susan also travelled to present posters on the Needs Assessment Tool at the PHASA Conference in Johannesburg and at the Medicine X Conference at Stanford University in Palo Alto, California.



Susan Perkins

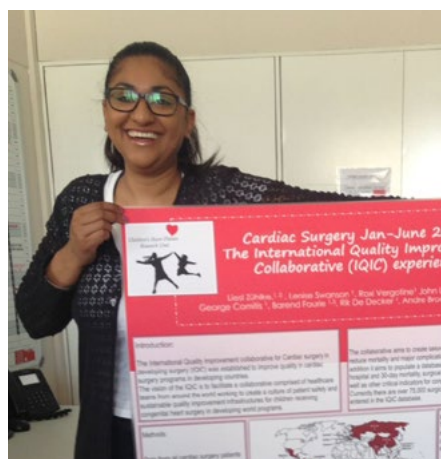
**Roxi-Lynn Vergotine** obtained her Bachelor's of Administration from the University of the Western Cape in 2016 and joined the team in early 2017. Roxi's primary role at the CHDRU is that of data administrator for the International Quality Improvement Collaborative for Congenital Heart Surgery (IQIC) Registry. Roxi was already a familiar face to many when she joined the team in 2017 as she worked for the Mayosi Research Group at Groote Schuur Hospital as the Data Quality Officer from 2009 to 2015. In that position, Roxi provided data management and administrative support to various cardiac database projects that included IMPI, ARVC and RHDGen. Roxi now applies her skills from previous experience and knowledge in her work for the CHDRU.

### Cameron Hendricks

Cameron is a part-time research assistant who joined the team in August 2017. He assists with record retrieval and data capturing by working with the Clinicom national hospital database system. Cameron has recently finished his 2nd year of study for his undergrad degree in Community Health Sciences and majors in Sociology, Psychology and Ethics at the University of the Western Cape.

### Phaphama Magadla

Phaphama joined the CHDRU staff in April 2017 and is based at Groote Schuur Hospital. There, she is responsible for booking patients, taking vital signs upon admission and performing ECGs. She enrolls these patients and collects data for the PROTEA study. Phaphama has taken on the role for trouble-shooting, backing up and updating the various cardiology systems in the GSH Cardiology Unit which has become a valuable role for the Unit.



Roxi-Lynn Vergotine



Cameron Hendricks



Phaphama Magadla

## CONSULTING STAFF

### Dr David Watkins

David is an academic physician based in the Department of Medicine at the University of Washington in Seattle. He also holds a joint appointment in the Department of Medicine at UCT and provides part-time consultation to the RHEACH project as a scientific advisor, spending about two months in Cape Town each year.

This has been a very important year for David as his major work, [Global, Regional, and National Burden of Rheumatic Heart Disease, 1990–2015](#), was published in the prestigious New England Journal of Medicine. Additionally, David is the co-recipient of a large grant awarded in 2017 to Children's National Health System from the American Heart Association (AHA) to launch a Rheumatic Heart Disease Center, with the goal of developing innovative strategies and economic incentives to improve the prevention and diagnosis of RHD in high-risk, financially disadvantaged countries and low-income communities across the United States.

### Associate Professor Mark Engel

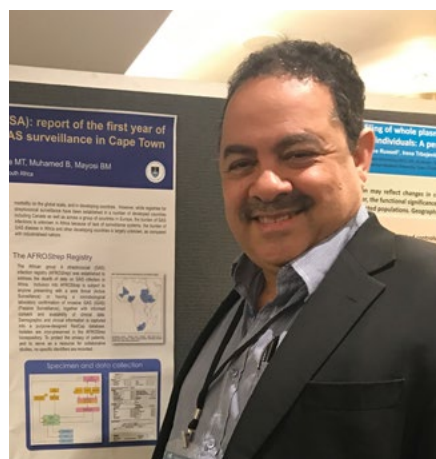
Mark is a member of the Mayosi Research Group based in the UCT Department of Medicine where he heads the AfroStrep Programme. His expertise is in epidemiology and evidence-based medicine research methods and his research focuses on the prevalence of group A streptococcus as it relates to rheumatic heart disease and sore throat among school children. As such, he consults regularly with the CHDRU on Rheumatic Heart Disease projects. Mark also co-supervised Lisa Telford's systematic review thesis for her MPH.



This year the [Global, Regional, and National Burden of Rheumatic Heart Disease, 1990–2015](#), was published in the prestigious New England Journal of Medicine.



Dr David Watkins



Associate Professor Mark Engel



The team at World Heart Day



## RESEARCH ASSISTANTS

**Lisa Telford, BSocSci (Hons)**, joined the Unit as an NRF intern in February 2017. Lisa is currently a Master of Public Health student at UCT under the supervision of Prof Mark Engel. Over the year, Lisa assisted with creating and maintaining an electronic cardiac surgery waiting list. This replaced the old paper-based waiting list – a huge improvement for the cardiac service at the hospital. For her thesis, Lisa worked on the development of a systematic review protocol to assess the diagnostic accuracy of handheld echocardiography for the detection of rheumatic heart disease. The protocol has been accepted for publication and the review is now underway. Lisa expects to graduate in Dec 2018.



Lisa Telford

**Inge Smit, BSc, MSc, MPH** also joined the Unit as an NRF intern in February 2017. Much of her work focused on the MRC-funded PartnerRships in COngeniTal HEart Disease in Africa (PROTEA) study and preparing all the regulatory and logistical aspects of the study. During her time spent with the Unit, Inge had three posters accepted: two at the Annual Public Health Association of South Africa (PHASA) meeting and the other at the 2017 Annual Red Cross War Memorial Children's Hospital Research Day. Additionally, Inge assisted with a systematic review that looked at task sharing in the diagnosis, prevention and management of rheumatic heart disease. The protocol has been published and the review is currently in final preparation for submission.



Inge Smit

**Jessica Abrams, BSc, BMedSc (Hons)** joined the team in April 2017. Jessica's work thus far has included research around rheumatic heart disease and compiling integration documents for RHD Action. Jessica is the recipient of a NRF Innovation Master's scholarship and is currently completing her Master of Public Health degree at UCT. Her dissertation is a systematic review which focuses on RHD prevention and care programs and how those are integrated into country health systems.

**Sithembile Cembi, BA (Hons) English Literature, BA (Hons) Psychology**, joined the team in July 2017. She is the recipient of the ADOLE7C scholarship award and will begin coursework toward a Master's in Public Health in February 2018. Her work is qualitative and she plans to examine the lived experiences of adolescents and mothers living with RHD and CHD, whilst investigating how health systems contribute to the discontinuity of care in this population. At her time spent at the Unit, Sithembile has been contributing to RhEACH/RHD Action communications output; she also travelled to Uganda to assist with the Listen to My Heart RHD Patient Event and Stakeholders meeting.



Jessica Abrams

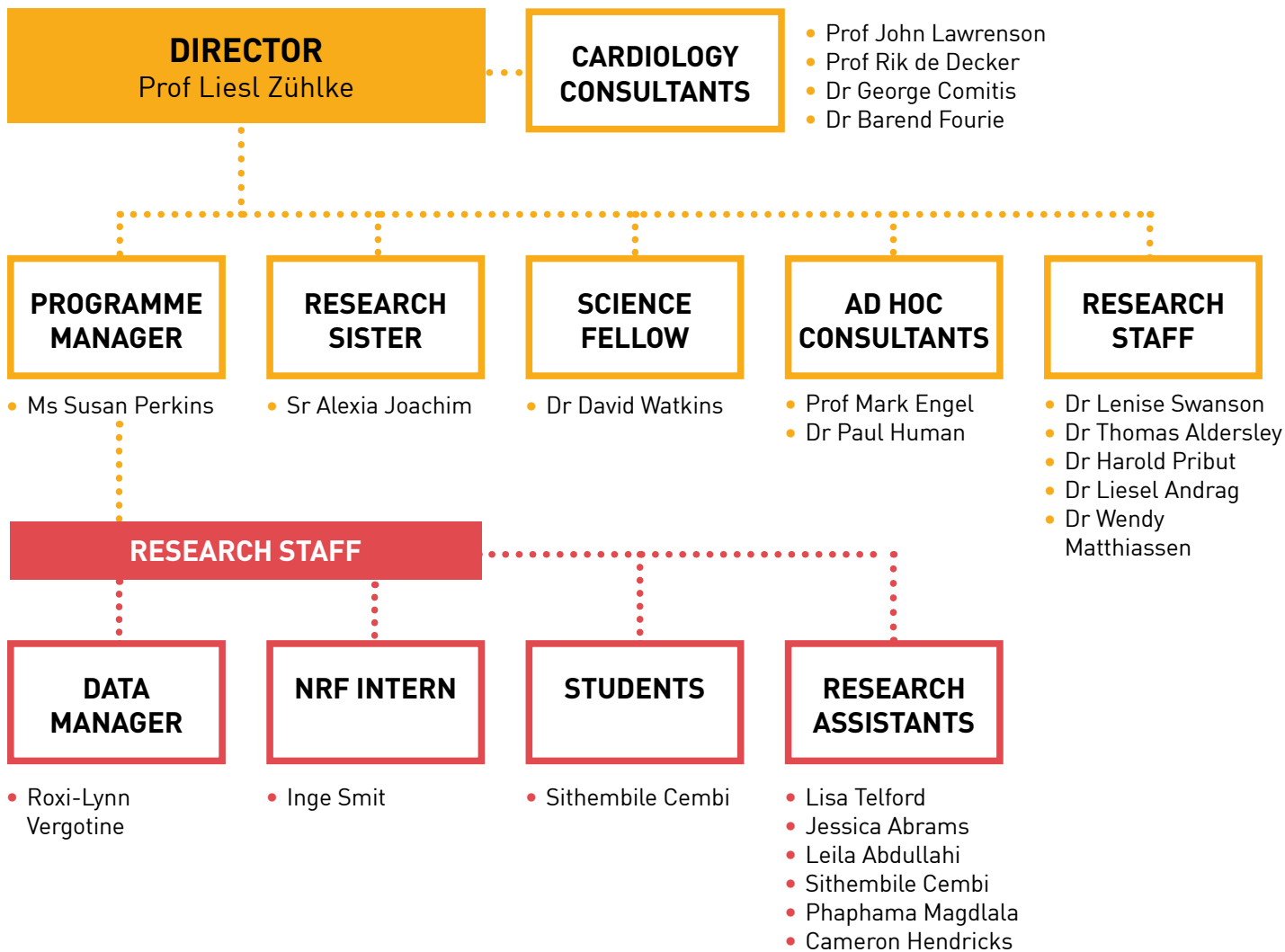


Sithembile Cembi



Fun times with the team

# ORGANOGRAM



# HIGHLIGHTS AND NOTEWORTHY EVENTS

2017

## 1ST QUARTER 2017 (JAN-MAR)

- RHD: Microbes to Community, Cairo, Egypt
- Prof Zühlke elected as Fellow of the American College of Cardiology
- Request from WHO to consult and advise on incorporating RHD in the Neglected Tropical Diseases portfolio
- Request to review - World Heart Federation Statements at Executive Board -Promoting Health of Migrants, Shortages of Medicines and Vaccines, Global Strategy
- Request from WHO AFRO (Dr Steven Shongwe) to review/advise on the burden of RHD and on-going efforts in our region
- Listen to My Heart CHD Patient Event 11 Mar
- RHD Action Partners Meeting Dubai 24-26 Mar
- Request from IMAI/WHO for contributions to WHO PEN Hearts

## 2ND QUARTER 2017 (APR-JUN)

- Prof Zühlke Keynote lecture: Cardiology at the Limits  
<http://www.atthelimits.org/cardiology-diabetes-nephrology/cdnatl-2017/programme/>
- PROTEA Study Start up meeting and site visits
- Prof Zühlke Keynote lecture: First Annual Algerian Paediatric Cardiology Conference
- Launch of RHD Action Small Grants Programme April
- First NAT Pilot testing in Uganda May
- WHO Executive Board recommends a Resolution on 'Rheumatic Fever and Rheumatic Heart Disease' for adoption at the World Health Assembly in May 2018: 1 June 2017

## 4TH QUARTER 2017 (OCT-DEC)

- Listen to My Heart Patient Event - Groote Schuur Hospital 3 Oct
- Listen to My Heart and RHD Stakeholder Meeting Kampala, Uganda 1-3 Nov
- Prof Zühlke awarded Affiliate Membership UCT Institute of Infectious Disease and Molecular Medicine
- SA Heart Association Congress - Johannesburg 9-10 Nov- Attendees: Drs Swanson, Aldersley, Fourie, Sr Joachim, Profs Zühlke and Lawrenson
- PANORAMA Study side-meeting, Prof Bob Shaddy
- Prof Zühlke Opening plenary: 50th Anniversary of the First Heart Transplant 2-4 Dec

## 3RD QUARTER 2017 (JUL-SEP)

- Prof Zühlke: Presentations and Workshop facilitation at the World Congress of Paediatric Cardiology and Surgery, Barcelona 18-19 July
- Patients, family and staff assisted to attend and address the World Congress of Paediatric Cardiology and Surgery, Barcelona 18-19 July
- World Heart Day Celebration in Cape Town 29 Sept
- Prof Zühlke: PASCAR Sudan Oct 7-10 First PANPACH (Paediatric and Congenital) Workshop run at PASCAR

2018







# PRESENTATIONS, FACILITATION AND SUPPORT

## **Rheumatic Heart Disease: from Molecules to the Global Community**

As representatives from both PASCAR and RHD Action, Prof Zühlke, Dr David Watkins and Susan Perkins attended this world conference on rheumatic heart disease held 13 – 16 January 2017 in Cairo, Egypt.

The Congress was convened by Prof Sir Magdi Yacoub (Aswan Heart Centre) and Prof Bongani Mayosi (Pan-African Society of Cardiology). The meeting included presentations and seminars on topics such as secondary prevention programmes, genetic and geographic determinants of RHD, cardiac surgery and RHD vaccine development.

## **First Algerian international meeting on pediatric cardiac surgery and cardiology**

19-20th May 2017 at Algiers

Invited Speaker: Professor Liesl Zühlke

“Paediatric Cardiology on the African Continent: Collaboration, Action and Integration”



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Susan Perkins, Prof Liesl Zühlke, and Dr David Watkins in Cairo

## World Congress of Paediatric Cardiology

Barcelona 16-21 July 2017

Invited Speaker: Professor Liesl Zühlke

Sponsored patient representation from Cape Town, South Africa

The central theme of the 2017 Congress was "Bridging Together" all major specialties in the field of cardiology. Prof Zühlke gave several presentations including, "A Collective Voice: The Power of Patient-Provider Partnerships, Children with heart disease and the prevention and control of non-communicable diseases (NCD's)", "Community-based Research: The RHD Model", "The Global burden of Rheumatic Heart Disease (RHD): Lessons learned from echocardiography-based screening", and a keynote talk entitled, "Eradication of Rheumatic Heart Disease (RHD): A reality - RHD should be a disease of the past."

## At the Limits: Cardiology, Diabetes and Nephrology

The University of Cape Town, Cape Town, South Africa Saturday 8-9 April 2017

The SA Heart & British Cardiovascular Society Lecture:

Invited speaker: Professor Liesl Zühlke

"The prevention, management and control of rheumatic heart disease: are we at the limits?"

## Pan African Society of Cardiology

Khartoum, Sudan 8-11 October 2017

Invited Speaker: Professor Liesl Zühlke

"Echocardiographic screening for Rheumatic Heart Disease: Lessons and current status"

"PANPACH: The First Independent Paediatric Workshop of the Pan African Network for Paediatric and Congenital Heart (PANPACH)". <https://academic-oup-com.ezproxy.uct.ac.za/eurheartj/article/38/47/3483/4737100>:

## 50th Anniversary of the Heart Transplant

Groote Schuur Hospital, University of Cape Town 2-4 December 2017

Invited Speaker: Professor Liesl Zühlke

"The RHD Global Burden: The Forgotten Millions"



Prof Liesl Zühlke at the Pan African Society of Cardiology in Sudan





# MAJOR RESEARCH PROJECTS AND PROGRAMMES

## ADOLE7C

AdolesCents reCeiving Continuous Care for Childhood-onset Chronic Conditions

**Funder:** South African Medical Research Council

**Project Dates:** 1 November 2016-31 October 2019

**Principal Investigators:** Prof Liesl Zühlke and Prof Bongani Mayosi

**Collaborators:** Professor Phillip Moons and Dr Ewa-Lena Bratt, Institute of Health & Care Sciences, Sahlgrenska Academy; University of Gothenburg, Gothenburg, Sweden



The main aim of the 3-year Adole7C-project is to get a better understanding of the role of healthcare system factors for care gaps in adolescents with complex chronic conditions. In this project, young persons with Congenital Heart Disease (CHD) and Rheumatic Heart Disease (RHD) are investigated as sample cases for the broader spectrum of complex chronic conditions.

The specific objectives are: (1) To investigate the prevalence of care gaps in young persons with CHD and RHD in South Africa and Sweden; (2) To identify hospital-related predictors and healthcare system factors, above and beyond patient-related predictors, for discontinuation of cardiac follow-up in young persons with CHD and RHD; and (3) To determine the impact of care gaps in young persons with CHD or RHD in South Africa and Sweden.

The project has both quantitative and qualitative research approaches. The quantitative study comprises an international, multi-centre, longitudinal study in six centres in South Africa (Cape Town, Port Elizabeth) and Sweden (Gothenburg, Lund, Stockholm, Umeå). Patients are selected from the paediatric cardiology outpatient clinic visit lists 2005-2011. Overall, 1500 patients will be included, providing sufficient data to reliably investigate the potential influence of the different patient-related, hospital-related, and healthcare system-related characteristics on care gaps.

More than 2,000 cardiology records of patients meeting the birth-year criterion - born in 1991, 92, and 93 - have been reviewed to identify eligible CHD and RHD participants at the Red Cross site. From that list, nearly 300 participant candidates have been found to meet further eligibility criteria to recruit for enrolment. Port Elizabeth site staff were also busy with this same participant screening process at the end of 2017.



The main aim of the 3-year Adole7C-project is to get a better understanding of the role of healthcare system factors for care gaps in adolescents with complex chronic conditions.



## PROTEA: A North-South Partnership in Congenital Heart Disease

PartneRships in COngeniTal HEart Disease in Africa

**Funder:** Medical Research Council Foundation (UK)

**Project Dates:** 1 April 2017 – 31 March 2018

**Principal Investigators:** Prof Bernard Keavney, Chair of Cardiovascular Medicine, University of Manchester, Prof Bongani Mayosi, Dean, Faculty of Health Sciences, University of Cape Town and Prof Liesl Zühlke, University of Cape Town

**Co-Is:** Profs R De Decker and R Ramesar and Drs B Cupido and G Shaboodien of UCT

This collaborative project between the University of Manchester and UCT aims to address the lack of basic information about Congenital Heart Disease (CHD) in Africa, and whether the rate at which CHD occurs is the same in African populations as in Western populations, and whether the range of CHD conditions encountered is similar. The project aims to establish a sustainable CHD research infrastructure at UCT, and to create a model that could be applied in other South African centres and collaborating African countries.

Adult and paediatric patients who attend the UCT CHD clinics are invited to participate in and contribute to a comprehensive clinical database containing information about both themselves and their families. Blood or saliva samples are requested to investigate the role of inherited factors (genes) in causing CHD. The target enrolment is 1200 patients in the two-year period of the grant.

The UK partner group at The University of Manchester guides the genetic investigation of African-derived genes already shown to be important in Western populations. If this foundation project shows that it is feasible to enrol and conduct genetic studies in African CHD patients, future experiments will be designed and conducted to search for particularly African genetic causes of CHD. Studies modelling the abnormal blood flow that occurs in CHD patients using powerful computers will also be carried out to see if patterns useful in predicting outcomes for patients can be identified.

The data and resources developed in this project will help African researchers define the most important and feasible research topics for future study in the population they serve. The research emerging from this registry will provide clear signposts on steps that can be taken to address the extremely different outcomes of CHD, which is now a highly treatable condition, between Western and African countries.

Aim 1 of the PROTEA project, the epidemiological database, went live 11 September 2017. Enrolments progressed rapidly and within the first month a total of 95



This collaborative project between the University of Manchester and UCT aims to address the lack of basic information about Congenital Heart Disease (CHD) in Africa.



PROTEA UofM Engineers visit in June 2017

participants were enrolled; 85 from RCWMCH, 8 from the GSH Adult Congenital Heart Disease Clinic and 2 from the GSH combined cardio-obstetric clinic. Aim 2 of the PROTEA project, the genetic repository, went live on 27 November 2017, with 9 participants entered in the first week. By the end of the year, a total of 380 participants were enrolled in Aim 1 and 18 samples were added to the genetic biorepository. In addition, the PROTEA database was fully functioning with only minor updates still outstanding.



## **IQIC**

International Quality Improvement Collaborative for Congenital Heart Disease

The International Quality Improvement Collaborative (IQIC) for Congenital Heart Disease is an initiative to collect and assess benchmarking data for congenital heart surgery in the developing world, with the overall goal of guiding quality improvement efforts and reducing mortality for congenital heart disease. Launched in 2008 by Boston Children's Hospital/Harvard University, there are currently 54 sites in 22 different countries enrolled with the IQIC.

The Unit joined this initiative in 2017 and registered 316 surgeries for the (2017) calendar year. The database is managed by Roxi Vergotine who works closely with Dr Swanson in collecting and entering the required clinical information.

## **INVICTUS**

INVESTigation of rheumatIc AF Treatment Using Vitamin K Antagonists, Rivaroxaban or Aspirin Studies, Superiority (INVICTUS-ASA) Invictus

**Funder:** Bayer AG

**Project Dates:** 2016 - 2020

**South African National Leader:** Prof Liesl Zühlke

**Cape Town Principal Investigators:** Prof Bongani Mayosi, Prof Liesl Zühlke, Dr Blanche Cupido

This programme is a comprehensive evaluation of rheumatic valvular heart disease (RVHD), Atrial fibrillation (AF)/flutter and stroke. It uses a prospective, randomized, open-label superiority trial design, comparing rivaroxaban to aspirin in high-risk patients either with AF and unsuitable for VKA or without AF and with high-risk factors.

The global INVICTUS programme is comprised of a registry of 20,000 participants and two clinical trials. The first trial, with participants in rheumatic valvular atrial fibrillation or flutter (AF/flutter), will test whether rivaroxaban is non-inferior to vitamin K antagonists (VKAs) for prevention of stroke or systemic embolism (the Non-inferiority Trial). In the second trial, in participants with RHD, either with AF/flutter but unsuitable for VKA therapy, or with sinus rhythm but with high risk, whether rivaroxaban is superior to aspirin for prevention of stroke or systemic embolism (the Superiority Trial).

Prof Zühlke is the South African National Leader and co-PI at Groote Schuur Hospital. She is additionally the site PI at Red Cross Hospital where paediatric participants are recruited for the registry arm of the study.



**IQIC for Congenital Heart Disease is an initiative to collect and assess benchmarking data for congenital heart surgery in the developing world.**



**INVICTUS is a comprehensive evaluation of rheumatic valvular heart disease (RVHD), Atrial fibrillation (AF)/ flutter and stroke.**

## Panorama-Heart Failure Clinical Study

**Project/Study Title:** Multicenter, open-label, study to evaluate safety, tolerability, pharmacokinetics and, pharmacodynamics of LCZ696 followed by a 52-week randomized, double-blind, parallel group, active-controlled study to evaluate the efficacy and safety of LCZ696 compared with enalapril in pediatric patients from 1 month to < 18 years of age with heart failure due to systemic left ventricle systolic dysfunction

**Funder:** Novartis

**Project Dates:** Second Quarter 2017

**Country Principal Investigator:** Prof Liesl Zühlke

**Site Principal Investigator:** Prof Liesl Zühlke

**Site Co-Is:** Prof J Lawrenson, and Drs G Comititis, T Aldersley and B Fourie

Industry-sponsored clinical trial of a heart failure medication in a paediatric population

## National Research Foundation

Competitive Support for Unrated Researchers (CSUR)

**Funder:** National Research Foundation

**Project Dates:** 2017-2020

**Principal Investigator:** Prof Liesl Zühlke

This grant provides bursary support for Masters/Doctoral student for three years of work and study based on the ADOLE 7C project.

## IMHOTEP

The African Cardiomyopathy and Myocarditis Registry Programme

**Funder:** Newton Fund

**Project Dates:** 2016

**Principal Investigator:** Dr Sarah Krause, Department of Medicine, UCT

**Co-Is:** Drs G Comititis and B Fourie, and Profs L Zühlke, J Lawrenson and R De Decker

This project entails the development of a comprehensive registry of cardiomyopathy patients in southern Africa

## RhEACH and RHD Action

Rheumatic Heart Disease-Evidence, Advocacy, Communication and Hope

**Funder:** Medtronic Foundation (Subcontract with Telethon Kids Institute, Perth Australia)

**Project Dates:** April 2015 to March 2020

**Co Programme Directors:** Profs Liesl Zühlke and Jonathan Carapetis (Telethon Kids Institute)

**Deputy Director:** Dr Sophie La Vincente (Telethon Kids Institute)

The RhEACH Project is a 5-year initiative funded by the Medtronic Foundation that is shared between Telethon Kids Institute in Perth Australia, under the direction of Dr Jonathan Carapetis, and the University of Cape Town under the leadership of Prof Zühlke. RhEACH is a technical support and policy translation initiative to amplify rheumatic heart disease control efforts locally, regionally and globally. RhEACH aims to identify, describe and disseminate solutions for this neglected disease and to reduce burden on vulnerable populations around the world. RhEACH is a founding partner of RHD Action.



RhEACH is a technical support and policy translation initiative to amplify rheumatic heart disease control efforts locally, regionally and globally.





The RHEACH project entered its third year in 2017 and was very busy in terms of travel and projects for the Cape Town-based office. The year started off with a Partners Meeting in Dubai, 24-26 March, with members from RHEACH-Perth and Cape Town, World Heart Federation-Geneva and the Demonstration Country partners from Uganda and Tanzania. The new RHEACH Deputy Director, Dr Sophie La Vincente, was introduced at this meeting. The purpose of the meeting was to take stock of progress to date and for planning for the way forward after the first two years of the programme had been completed. There was also a virtual interactive session with new Medtronic project leadership, Ms Jessica Daly and Ms Belinda Ngongo.

On 1 June 2017, the WHO Executive Board recommended a Resolution on 'Rheumatic Fever and Rheumatic Heart Disease' for adoption at the World Health Assembly in May 2018. This was a major milestone for RHD Action and their allies after years of campaigning to secure a global commitment on RHD. The Resolution will be a high-level global policy that demands national and international decision-makers to take action to prioritize and fund RHD prevention and control in all endemic settings. As the 2018 date for the adoption of the Resolution approaches, RHD Action is preparing to assist with dissemination and execution of the directive on the world stage.

One of the major RHEACH Cape Town activities this year included on-the-ground pilot testing of selected tools in Mbarara, UG from the Needs Assessment Tool created by the RHEACH team in 2016. RHEACH Cape Town worked closely with Uganda demonstration country partners at Makerere University (Kampala), Case Western University (Cleveland, OH USA) and Children's National Medical Center (Washington, DC) to develop the protocol and implement the project. Valuable lessons were learned from the experience that will be incorporated into the second edition of the NAT slated for 2019-20. A manuscript of the qualitative data collected during the pilot testing is in preparation.

Also in 2017, RHD Action launched a new Small Grants Programme that was administered from the Cape Town office. A Request for Proposals was issued calling for RHD-related projects in low-to-middle income countries that addressed a specific component of the RHD Action Priorities Pyramid that could be completed with a \$2000 budget over a 6-month period. Five proposals were selected from over 20 high quality submissions from three continents.



Small Grant Project Fiji



Because of the huge success of this first round of funded projects, this programme is slated to be expanded in 2018.



Emerging Leaders Small Grant Winners

A clear need for this small seed funding to enable resource-limited sites to kick off small projects to gain momentum and create a presence was apparent based on the large number of proposals received. Because of the huge success of this first round of funded projects, this programme is slated to be expanded in 2018.

## Listen to My Heart Patient Events

The RHD community of researchers and health care workers at University of Cape Town under the banner of the Stop RHD ASAP programme have created a tradition of patient events to include, recognize and celebrate the RHD patient community. Starting in 2014, the first patient event was a luncheon to show appreciation for study participation and to share preliminary results of the Global Rheumatic Heart Disease Registry (REMEDY) study prior to presentation at an international congress.

In 2015, the Stop RHD ASAP team, together with the Rheumatic Heart Disease, Evidence, Advocacy, Communication and Hope (RhEACH) team, added an educational demonstration component to empower the patient community with information about their disease and how to take better care of themselves. This new format also provided an opportunity for patients to interact directly with healthcare providers and researchers outside of the clinical environment.

Based on the success and enthusiasm generated at the 2015 event, Stop RHD ASAP together with RhEACH and other RHD Action partners were joined by UCT's Dr Jantina DeVries, a recipient of NIH funding for a community engagement component, to hold the 2016 event. The event was held at the Cape Town International Convention Center and was facilitated by the incoming president of SA Heart and RHD Action's Prof Liesl Zühlke to take place within the South African Heart Association meeting. Having patients included in a medical congress was a first for the cardiology community in South Africa. The newly formed Groote Schuur Hospital RHD Patient Community Advisory Group was formally introduced at this event.

This patient event was called "Listen to my Heart" and has become the model for a series of subsequent events in both Cape Town and Kampala, UG. Events to engage, celebrate and network with patients is clearly a valuable activity in the healthcare community. We have been working to encourage the celebration of the community of people living with heart disease around the world in an effort to bring the faces and voices of the real people affected by cardio-vascular disease to the attention of policy makers, funders and the medical community so they can make informed decisions on the importance of prevention at the primary, secondary and tertiary levels, and on how to care for PLWRHD who have progressed to advanced disease.

## Listen to My Heart: Focus on Congenital Heart Disease

Navigating Transitions for Congenital Heart Disease Patients

This first-ever CHD patient event was held on 11 March 2017 to provide important information to parents and guardians of children with congenital heart disease. The event also targeted older children and teenagers living with CHD. The topics covered were those raised by most often by parents and families, and covered school-related issues, sport and exercise, diet, surgery and reproductive health. Information about transitioning to the Grown-ups with Congenital Heart Disease (GUCH) Clinic at Groote Schuur Hospital (GSH) was also discussed.

The event format was a series of on-stage discussions between clinicians and patients, and their parents as appropriate. One female patient, aged 19, discussed her experiences at school as a CHD patient. She felt that teachers should be made aware of their CHD scholars' medical status and should be encouraged to treat their CHD pupils as normal as possible. This patient has completed her schooling and is now enrolled at the University of Cape Town.



We have been working to encourage the celebration of the community of people living with heart disease around the world in an effort to bring the faces and voices of the real people affected by cardio-vascular disease to the attention of policy makers, funders and the medical community



Young CHD patient

Another patient, an 11-year old boy, talked with his clinician and the audience about sport and exercise. This patient recently won the most promising cricket player award from his club. He too discussed his limitations and importance of openness with his coach and team members about his medical condition. This transparency has facilitated a strong relationship with his team as they are eager to make the accommodations such as extra rest and breaks, that might be needed during practice and play.

Prof Zühlke explained the concept of transition to the new GUCH Clinic at Groote Schuur Hospital (GSH) at around 13 years of age. She reassured patients and their families that paediatric cardiologists will still be part of the patients' lives and will work with the new cardiology team as patients are transitioned to adult care.

Prof Zühlke also brought up the important topic of women's health focusing on the additional needs female patients with CHD will have during pregnancy. The importance of contraception and planned pregnancies was discussed. Patients were informed about the GSH Combined Cardiac-Obstetric Clinic where patients can discuss future pregnancies and any unique needs and risks involved. She encouraged open discussion about sex education from very early on and preventing unplanned pregnancy for the safety of the patient.

The last patient/clinician duo was a cardiac surgeon and a vibrant 6-year old girl who has undergone a series of very serious surgeries. Her father joined the conversation to discuss the impact of CHD on the entire family and stressed that CHD is a life-long



Alexia Joachim at the event



The audience at the Listen to My Heart event



Some of the patients attending the event and taking part in various activities



journey for the child and the family - that discussions must include siblings and the wider family.

### Cape Town 4th Annual Listen to My Heart Patient Event

This year, 47 People living with Rheumatic Heart Disease (PLWRHD) guests attended the 2017 event despite the grey October weather that had settled over Cape Town. There were many familiar faces among the patient group this year, as well as some new faces. Notably in attendance was a new mother with RHD, whose pregnancy was successfully managed at the GSH Combined Cardio-Obstetric Clinic. She brought along her 7-month old son, much to the delight of her fellow guests.

The event included informational booths displaying heart valves, and the genetics of RHD. The program also included short presentations about the global epidemiology of RHD, the natural progression from strep throat to the valvular complications of RHD, as well as the management of RHD. A healthy eating demonstration was new to the program this year. along with the "I know my heart" quiz moderated by Prof Mark Engel based on the information and demonstrations from the entire morning.

This year, patients responded strongly to the auscultation demonstration with simple stethoscopes. Patient guests were enthralled, "listening to the hearts" of their fellow patients as well as to their own. The sound of hearts pumping with damaged valves, repaired valves and mechanical valves was plainly audible through the stethoscopes. Guests and event facilitators were clearly happy to share the sounds of their heartbeats with others. <https://academic-oup-com.ezproxy.uct.ac.za/eurheartj/article/39/19/1669/4995734>



Patient guests were enthralled, "listening to the hearts" of their fellow patients as well as to their own.



Stethoscope demonstration on new mother



One of the booths at the event



RHD patient listening to her own heart



Listen to my Heart Patient Event guests and facilitators

## Listen to my Heart – Patient Event in Kampala

Susan Perkins and Sithembile Cembali traveled to Uganda to facilitate an international Listen to My Heart event at the Mulago Hospital Guest House in Kampala. They were joined by Alastair White from WHF Geneva and worked with the Uganda Heart Institute (UHI) Rheumatic Heart Disease Support Group to organize the event. Tao Farren-Hefer, a Cape Town-based independent photographer/videographer, joined the team to capture important images at both the patient event and the more formal RHD stake-holder event that took place on 2-3 November, also in Kampala.

The patient event was attended by about 90 participants that primarily included PLWRHD, but also physicians, nurses, policy makers and advocates. Patients from Zambia, Kenya and Rwanda, as well as from several locations across Uganda, attended the event and RHD Action was represented by several team members from the US, Australia and Geneva.

Themes and formats established at previous Cape Town Listen to My Heart events were utilized to provide an interactive, educational and fun session. The primary aim was to empower PLWRHD, giving them the opportunity to learn more about their disease and the services health care workers provide, and most importantly, the chance to meet and network with other PLWRHD from across the region.

Tom Okello– Chair of the RHD Support Group at the Uganda Heart Institute – was the Master of Ceremonies and opened the event by saying “RHD is a silent killer. Many who come to be diagnosed are diagnosed late. But RHD can be stopped – and this is why we are here.” Tom, who himself underwent heart valve replacement surgery in 1996, said that people living with RHD could make a difference: “It is our desire that we see RHD eradicated from Uganda, and it is up to us to start this fight.”

Christine Katusiime, Vice-Chair of the RHD Support Group, introduced members of the patient support group and described their roles in supporting other PLWRHD and providing important health messages about RHD to raise awareness and reduce stigma in the community. Other speakers included Dr Peter Lwabi, senior consultant pediatrician and cardiologist, and the Deputy Executive Director at UHI; Dr Rosemary Wyber of RhEACH/Australia; and Jeremiah Mwangi, Director of Policy & Advocacy at the World Heart Federation.

A wide variety of patient stories and testimonials were presented and included Zahara, the first person in Uganda to undergo valve replacement surgery at the Mulago Hospital; Samuel from Zambia, who recounted how he was unable to run and play as a boy; and Adoch, a Ugandan patient, who had succeeded in qualifying as a teacher following successful open-heart surgery.

Closing remarks were provided by Dr. Isaac Ssinabulya, a cardiologist and medical advisor to the patient support group, who highlighted the vital role played by the RHD Patient Support Group in improving RHD care.



**A wide variety of patient stories and testimonials were presented and included Zahara, the first person in Uganda to undergo valve replacement surgery at the Mulago Hospital.**



Tom Okello speaking to the audience



Patient Support Group Members from Entebbe



Guest patients from Zambia listening to the Uganda RHD Stories




# COLLABORATORS AND STRONG LINKAGES

- Mayosi Research Group: Head: Prof Bongani Mayosi
- Department of Paediatric Cardiology, UCT and Tygerberg Hospital: Head Associate Prof John Lawrenson
- Department of Medicine, Groote Schuur Hospital Head: Prof Ntobeko Ntusi
- Department of Cardiology, Groote Schuur Hospital Head: Prof Mpiko Ntsekhe
- Department of Pediatrics: Prof Andrew Argent
- Afrostrep Research Group: Head: Prof Mark Engel
- Hatter Institute of Cardiovascular Research: Head: Professor Karen Sliwa-Hanle
- CDIA- Chronic Diseases Initiative in Africa- Head: Prof Naomi Levitt
- Institute of Infectious Diseases: Prof Valerie Mizrahi
- World Heart Federation- President-Elect Prof Karen Sliwa
- World Health Organization: IMAI/WHO for contributions to WHO PEN Hearts
- Telethon Kids Institute Head: Prof Jonathan Carapetis
- Pan-African Society of Cardiology; Immediate Past-President President: Prof Bongani Mayosi
- Academic Center for Nursing and Midwifery, Leuven Department of Public Health and Primary Care, University of Leuven, Head: Professor Philip Moons
- Institute of Health and Care Sciences, Sahlgrenska Academy, University of Gothenburg: Prof Ewa-Lena Bratt
- University of Manchester: Prof Bernard Keavney
- London School of Economics: Dr Huseyin Naci
- Brave little hearts (<https://www.facebook.com/BraveLittleHeartsSA/>)



Drum Magazine photo from "The Heart of the Matter"





# PROMOTION, MEDIA AND PUBLICITY

## Television

Prof Zühlke, acting in her dual roles of UCT Associate Professor and President of the South African Heart Association, appeared on the early-morning Espresso show on 2 August 2017 to commemorate Rheumatic Fever Week in South Africa. Rheumatic Fever Week has been observed in South Africa for over 25 years since it was declared by the National Department of Health. Prof Zühlke's discussion covered progression of disease from sore throat to rheumatic fever to late stage valvular heart disease. She emphasized the strong case for prevention. Espresso is an award-winning South African breakfast magazine television show with a viewership reaching nearly 1.5 million people, broadcast live from Cape Town that features both informative and interactive segments.

## Electronic Media

### Grant to help children with heart disease

FAMILY / 15 FEBRUARY 2017, 09:00AM / SIPOKAZI FOKAZI

<https://www.iol.co.za/lifestyle/family/grant-to-help-children-with-heart-disease-7766435>

### It's vital to curb heart disease among our women, young people

OPINION / 8 OCTOBER 2017, 10:31PM / PAMELA NAIDOO, LIESL ZÜHLKE AND KAREN SLIWA

<https://www.iol.co.za/capetimes/opinion/its-vital-to-curb-heart-disease-among-our-women-young-people-11520749>

### The Heart of the Matter.

31 August 2017 Drum: Lifestyle Health; page 42. Reported by Jane Surtees. [www.drum.co.za](http://www.drum.co.za)

“

Prof Zühlke's discussion covered progression of disease from sore throat to rheumatic fever to late stage valvular heart disease. She emphasized the strong case for prevention.

# VISITING SCHOLARS

## Ms Jennifer Cottrell

The CHDRU hosted Ms Jennifer Cottrell, Visiting Churchill Scholar, Australia and South Australia RHD Programme Coordinator, in June of this year. Ms Cottrell visited the Vanguard Clinic in Gugulethu where many RHD study patients have been recruited and followed over the years. She interviewed two local PLWRHD and spoke with many of the academic RHD stakeholders based at UCT. The Unit also facilitated networking/discussions with attendees from Mozambique, Namibia and Fiji at Emerging Leaders Programme that was being held concurrently in Cape Town. (Two of the Emerging Leaders were RHD Action Small Grant recipients.) Discussion focused on concept and branding development and the global promotion of RHD patient-focused events (Listen to My Heart). Ms Cottrell carried this discussion to Ms Dilys Kamunto Nyariki, the Kenya Small Grant recipient, on the next segment of her Visiting Scholar itinerary.



Ms Jennifer Cottrell

## Professor Bernard Keavney, Alastair Revell and Amir Keshmiri

University of Manchester

Professor Keavney is British Heart Foundation Professor of Cardiovascular Medicine and a Consultant Cardiologist at Central Manchester University Hospitals NHS Trust. Prof Keavney is world-renowned for his work in the genetics of congenital heart disease at the University of Manchester where he serves as Director of the Institute of Cardiovascular Sciences and Director of the Cardiovascular, Metabolic and Nutritional Science Research Domain in the Faculty of Biology, Medicine and Health. Prof Keavney is the co-PI of the MRC UK-funded PROTEA study.

Prof Keavney visited UCT to participate in the PROTEA Kick-off meetings in March of 2017. Drs Revell and Keshmiri, both from the School of Mechanical, Aerospace & Civil Engineering at University of Manchester, visited UCT in June to consult with UCT collaborators in regard to the development of the Computational Flow Dynamics component of the project.



Prof Bernard Keavney



## Dr Heidi Weberruss

For the second time, Heidi Weberruss, PhD, sports scientist and medical student, from the Technical University of Munich, was a visiting scholar to the Unit from August to October. She continued to work on a research project investigating fitness levels and vascular status in children born with univentricular hearts (UVH). This pilot study will be the first one measuring physical fitness in South African children born with UVH. Participants will learn about their level of physical fitness and be given encouragement to be physically active to promote cardiovascular health.

Dr Weberruss collaborated with Dr Andre Brooks, paediatric surgeon, and Prof Zühlke, and addressed cardiopulmonary exercise testing and exercise guidelines in children with congenital heart disease at the cardiology journal club. Dr Weberruss also attended the 2nd Cape Town Cardiac Diseases in Pregnancy Symposium at the UCT Hatter Institute for Cardiovascular Research and worked on an abstract regarding cardiovascular disease in pregnant women, born with congenital heart disease, accepted for oral presentation in 2018.

## Dr Radhini Karunaratne

Dr Karunaratne is a Paediatric Registrar training at University College in the London Deanery. She has interests in both Paediatric Cardiology and Global Child Health, so she took a year off to explore these interests. In addition to participating in field work in developing settings in Africa – notably in Malawi and Zimbabwe - “Raz” joined us here in Cape Town for a three-month stint to observe first-hand how paediatric cardiologists practice in South Africa compared to the UK. She used this time to gain hands-on experience in basic echocardiography and assisted with data capture for the IMHOTEP registry, mainly at Tygerberg Hospital.



Dr Heidi Weberruss



Dr Radhini Karunaratne



Drs Alastair Revell and Amir Kashmiri on Table Mountain





# POST-GRADUATE TRAINEES

**Paediatric Registrar: Dr Fefekazi Mpisane (3rd Year)**

M.Med Project entitled, "Post cardiac surgery sternal wound sepsis burden, risk factors and outcomes at Red Cross War Memorial Children's Hospital, Cape Town, South Africa: A five-year experience."

**Supervisor:** Prof L Zühlke

**Progress:** DRC and HREC approved, data collection in progress

**Paediatric Cardiology Specialist Registrar: Dr Fenny Shidhika (3rd Year) M.Phil.**

Project entitled, "The Namibia children heart project; a 6-year retrospective review"

**Co-supervisors:** Prof L Zühlke and Dr Chris Hugo-Hamman from Windhoek Central Hospital in Namibia

**Progress:** DRC and HREC approved, data collection in progress



Dr Fefekazi Mpisane



Dr Fenny Shidhika

# RESEARCH OUTPUT 2017

## Publications (selected)

1. [Factors associated with long-term mortality after Fontan procedures: a systematic review.](#) Alsaied T, Bokma JP, Engel ME, Kuijpers JM, Hanke SP, Zühlke L, Zhang B, Veldtman GR. *Heart*. 2017 Jan 15;103(2):104-110. doi: 10.1136/heartjnl-2016-310108. Epub 2016 Nov 9. Review. PMID:
2. [A Comprehensive Needs Assessment Tool for Planning RHD Control Programs in Limited Resource Settings.](#) Zühlke LJ, Watkins DA, Perkins S, Wyber R, Mwangi J, Markbreiter J, Moloi HS, Engel ME, Shato T, Hermanus T, DeVries J, Read C. *Glob Heart*. 2017 Mar;12(1):25-31. doi: 10.1016/j.gheart.2016.10.028. Epub 2017 Feb 27. PMID:
3. [Group A Streptococcus, Acute Rheumatic Fever and Rheumatic Heart Disease: Epidemiology and Clinical Considerations.](#) Zühlke LJ, Beaton A, Engel ME, Hugo-Hamman CT, Karthikeyan G, Katzenellenbogen JM, Ntusi N, Ralph AP, Saxena A, Smeesters PR, Watkins D, ZillaP, Carapetis J. *Cur Treat Options Cardiovasc Med*. 2017 Feb;19(2):15. doi: 10.1007/s11936-017-0513-y. Review. PMID:
4. [The Health Systems Barriers and Facilitators for RHD Prevalence: An Epidemiological Meta-Analysis From Uganda and Tanzania.](#) Moloi AH, Mall S, Engel ME, Stafford R, Zhu ZW, Zühlke LJ, Watkins DA. *Glob Heart*. 2017 Mar;12(1):5-15.e3. doi: 10.1016/j.gheart.2016.12.002. Epub 2017 Mar 14. PMID:
5. [Child and Adolescent Health From 1990 to 2015: Findings From the Global Burden of Diseases, Injuries, and Risk Factors 2015 Study.](#) Global Burden of Disease Child and Adolescent Health Collaboration, Kassebaum N et al Murray CJL, Vos T. *JAMA Pediatr*. 2017 Jun 1;171(6):573-592. doi: 10.1001/jamapediatrics.2017.0250.
6. [Predicting long-term mortality after Fontan procedures: A risk score based on 6707 patients from 28 studies.](#) Alsaied T, Bokma JP, Engel ME, Kuijpers JM, Hanke SP, Zühlke L, Zhang B, Veldtman GR. *Congenit Heart Dis*. 2017 Jul;12(4):393-398. doi: 10.1111/chd.12468. Epub 2017 May 8. PMID:

7. [Moving Forward the RHD Agenda at Global and National Levels](#). Watkins DA, Zühlke LJ, Narula J. *Glob Heart*. 2017 Mar;12(1):1-2. doi: 10.1016/j.gheart.2017.04.002. No abstract available. PMID:
8. [Epidemiology of pharyngitis as reported by Zambian school children and their families: implications for demand-side interventions to prevent rheumatic heart disease](#). Musuku J, Lungu JC, Machila E, Jones C, Colin L, Schwaninger S, Musonda P, Tadmor B, Spector JM, Engel ME, Zühlke LJ. *BMC Infect Dis*. 2017 Jul 6;17(1):473. doi: 10.1186/s12879-017-2563-x. PMID:
9. [Status and Challenges of Care in Africa for Adults With Congenital Heart Defects](#). Edwin F, Zühlke L, Farouk H, Mocumbi AO, Entsua-Mensah K, Delsol-Gyan D, Bode-Thomas F, Brooks A, Cupido B, Tettey M, Aniteye E, TamateyMM, Gyan KB, Tchoumi JCT, Elgamal MA. *World JPediatr Congenit Heart Surg*. 2017 Jul;8(4):495-501. doi: 10.1177/2150135117706340. PMID
10. [Acquired heart disease in low-income and middle-income countries](#). Curry C, Zühlke L, Mocumbi A, Kennedy N. *Arch Dis Child*. 2017 Aug 24. pii: archdischild-2016-312521. doi: 10.1136/archdischild-2016-312521. [Epub ahead of print] PMID:
11. [Lancet](#). 2017 Jul 15;390(10091):231-266. doi: 10.1016/S0140-6736(17)30818-8. Epub 2017 May 18. Healthcare Access and Quality Index based on mortality from causes amenable to personal health care in 195 countries and territories, 1990-2015: a novel analysis from the Global Burden of Disease Study 2015.
12. [GBD 2015 Healthcare Access and Quality Collaborators. Electronic address: cjlm@uw.edu; GBD 2015 Healthcare Access and Quality Collaborators](#). The New England Journal of Medicine. August 24, 2017 vol. 377 no. 8. Global, Regional, and National Burden of Rheumatic Heart Disease, 1990–2015 David A. Watkins, M.D., M.P.H., et al Theo Vos, M.D., Ph.D., Jonathan R. Carapetis, M.B., B.S., Ph.D., and Gregory A. Roth, M.D., M.P.H.

## Posters

1. Pregnancy outcomes in women with Pulmonary Hypertension: The Cardiac Disease in Maternity Groote Schuur Cohort Study. Ayesha Osman, Johann Baard, Ferial Azibani, **Liesl Zühlke**, Anthony Lachman, Olivia Briton, John Anthony, Karen Sliwa Department of Obstetrics and Gynaecology, Groote Schuur Hospital, University of Cape Town
2. Observational Study of Carbapenem Antibiotic Resistance in Humans: Europe and Ireland 2010 –2015. **Inge Smit** and Prof Séamus Fanning An Evaluation of Medicinal Plants Used in South Africa and Lesotho for Uterotonic PHASA: 4-7 Sept 2017, Sandton
3. Partnerships for Congenital Heart Disease in Africa (The Protea Study)- A CHD cohort for aetiological, intervention and outcome studies. **Inge Smit, Susan Perkins, Thomas Aldersley**, Bernard Keavney, Alistair Revell, Rik De Decker, John Lawrenson, George Comititis, Barend Fourie, **Lenise Swanson**, Blanche Cupido, Gasnat Shaboodien, Rajkumar Ramesar, Bongani Mayosi, Paul Human, **Liesl Zühlke**, Red Cross Hospital Research Day: 31 Oct – 1 Nov 2017, Cape Town
4. Cardiac Surgery Jan-June 2017: The International Quality Improvement Collaborative (IQIC) Experience. **Liesl Zühlke, Lenise Swanson, Roxi Vergotine**, John Lawrenson, George Comititis, Barend Fourie, Rik De Decker, Andre Brooks, John Hewitson, Red Cross Hospital Research Day: 31 Oct – 1 Nov 2017, Cape Town



5. Diagnostic accuracy of hand-held echocardiography for the detection of Rheumatic Heart Disease in school-aged children and adolescents: a systematic review protocol **Lisa Telford, Liesl Zühlke**, Eleanor Ochodo, Mark Engel, 7th World Congress of Paediatric Cardiology & Cardiac Surgery (WCPCCS): 16 – 21 July 2017, Barcelona; UCT Department of Medicine, 43rd Annual Medicine Research Day: 4 – 5 Oct 2017, Cape Own; Red Cross Hospital Research Day: 31 Oct – 1 Nov 2017, Cape Town
6. Development of a Comprehensive RHD Needs Assessment Tool (NAT) for Resource-Limited Settings. **S Perkins, D Watkins, L J Zühlke**, Medicine X Conference, September 2017, Palo Alto, CA (USA)
7. Development of an RHD Needs Assessment Tool (NAT) for Resource-Limited Settings. **S Perkins, L Zühlke, D Watkins**, PHASA: 4-7 Sept 2017, Sandton