59th Annual Academic Day
13 August 2015

59ste Akademiese Jaardag
13 Augustus 2015

PROGRAMME & ABSTRACTS
PROGRAM & ABSTRAKTE

FOREWORD

Stellenbosch University is a leading research-intensive African higher education institution, and the Faculty of Medicine and Health Sciences (FMHS) contributes significantly to the University's well-established reputation, with our top-class research addressing some of the toughest health challenges of our nation, the African continent, and the world. We are committed to sustaining a research culture in which productivity, quality and relevance are encouraged and supported.

Our Faculty research themes include: Infectious Diseases, Non-communicable Diseases, Mental Health and Neurosciences, Violence, Injuries, Trauma and Rehabilitation, Maternal and Child Health, Health Systems Strengthening, and Perioperative Sciences. Through these themes and the associated research groupings, units, centres and institutes, we aim to make a difference to the health and wellness of our society as a whole.

During the past year, the FMHS has once again broken all previous records in its long and proud history, in terms of the number of publication outputs produced annually. Since 2013 we have been the Faculty with the largest number of research article publications at Stellenbosch University, and in recent years we have also consistently been increasing our outputs of postgraduate students. Furthermore, we have seen a very pleasing growth in the number of postdoctoral fellows at the Faculty over the last few years which we hope will contribute to the next generation of health sciences researchers for our country. Our researchers and research centres continue to attract highly prestigious awards, and recently we have had cause to celebrate a number of breakthroughs, such as the world's first successful penile transplant. Finally, we have been able to invest significant amounts of funding in infrastructure and a number of key new appointments in Molecular Biology, Sports and Exercise Medicine, Bioinformatics and other areas which we see as areas of strength, growth and potential for the Faculty.

The Annual Academic Day, which showcases and celebrates our Faculty's on-going research achievements, remains a highlight of our academic calendar. This event also provides an opportunity to acknowledge the commitment and hard work of our researchers and support staff, whose efforts are indispensable to the success of our research enterprise. Importantly, it is a time to take stock and reflect on the impact of our research, and to celebrate the difference it has made to the lives of individuals and communities.

On behalf of the FMHS, I would like to congratulate everyone whose work has been selected for presentation this year. I also wish to express the Faculty's sincere appreciation to the organising committee who has worked tirelessly to ensure the success of the 2015 Annual Academic Day. I invite you all to share and enjoy this special event with us.

Professor Jimmy Volmink
DEAN

VOORWOORD

Universiteit Stellenbosch is een van die toonaangewende navorsingsintensiewe hoëronderwysinstellings in Afrika, en die Fakulteit Geneeskunde en Gesondheidswetenskappe (FGGW) dra aansienlik by tot die Universiteit se goed gevestigde reputasie, met ons top-klas navorsing wat sommige van die moeilikste uitdagings vir die gesondheid van ons nasie, die Afrika-kontinent en die wêreld aanspreek. Ons is verbind tot die handhawing en uitbreiding van 'n navorsingskultuur waarin produktiwiteit, gehalte en relevansie aangemoedig en ondersteun word.

Ons Fakulteit se navorsingstemas sluit in: Infeksiesiektes, Nie-oordraagbare Siektes, Geestesgesondheid en Neurowetenskappe, Geweld, Beserings, Trauma en Rehabilitasie, Moeder en Kindgesondheid, Gesondheidsisteme Versterking en Perioperatiewe Wetenskappe. Deur middel van hierdie temas en die gepaardgaande navorsingsgroeperings, eenhede, sentrums en institute, streef ons daarna om 'n verskil aan die gesondheid en welstand van ons samelewing as 'n geheel te maak.

Gedurende die afgelope jaar het die FGGW weer alle vorige rekords in sy lang en trotse geskiedenis gebreek, in terme van die aantal publikasie-uitsette wat jaarliks geproduseer word. Sedert 2013 is ons die Fakulteit met die grootste aantal navorsingsartikelpublikasies aan die Universiteit Stellenbosch, en in die afgelope jaar het ons ook konsekwent die uitsette van nagraadse studente verhoog. Verder het ons 'n baie verblydende groei getoon in die aantal nadoktorale genote by die Fakulteit oor die laaste paar jaar, wat ons hoop sal bydra tot die volgende generasie van gesondheidswetenskappe navorsers vir ons land. Ons navorsers en navorsingsentrums het voortgegaan om hoogs gesogte toekennings te verwerf, en onlangs het ons rede gehad om 'n aantal deurbrake te vier, soos die wêreld se eerste suksesvolle penis oorplanting. Ten slotte, was ons in staat om aansienlike bedrae befondsing te belê in infrastruktuur en 'n aantal nuwe sleutelaanstellings in Molekulêre Biologie, Sport en Oefeninggeneeskunde, Bioinformatika en ander gebiede wat ons sien as areas van krag, groei en potensiaal vir die Fakulteit.

Die Akademiese Jaardag, wat ons Fakulteit se voortgesette navorsingsprestasies ten toon stel en vier, bly 'n hoogtepunt van ons akademiese kalender. Hierdie gebeurtenis bied ook 'n geleentheid om die toewyding en harde werk van ons navorsers en ondersteuningspersoneel te erken, wie se pogings onontbeerlik is vir die sukses van ons navorsingsonderneming. Dit is `n belangrike tyd om voorraad te neem en te besin oor die impak van ons navorsing, en om die verskil wat dit gemaak het aan die lewens van individue en gemeenskappe te vier.

Namens die FGGW, wil ek graag almal wie se navorsing gekies is vir aanbieding by hierdie jaar se AJD gelukwens. Ek wil ook die Fakulteit se opregte waardering betuig aan die reëlingskomitee wat onvermoeid gewerk het om die sukses van die 2015 Akademiese Jaardag te verseker. Ek nooi julle almal uit om aan hierdie spesiale geleentheid deel te neem en dit saam met ons te geniet.

Professor Jimmy Volmink
DEKAAN

THE AAD 2015 ORGANISING COMMITTEE WOULD LIKE TO EXPRESS ITS SINCERE APPRECIATION TO THE FOLLOWING COMPANIES FOR THEIR PARTICIPATION AND FINANCIAL SUPPORT /
DIE AJD 2015 REËLINGSKOMITEE WIL GRAAG SY DANK EN WAARDERING UITSPREEK AAN DIE VOLGENDE MAATSKAPPYE VIR HULLE DEELNAME EN FINANSIËLE ONDERSTEUNING

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Programme Overview / Program Oorsig

59th ANNUAL ACADEMIC DAY 2015 / 59ste AKADEMIESE JAARDAG 2015

Thursday 13 August 2015 / Donderdag 13 Augustus 2015

Morning Parallel Sessions / Oggend Parallelle Sessies

08h45-11h45:	Health Systems Strengthening (Session 1 and 2)	Lecture Hall 4	p16
08h45-11h45:	Infectious Diseases (Session 1 and 2)	Lecture Hall 11	p19
08h45-11h45:	Violence, Injuries, Trauma and Rehabilitation (Session 1 and 2)	Lecture Hall 7	p27
08h45-11h45:	Non-communicable diseases (Session 1 and 2)	Main Lecture Hall	p29
10h45-11h45:	Mental Health and Neurosciences (Session 1)	JN de Villiers	p34
10h00-12h15:	Maternal and Child Health (Session 1)	Lecture Hall 12	p42

Please note there will be a Tea/Coffee and Poster Discussions break (in the Foyer between Lecture Hall 11 and 12) from 10h00-10h30 between Sessions 1 and 2 of the morning sessions

11h45-12h30: ***Lunch / Middagete and Posters*** (Foyer between Lecture Hall 11 and 12)

Main Programme / Hoofprogram (Lecture Hall 11 / Voorlesingsaal 11)

Chair / Voorsitter: *Prof NC Gey van Pittius (Deputy Dean: Research)*

12h30-13h00: Dean's Address
Prof Jimmy Volmink (Dean, Faculty of Medicine and Health Sciences, Stellenbosch University)

13h00-13h15: Introduction of Guest Speaker:
Prof Jimmy Volmink

13h15-14h00: Guest Speaker (see page 8)
Prof Wim de Villiers (Rector and Vice-Chancellor of Stellenbosch University)
Presentation title: *Transformation through Research*

14h00-14h30: ***Tea/Coffee and Posters*** (Foyer between Lecture Hall 11 and 12)

Afternoon Parallel Sessions / Namiddag Parallelle Sessies

14h30-16h00:	Health Systems Strengthening (Session 3)	Lecture Hall 4	p17
14h30-16h30:	Infectious Diseases (Session 3)	Lecture Hall 11	p20
14h30-16h30:	Non-communicable diseases (Session 3)	Main Lecture Hall	p30
14h30-16h30:	Mental Health and Neurosciences (Session 2)	JN de Villiers	p34
14h30-17h45:	Perioperative Sciences (Session 1 and 2)	Lecture Hall 7	p40
14h30-20h00:	Maternal and Child Health (Session 2, 3 and Evening Programme)	Lecture Hall 12	p43

Please note there will be a Tea/Coffee and Poster Discussions break (in the Foyer between Lecture Hall 11 and 12) from 16h30-16h45 before the late afternoon sessions, and a Finger Supper from 17h30-18h15 for the Maternal and Child Health Track before the Evening Programme.

State of the Art Presentations / Spiespuntvoordragte

09h30 - 10h00: State of the Art Lecture 1 – Health Systems Strengthening (Lecture Hall 4)
Dr Willie Visser (Division of Dermatology)
Title: *The Clinician as Teacher: Juggling all the Balls*

10h30 - 11h00: AJ Brink State of the Art Lecture 2 - Infectious Diseases (Lecture Hall 11)
Prof Mark Cotton (Department of Paediatrics and Child Health)
Title: *Diagnosing and treating HIV in children – a moving target*

11h00 - 11h45: State of the Art Lecture 3 - Violence, Injuries, Trauma and Rehabilitation (Lecture Hall 7)
Prof Wayne Derman (Division of Orthopaedic Surgery)
Title: *"Secrets of the Alchemists" - A behind the scenes tour of what really happens in the life and training of Paralympic athletes.*

14h30 - 15h00: State of the Art Lecture 4 - Non-communicable Diseases (Main Lecture Hall)
Prof Vikash Sewram (African Cancer Institute)
Title: *Envisioning a Continent Free of Cancer*

15h00 - 15h30: State of the Art Lecture 5 - Mental Health and Neurosciences (JN De Villiers)
Dr Sian Hemmings (Department of Psychiatry)
Title: *The Microbiome In Psychiatry: From Bowel To Brain*

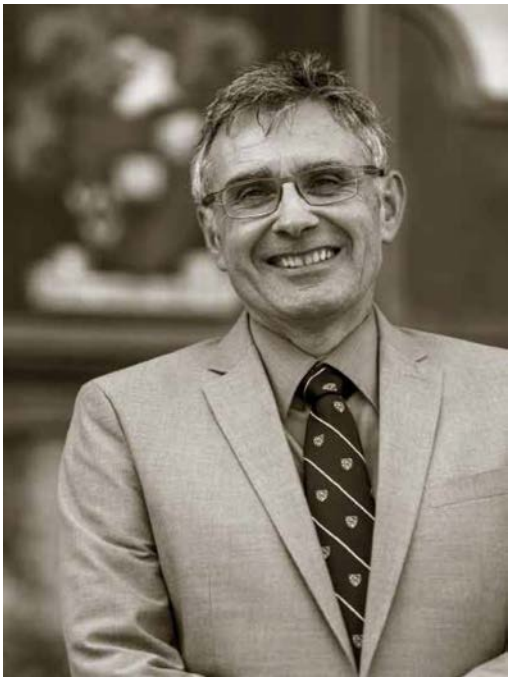
15h30 - 16h00: State of the Art Lecture 6 – Perioperative Sciences (Lecture Hall 7)
Prof Andre van der Merwe (Division of Urology)
Title: *Penile transplant*

16h00 - 16h30: State of the Art Lecture 7 – Maternal and Child Health (Lecture Hall 12)
Prof Anneke Hesseling (Desmond Tutu TB Centre)
Title: *Novel approaches to tuberculosis treatment in children and pregnant women*

18h20 - 18h50: JN de Villiers Memorial Lecture (Lecture Hall 12)
Prof Gerhard Theron (Department of Obstetrics and Gyneacology)
Title: *Perinatal HIV*

GUEST SPEAKER / GASSPREKER

PROF WIM DE VILLIERS



Prof Wim de Villiers (55) is the 12th Rector and Vice-Chancellor of Stellenbosch University (SU). He was appointed by the University Council on 1 December 2014, and was inaugurated on 29 April 2015. Formerly, he was Dean of Health Sciences at the University of Cape Town, and he is a Matie alumnus and medical doctor who also studied and worked in England and America for 21 years. De Villiers was born in Stellenbosch, the youngest child of Prof AB de Villiers, who would later become Dean of Law at SU, and Mrs Gera de Villiers (née Klomp) of Kroonstad. He matriculated from Paul Roos Gymnasium in 1977 with the best marks in the then Cape Province, and passed his MB,ChB at SU *cum laude* in 1983, receiving the Francie Van Zijl and Chancellor's medals for academic achievement. In 1990, he also obtained the MMed degree in Internal Medicine at SU *cum laude*. He spread his wings and obtained a DPhil in Immunology at Oxford University in 1995, subsequently going to America to gain more experience – at the University of Kentucky Medical Centre in Lexington, KY. He later also obtained a master's degree in health-care management at Harvard University. De Villiers practised as a gastroenterologist and established himself as a respected researcher in the field. He was included in the publication Best Doctors in America, and held a number of senior positions at the University of Kentucky, including Head of Gastroenterology, and Administrative Head of the Good Samaritan Hospital in Lexington. In July 2013 he accepted the Dean's post in Cape Town, and in April 2015 the next chapter of his career started at SU. De Villiers sees SU as a mature university that is well positioned to be locally relevant, yet globally competitive. He wants students to receive an excellent education that will give them a competitive advantage as graduates in a rapidly changing world. He believes the University should offer an experience that is pleasant, welcoming and hospitable – in an inclusive environment. He is committed to continued transformation to address the inequalities of the past, and supports the University's Institutional Intent and Strategy, adopted in 2013.

State of the Art Presenters / Spiespuntvoordrag Aanbieders

State of the Art Lecture 1
Dr Willie Visser (Division of Dermatology)
Title: *The Clinician as Teacher: Juggling all the Balls*

Dr. Willie Visser is a borne South African and studied medicine at the University of Stellenbosch after which he spent four years in general practice. He finished his masters degree in Family Medicine during this time. His interest in Dermatology developed while he was still a medical student. He started specializing in Dermatology in 2004 at the University of the Free State. After completing the MMed in Dermatology, he worked in the United Kingdom as a consultant in Dermatology. After his return to South Africa, he was appointed as Senior Specialist, and is currently the Head of Dermatology, University of Stellenbosch, Tygerberg Academic Hospital, South Africa. His interest is medical dermatology especially dermato-oncology and cutaneous drug eruptions. He has given lectures both nationally and internationally. His current research is in the field of cutaneous malignancies. He also has a special interest in medical education.

AJ Brink State of the Art Lecture 2
Prof Mark Cotton (Department of Paediatrics and Child Health)
Title: *Diagnosing and treating HIV in children – a moving target*

Prof Mark Cotton is Head of the Division of Paediatric Infectious Diseases and Director of the Children's Infectious Diseases Clinical Research Unit (KID-CRU) at Tygerberg Children's Hospital (TCH), Faculty of Medicine and Health Sciences, Stellenbosch University. He completed a 3 year fellowship in paediatric infectious diseases at University of Colorado-Denver, and also conducted laboratory-based research on apoptosis in paediatric HIV under the supervision of Dr Terri Finkel at

the National Jewish Centre for Respiratory Diseases and Immunology. On return to Tygerberg Academic Hospital, he completed a PhD on the role of apoptosis in paediatric HIV infection. He has been conducting a number of multicentre trials focusing on TB and HIV in children. He is a member of the WHO technical task teams on HIV staging, ART and guidelines for tuberculosis in children since 2004. He is a Specialist in Pediatric Infectious Diseases with extensive experience in managing HIV-infected children. He has been co-PI and investigator in a number of randomized clinical trials in children, both studies ART strategy and isoniazid prophylaxis and also ARV pharmacokinetics in HIV-infected children. The majority of studies are funded through the International Maternal Pediatric Adolescent AIDS Clinical Trial Group (IMPAACT).

State of the Art Lecture 3
Prof Wayne Derman (Division of Orthopaedic Surgery)

Title: *"Secrets of the Alchemists" - A behind the scenes tour of what really happens in the life and training of Paralympic athletes.*

Prof Wayne Deman is the chair in Sport and Exercise Medicine (SEM) within the Faculty of Medicine & Health Sciences at the University of Stellenbosch. Prof Derman is a past president of the South African Sports Medicine Association and is Co-director of the IOC research Center in South Africa. He has had a long and productive career at the University of Cape Town where he has played an important role in the training of sports physicians, exercise scientists and biokineticists. His research has focused on secondary prevention of chronic disease of lifestyle, and injury and illness prevention in athletes especially those with disabilities. Professor Derman has played an important role in clinical support for South Africa's athletes at International level. He fulfilled the positions of Chief Medical Officer for the South African Team to the Sydney 2000, Athens 2004 Olympic Games, and Medical Officer for the South African Paralympic Team to Beijing 2008 and London 2012. In December to May 2002, he served as Flight Surgeon to Cosmonaught Mark Shuttleworth during the "First African in Space" mission in Russia and served as the Medical Officer for Cape Town for the FIFA 2010 World Cup. He currently serves on the International Paralympic Committee Medical Commission and represents South Africa on the International Council of Cardiovascular Prevention and Rehabilitation.

State of the Art Lecture 4
Prof Vikash Sewram (African Cancer Institute)
Title: *Envisioning a Continent Free of Cancer*

Prof. Vikash Sewram is the Chairperson of the Ministerial Advisory Committee on the Prevention and Control of Cancer in South Africa, the Founding Director of the African Cancer Institute and Professor of Community Health at the Faculty of Medicine and Health Sciences, Stellenbosch University, South Africa. In 2015, the Minister of Health appointed him to the Medicines Control Council. Professor Sewram obtained a PhD degree in Medicinal Chemistry and Physiology from the University of Natal in 1998, an MPH in Cancer Epidemiology (with distinction) from the School of Public Health and Family Medicine, University of Cape Town, in 2002, and a PhD in Public Health: Cancer Epidemiology from the same university in 2007. In 2009 he was nominated to the Academy of Science of South Africa and, in 2014, to the Permanent Scientific Committee in the Oncology Section of the World Organization for Specialized Studies on Diseases of the Esophagus. Prof Sewram is also the associate editor of the Cancer Epidemiology and Prevention section of the international journal, Frontiers in Oncology. He serves as a reviewer for a number of international journals including the Institute of Medicine, USA. Professor Sewram is involved in a number of research projects relating to the epidemiology of oesophageal and colorectal cancers in local and international populations, and has spent time abroad as visiting scientist at the International Agency for Research on Cancer in Lyon, France; School of Public Health, University of Michigan, USA; and the Cancer Council NSW in Sydney, Australia. His research achievements have earned him 10 national and nine international research awards, and have resulted in numerous national and international collaborations, peer-reviewed publications, research grants and postgraduate student supervision.

State of the Art Lecture 5
Dr Sian Hemmings (Department of Psychiatry)
Title: *The Microbiome In Psychiatry: From Bowel To Brain*

Dr. Sian Hemmings have been working in the field of psychiatric genetics for approximately 15 years, having completed her postgraduate degrees (MSc and PhD), as well as postdoctoral work, in the field.

She is currently a Senior Research Scientist in the Department of Psychiatry, and head up the laboratory-based side of molecular research into anxiety and stress-related disorders, particularly posttraumatic stress disorder (PTSD). She supervises a number of postgraduate students (including PhD students) and host several post-doctoral fellows. She also collaborate with a number of other international researchers on research projects that she have initiated or co-initiated. She has successfully administered and acted as PI and co-PI on a number of grants, and has authored and co-authored numerous publications in the field.

State of the Art Lecture 6
Prof Andre van der Merwe (Division of Urology)
Title: *Penile transplant*

Prof Andre van der Merwe is an Associate Professor and Head of the Division of Urology at the Faculty of Medicine and Health Sciences of Stellenbosch University. He was born in Carnavon and received his MBChB at University of Stellenbosch 1993. Thereafter, he spent some time as an Intern at Kimberley Hospital and a Medical Officer at Barberton Hospital, before becoming Resident Medical Officer at the Oaks Hospital, Colchester, UK, Senior House Officer (SHO) in Accident and Emergency and ITU, and later SHO in General and Vascular Surgery and in General, Breast, Paediatric and Endocrine Surgery at Taunton and Somerset Hospital and Somerset Nuffield Hospital Taunton, in the UK, where he also received Membership of Royal College of Surgeons (MRCS) of both England and Edinburgh in December 1999. After some more time in the UK as SHO in Urology at Taunton and Somerset Hospital, he returned to South Africa to become Specialist Registrar in Urology at Groote Schuur Hospital in 2000. He was admitted as a Fellow of the College of Urologists of South Africa (FC Urol(SA)) in October 2003, and became Junior Consultant in Urology, and later Senior Specialist in Urology at Groote Schuur Hospital. In April 2007 he completed an MMed (Urology) at UCT, before joing the Faculty of Medicine and Health Sciences of Stellenbosch University as Senior lecturer in Urology, before becoming Associate Professor and Head of the Division. He also completed an MSc in Clinical Epidemiology through the University of Stellenbosch and graduated in December 2014. He is best known for conducting the world's first successful penile transplant in 2014, but also performed the first retroperitoneoscopic live donor nephrectomy in South Africa, and is the first person in the world to use the retroperitoneal route for laparoendoscopic single-site (LESS) donor nephrectomy. He has published 31 publications in the field.

State of the Art Lecture 7
Prof Anneke Hesseling (Desmond Tutu TB Centre)
Title: *Novel approaches to tuberculosis treatment in children and pregnant women*

Prof Anneke C. Hesseling is Professor of Pediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, and currently leads a group of 65 researchers as Programme Director: Pediatric TB at the Desmond Tutu TB Centre (DTTC), Stellenbosch University. She chairs the NIH IMPAACT TB Scientific Committee and leads/co-leads several IMPAACT protocols. She is the Stellenbosch co-PI for the DAIDS-funded Clinical Trials Unit (SUN-CTU) and is also the IMPAACT CRS leader for the Desmond Tutu TB Centre (DTTC-SU). She is also the PI for the CDC TB Trial Consortium (TBTC) Stellenbosch site, chairs the TBTC Pediatric Interest Group, is a core member of the WHO Stop TB Pediatric Subgroup, and is a pediatric TB consultant for the WHO / Stop TB Partnership's TB Research Strategy. Prof Hesseling has more than 10 years' experience of designing and conducting clinical TB research in South Africa and has been based at DTTC since 2001. She completed her medical training in South Africa, and received training in epidemiology and public health through a Fogarty training grant at Columbia University. She subsequently completed her PhD at the London School of Hygiene and Tropical Medicine (2009). She has a strong record of mentoring younger investigators institutionally and externally. Her group's research program at the DTTC has a strong focus on mentorship and capacity building and building career tracks for clinical and other researchers. She has supervised 6 PhD and 12 Masters degree students to date, and have mentored several South African and international awardees (e.g. Thrasher Research Fund, Elizabeth Glazer Pediatric AIDS Foundation mentees). She has extensive experience in the design and implementation of research, with more than 150 publications and multiple investigator-initiated grants including 2 RO1 grants as PI. She has strong collaborations with local, US, other African, Indian and European investigators and trial networks.

JN de Villiers Memorial Lecture
Prof Gerhard Theron (Department of Obstetrics and Gyneacology)
Title: *Perinatal HIV*

Prof Gerhard Theron is Professor and Executive Head of the Department of Obstetrics and Gynaecology at the Faculty of Medicine and Health Sciences, Stellenbosch University. He received his MBChB in 1975 at Stellenbosch University. He became a Member of the College of Obstetrics and

Gynaecology (SA) in 1985 after completing his MMed in Obstetrics & Gynaecology at the same institution. He was also awarded the degrees HonsBSc in Epidemiology in 1987 and MD in Obstetrics and Gynaecology in 1998, both at Stellenbosch University. He became Principal Consultant in 1992 and thereafter Associate Professor, Chief Specialist, and finally Professor and Executive Head of the Department in 2010. With the advent of the HIV epidemic and the projected disastrous consequences for mothers and infants, he realized that reducing mother to child transmission is within the grasp of health workers, and he therefore involved himself in research that provided answers to vexing clinical questions of the time. The focus area of his research since 1999 was the correct approach to mothers entering labour with an unknown HIV status. He was the protocol co-vice chair of the P1031A study (Comparison of the intrapartum vs. postpartum rapid HIV testing for women presenting in labour in primary and district hospitals in South Africa), the principal investigator of the only site where the study was conducted and the writing author of the 2 international publications from the study, a member of the Perinatal RAC of the PACTG group in 2003, sub-investigator for the NICHD/HPTN 040/P1043 study (Three postpartum antiretroviral regimens to prevent intrapartum HIV infection) and co-author of the first paper published form the study in 2012, and subsequent to these studies, shifted his focus to answer the question as to whether all pregnant women should be commenced on HAART, acting as principal investigator and member of the Clinical Management Committee of the PROMISE study, a multicenter, domestic and international trial of the IMPAACT group and protocol co-vice chair of the IMPAACT P1077 study (A Phase IV Randomized Double-Blind Placebo-Controlled Trial to Evaluate the Safety of Immediate Versus Deferred (Postpartum-Initiated) Isoniazid Preventive Therapy among HIV-infected Women in High TB Incidence Settings. During this time various personal initiated perinatal HIV studies were conducted and published. Prof Theron is a member of numerous national and international professional organizations and committees, has published 66 papers in peer reviewed journals and is the holder of several grants, and has received a number of honours and awards for his achievements in research and teaching over the years.

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Full Programme / Volledige Program

Theme 1 - Health Systems Strengthening /
Tema 1 – Gesondheidsisteme Versterking p16

Theme 2 - Infectious Diseases /
Tema 2 - Infeksiesiektes p19

Theme 3 - Violence, Injuries, Trauma and Rehabilitation /
Tema 3 – Geweld, Beserings, Trauma en Rehabilitasie p27

Theme 4 - Non-communicable Diseases /
Tema 4 – Nie-oordraagbare Siektes p29

Theme 5 - Mental Health and Neurosciences /
Tema 5 – Geestesgesondheid en Neurowetenskappe p34

Theme 6 – Perioperative Sciences /
Tema 6 – Perioperatiewe Wetenskappe p40

Theme 7 - Maternal and Child Health /
Tema 7 – Moeder en Kind Gesondheid p42

Theme 1 / Tema 1

Health Systems Strengthening / Gesondheidsisteme Versterking

Lecture Hall 4 / Lesingsaal 4

Welcome 08h45-09h00: Prof B Van Heerden

FIRST SESSION / EERSTE SESSIE (Lecture Hall 4)

Session Chair / Sessie Voorsitter: Prof B Van Heerden

09h00-09h15 **RESEARCH INVOLVEMENT, FUTURE RESEARCH PARTICIPATION AND SELF-PERCEIVED RESEARCH COMPETENCE AMONG UNDERGRADUATE HEALTH SCIENCES STUDENTS.**
JONAS BOVIJN
(Abstract Nr 1)

09H15-09H30 **A TANGLED WEB OF DEFINITIONS: DECONSTRUCTING HEALTH SCIENCE STUDENTS' CONCEPT OF RESEARCH – A QUALITATIVE APPROACH**
NABEELA KAJEE
(Abstract Nr 2)

09h30-10h00 **STATE OF THE ART PRESENTATION 1 - DR W VISSER**
Title: *The Clinician As Teacher: Juggling All The Balls*

10h00-10H30 **TEA AND POSTER DISCUSSIONS**

SECOND SESSION / TWEEDE SESSIE (Lecture Hall 4)
Session Chair / Sessie Voorsitter: Prof L Dudley

10H30-10H45 **CLINICAL TEACHING OF UNDERGRADUATE MEDICAL STUDENTS: HOW DO CLINICIANS DO IT?**
J BLITZ
(Abstract Nr 3)

10H45-11H00 **ASSESSMENT OF THE IMPACT OF FAMILY PHYSICIANS IN THE DISTRICT HEALTH SYSTEM OF THE WESTERN CAPE, SOUTH AFRICA**
GERMARIE FERREIRA
(Abstract Nr 4)

11h00-11h15 **FINAL-YEAR MEDICAL STUDENTS' REFLECTIONS ON THEIR CLINICAL LEARNING EXPERIENCE IN URBAN OR RURAL SETTINGS.**
SUSAN VAN SCHALKWYK
(Abstract Nr 5)

11h15-11h30 **ECONOMIC EVALUATION OF BLENDED LEARNING IN TEACHING HEALTH RESEARCH METHODS: THREE-UNIVERSITY COLLABORATION IN SOUTH AFRICA, SWEDEN AND UGANDA**
L NKONKI
(Abstract Nr 6)

11h30-11h45 **Questions and Discussion**

11h45-12h30 **LUNCH** (Foyer between Lecture Hall 11 and 12) and **POSTER DISCUSSIONS**

MAIN PROGRAMME / HOOFPROGRAM (Lecture Hall 11)

12h30-13h00 **DEAN'S ADDRESS**

13H00-13h15 Introduction of the **GUEST SPEAKER**

13h15-14h00 **GUEST SPEAKER -** Prof Wim de Villiers, Rector and Vice-Chancellor of Stellenbosch University
Title: *Transformation through Research*

14h00-14h30: **TEA AND POSTER DISCUSSIONS**

THIRD SESSION / DERDE SESSIE (Lecture Hall 4)

Session Chair / Sessie Voorsitter: Dr F Mukinda

14h30-14h45 **WORLD TB DAY 2015: CIVIL SOCIETY WORKING WITH GOVERNMENT TO IMPROVE WELLNESS OF COMMUNITY CARE WORKERS IN CAPE TOWN, SOUTH AFRICA**
MARGARET VAN NIEKERK
(Abstract Nr 7)

14h45-15h00 **THE VALIDITY OF SPIROMETRY PERFORMED ON SOUTH AFRICAN NAVY DIVERS AND SUBMARINERS FROM 1 JULY 2010 –1 JULY 2012**
B ANDREWS
(Abstract Nr 8)

15H00-15H15 **EVALUATION OF SUNHEART CARDIOLOGY OUTREACH PROGRAMME -**
ALFONSO JK PECORARO
(Abstract Nr 9)

15H15-15H30 **PERCEPTIONS OF CLIENTS USING A SOUTH AFRICAN UNIVERSITY SEXUAL HEALTH CLINIC**
MARIANA VAN DER HEEVER
(Abstract Nr 10)

15H30-15H45 **TRENDS IN PAEDIATRIC BLOODSTREAM INFECTIONS AT A SOUTH AFRICAN REFERRAL HOSPITAL**
ANGELA DRAMOWSKI
(Abstract Nr 11)

15H45 -16H00 **"I HAVE A DREAM: A WORLD WITHOUT HIV…"**
KEYMANTHRI MOODLEY
(Abstract Nr 12)

POSTERS / PLAKKATE

1. **CAN EDUCATION, RELIGION AND BIOMEDICINE UNDERMINE THE HEALTH INDICATORS OF A RURAL COMMUNITY?**
   GUBELA MJI
   (Abstract Nr 13)

2. **A NEEDS ASSESSMENT FOR PALLIATIVE CARE TRAINING IN UNDERGRADUATE STUDENTS AT THE UNIVERSITY OF STELLENBOSCH**
   AE FOURIE
   (Abstract Nr 14)

3. **AN EVALUATION OF THE ADEQUACY OF PHARMACEUTICAL SERVICES FOR THE PROVISION OF ANTIRETROVIRAL TREATMENT IN PRIMARY HEALTH CARE CLINICS**
   TALITHA CROWLEY
   (Abstract Nr 15)

4. **THE ROLE OF PATIENT CARE WORKERS IN PRIVATE HOSPITALS IN THE CAPE METROPOLE**
   LOUISE ANNET AYLWARD
   (Abstract Nr 16)

5. **VIDEO SELF-ASSESSMENT AS AN AUTHENTIC TEACHING AND LEARNING STRATEGY IN CLINICAL SKILLS TRAINING**
   LIANNE KEILLER
   (Abstract Nr 17)

Theme 2 / Tema 2

Infectious Diseases / Infeksiesiektes
Lecture Hall 11 / Lesingsaal 11

Welcome 08h45-09h00: Prof W Preiser

FIRST SESSION / EERSTE SESSIE (Lecture Hall 11)

Session Chair / Sessie Voorsitter: Prof A Whitelaw

09h00-09h15 **UNRAVELLING THE LINK BETWEEN TYPE 2 DIABETES AND TUBERCULOSIS.**
KATHARINA RONACHER, LEANIE KLEYNHANS, KATISO MGADI, MOSA SELAMOLELA, ANDRE LOXTON, GERHARD WALZL
(Abstract Nr 18)

09h15-09h30 **SINGLE CELL ELUCIDATION OF MYCOBACTERIAL REPLICATION DYNAMICS.**
JOMIEN MOUTON, SAMANTHA LEIGH SAMPSON, SOPHIE HELAIN, DAVID W HOLDEN
(Abstract Nr 19)

09h30-09h45 **CAN THE COST-EFFICIENCY OF INFANT HIV DIAGNOSIS BE IMPROVED THROUGH POOLED PCR TESTING OF DRIED BLOOD SPOTS?**
JEAN MARITZ, CARI VAN SCHALKWYK, ALEX WELTE, GERT UVES VAN ZYL, WOLFGANG PREISER
(Abstract Nr 20)

09h45-10h00 **LARGE PNCA GENE DELETIONS IN MYCOBACTERIUM TUBERCULOSIS: A NOVEL MECHANISM OF PYRAZINAMIDE RESISTANCE.**
ELIZABETH MARIA STREICHER, RUBEN VAN DER MERWE, SAMANTHA SAMPSON, ANZAAN DIPPENAAR, M. WHITFIELD, MARGARETHA DE VOS, NCITE DA CAMARA, ARNAB PAIN, PAUL VAN HELDEN, ROB WARREN
(Abstract Nr 21)

10h00-10h30 **TEA AND POSTER DISCUSSION**

SECOND SESSION / TWEEDE SESSIE (Lecture Hall 11)

Session Chair / Sessie Voorsitter: Prof M Esser

10h30-11h00 **AJ BRINK STATE OF THE ART PRESENTATION 2 - PROF. MARK COTTON**
Title: *Diagnosing and treating HIV in children – a moving target*

11h00-11h15 **ASAP, AN AUTOMATED SEQUENCE ANALYSIS PIPELINE FOR WHOLE GENOME SEQUENCING DATA.**
RUBEN GERHARD VAN DER MERWE, ROBIN MARK WARREN, ANZAAN DIPPENAAR, MARGARETHA DE VOS, PAUL DAVID VAN HELDEN, ABDALLAH ABDALLAH, ARNAB PAIN, SAMANTHA SAMPSON
(Abstract Nr 22)

11H15-11H30 **EMERGENCE OF HIV-1 SUBTYPE DIVERSITY IN SOUTH AFRICA.**
SUSAN ENGELBRECHT, MATHILDA CLAASSEN, GRAEME B JACOBS, GERT U VAN ZYL, WOLFGANG PREISER
(Abstract Nr 23)

11h30-11h45 **AWARDING OF HD BREDE AWARD FOR TUBERCULOSIS RESEARCH**

11h45-12h30 **LUNCH** (Foyer between Lecture Hall 11 and 12) and **POSTER DISCUSSIONS**

MAIN PROGRAMME / HOOFPROGRAM (Lecture Hall 11)

12h30-13h00 **DEAN'S ADDRESS**

13H00-13h15 Introduction of the **GUEST SPEAKER**

13h15-14h00 **GUEST SPEAKER -** Prof Wim de Villiers, Rector and Vice-Chancellor of Stellenbosch University
Title: *Transformation through Research*

14h00-14h30 **TEA AND POSTER DISCUSSIONS**

THIRD SESSION / DERDE SESSIE (Lecture Hall 11)

Session Chair / Sessie Voorsitter: Dr M Möller

14h30-14h45 **PRIMARY IMMUNODEFICIENCY DISEASE MANAGEMENT IN TUBERCULOSIS ENDEMIC REGIONS – ARE WE AWARE - AND HOW DOES A REGISTRY ASSIST?**
M ESSER, CJ KINNEAR, M MÖLLER, E BANDA, N SCHLECHTER, G DURRHEIM, R NORTJE, M SCHOEMAN, M URBAN, E HOAL
(Abstract Nr 24)

14h45-15h00 **USING MULTI-WAY ADMIXTURE MAPPING TO ELUCIDATE TB SUSCEPTIBILITY IN THE SOUTH AFRICAN COLOURED POPULATION.**
MICHELLE DAYA
(Abstract Nr 25)

15h00-15h15 **APPLICATION OF BECTON DICKINSON FACSTM COMBINATORIAL ANTIBODY PROFILE (FACSTM CAP) TECHNOLOGY TO THE IDENTIFICATION OF EFFICIENCY OF TUBERCULOSIS THERAPY.**
BRONWYN SMITH
(Abstract Nr 26)

15h15-15h30 **ETHIONAMIDE RESISTANCE IN SECOND-LINE DRUG NAÏVE TB PATIENTS REVEALED BY WHOLE GENOME SEQUENCING.**

MARISA KLOPPER, FRIK ADRIAAN SIRGEL, RUBEN GERHARD VAN DER MERWE, ELIZABETH MARIA STREICHER, SAMANTHA LEIGH SAMPSON, PAUL DAVID VAN HELDEN, ROBIN MARK WARREN
(Abstract Nr 27)

15h30-15h45 **THE PREVALENCE AND PRESENTATION OF TUBERCULOSIS IN A CADAVER POPULATION IN CAPE TOWN, SOUTH AFRICA.**
ELSIE HELENA BURGER, ELSJE-MÁRIE GELDENHUYS, PAUL VAN HELDEN, SANET HENRIËT KOTZÉ
(Abstract Nr 28)

15h45-16h00 **MEDICAL INTERNS AND OCCUPATIONAL HAZARDS: AN IMPORTANT INFECTION PREVENTION AND CONTROL OPPORTUNITY.**
JONAS BOVIJN, ANGELA DRAMOWSKI
(Abstract Nr 29)

16h00-16h15 **A SIX-MARKER SERUM BIOSIGNATURE SHOWS PROMISE IN THE DIAGNOSIS OF TB DISEASE IN AFRICAN PRIMARY HEALTH CARE CLINIC ATTENDEES SUSPECTED PULMONARY TB.**
NOVEL N CHEGOU, JAYNE S. SUTHERLAND, ANDRE G LOXTON, GIAN VAN DER SPUY, KIM STANLEY, HARRIET MAYANJA-KIZZA, AMELIA C. CRAMPIN, MARIETA VAN DER VYVER, RAWLEIGH HOWE, GERHARD WALZL AND THE AE-TBC CONSORTIUM
(Abstract Nr 30)

16h15-16h30 **PERSISTENT AND NEW LESIONS ON 18F-FDG PET/CT PULMONARY TUBERCOLOSIS LESIONS AFTER TREATMENT.**
STEPHANUS THERON MALHERBE, ANNARE ELLMAN, GERHARD WALZL, JAMES WARWICK, KATHARINA RONACHER
(Abstract Nr 31)

16h30-16h45 **TEA AND POSTER DISCUSSIONS**

POSTERS / PLAKKATE

1. **UROGENITAL TUBERCULOSIS IN A REGION WITH A HIGH PREVALENCE OF HUMAN IMMUNODEFICIENCY VIRUS INFECTION AND MULTI-DRUG RESISTANT TUBERCULOSIS.**
   HILGARD MICHIEL ACKERMANN, ANDRÉ VAN DER MERWE, AMIR ZARRABI
   (Abstract Nr 32)

2. **THE IDENTIFICATION OF NOVEL PROTEINS INVOLVED IN IRON-SULPHUR CLUSTER BIOGENESIS IN MYCOBACTERIUM TUBERCULOSIS.**
   JESMINE ARRIES, SAMANTHA SAMPSON, ROB WARREN, MONIQUE WILLIAMS
   (Abstract Nr 33)

3. **INVESTIGATING CELL SURFACE MOLECULES AND RECEPTORS IN TB SUSCEPTIBILITY: THE ROLE OF MHC AND LRC.**
   NICHOLAS BOWKER
   (Abstract Nr 34)

4. **DEVELOPMENT OF A DIAGNOSTIC ASSAY FOR M. SURICATTAE INFECTION IN MEERKATS.**

CHARLENE CLARKE, PATTERSON STUART, VAN HELDEN PAUL D, MILLER MICHELE A, PARSONS SVEN D. C
(Abstract Nr 35)

5. **COMPUTATIONAL ANALYSIS OF THE IMMUNOGENICITY OF M. TUBERCULOSIS PPE_MPTR PROTEINS.**
ANTOINETTE COLIC, SAMANTHA SAMPSON, ALAN CHRISTOFFELS, PAUL VAN HELDEN
(Abstract Nr 36)

6. **TARGETED DEEP SEQUENCING OF DRUG RESISTANCE ASSOCIATED GENES TO INVESTIGATE HETEROGENEITY IN MYCOBACTERIUM TUBERCULOSIS POPULATIONS.**
NCITE DA CAMARA, MARGARETHA DE VOS, ANZAAN, RUBEN VAN DER MERWE, ROB WARREN, SAM SAMPSON, ABDALLAH ABDALLAH, ARNAB PAIN,PAUL VAN HELDEN
(Abstract Nr 37)

7. **PATIENT SATISFACTION AND TREATMENT ADHERENCE OF STABLE HIV INFECTED PATIENTS IN ART ADHERENCE CLUBS AND CLINICS.**
M GABI DE JAGER, TALITHA CROWLEY, TM ESTERHUIZEN
(Abstract Nr 38)

8. **WHOLE GENOME SEQUENCING REVEALS GENOMIC HETEROGENEITY AND ANTIBIOTIC PURIFICATION IN MYCOBACTERIUM TUBERCULOSIS ISOLATES.**
MARGARETHA DE VOS, PHLIPPA BLACK, GAIL LOUW, RUBEN VAN DER MERWE, ANZAAN DIPPENAAR, ELIZABETH STREICHER, ABDALLAH ABDALLAH, SAMANTHA SAMPSON, PAUL VAN HELDEN, ROBIN WARREN, ARNAB PAIN
(Abstract Nr 39)

9. **WHOLE GENOME SEQUENCE ANALYSIS OF MYCOBACTERIUM SURICATTAE.**
ANZAAN DIPPENAAR, SVEN DAVID CHARLES PARSONS, SAMANTHA LEIGH SAMPSON, RUBEN GERHARD VAN DER MERWE, JULIAN ASHLEY DREWE, ABDALLAH MUSA ABDALLAH, KABENGELE KEITH SIAME, NICOLAAS CLAUDIUS GEY VAN PITTIUS, PAUL DAVID VAN HELDEN, ROBIN MARK WARREN, ARNAB PAIN
(Abstract Nr 40)

10. **THE ROLE OF GLUTAMATE DEHYDROGENASE IN CELLULAR STRESS.**
JAMES LUKE GALLANT, ALBERTUS JOHANNES VILJOEN, IAN WIID, PAUL VAN HELDEN
(UNIVERSITY OF STELLENBOSCH - BIOMEDICAL SCIENCE
(Abstract Nr 41)

11. **THE ASSOCIATION BETWEEN TUBERCULOSIS AND HYPERTROPHIC PULMONARY OSTEOARTHROPATHY IN A CADAVER POPULATION FROM THE WESTERN CAPE, SOUTH AFRICA.**
ELSJE-MARIE GELDENHUYS, AMANDA ALBLAS, ELSIE H BURGER, LINDA M GREYLING, SANET H KOTZE
(Abstract Nr 42)

12. **CANDIDATE BIOMARKERS FOR THE DIAGNOSIS OF MYCOBACTERIUM BOVIS INFECTION IN AFRICAN BUFFALOES (SYNCERUS CAFFER).**
WYNAND JOHAN GOOSEN
(Abstract Nr 43)

13. **THE ASSOCIATION BETWEEN PULMONARY TUBERCULOSIS AND PERIOSTIC RIB LESIONS IN A CADAVER POPULATION FROM A HIGH TUBERCULOSIS BURDEN, WESTERN CAPE, SOUTH AFRICA.**
GELDENHUYS E, GREYLING L.M, ALBLAS A, BURGER E.H, KOTZÉ S.H.

(Abstract Nr 44)

14. **PHOSPHATE ABC TRANSPORTER SYSTEMS REGULATE THE LEVEL OF RIFAMPICIN RESISTANCE IN MYCOBACTERIUM TUBERCULOSIS.**
MELANIE GROBBELAAR
(Abstract Nr 45)

15. **THE PREVALENCE OF ANTIBODIES TO TOXOPLASMA GONDII IN SHEEP IN THE WESTERN CAPE PROVINCE OF SOUTH AFRICA.**
KENNETH HAMMOND-ARYEE, LESLEY S. VAN HELDEN, PAUL D. VAN HELDEN
(Abstract Nr 46)

16. **GENOTYPIC CHARACTERIZATION AND STRAIN DIVERSITY OF TOXOPLASMA GONDII FROM INFECTED HUMAN AND ANIMAL TISSUES FROM THE WESTERN CAPE OF SOUTH AFRICA.**
KENNETH HAMMOND-ARYEE, MONIKA ESSER, PAUL D. VAN HELDEN
(Abstract Nr 47)

17. **RIFAMPICIN-RESISTANT MYCOBACTERIUM TUBERCULOSIS INCREASE IN SPUTUM FROM PATIENTS ON RIFAMPICIN MONOTHERAPY FOR 14 DAYS.**
XAVIER KAYIGIRE, ANDREAS H DIACON, LIZE VAN DER MERWE, PETER R DONALD, SVEN O FRIEDRICH
(Abstract Nr 48)

18. **GLOBAL/HIGH-THROUGHPUT ANALYSIS OF DNA-BINDING PROTEINS IN MYCOBACTERIUM SMEGMATIS.**
NASTASSJA KRIEL, TIAAN HEUNIS, MONIQUE WILLIAMS, SAMANTHA SAMPSON, ROB WARREN, PAUL VAN HELDEN
(Abstract Nr 49)

19. **THE HOST RESPONSE TO A CLINICAL MDR MYCOBACTERIAL STRAIN CULTURED IN A DETERGENT FREE ENVIRONMENT: A GLOBAL TRANSCRIPTOMICS APPROACH.**
GINA LEISCHING, BIENYAMEEN BAKER, CAREL VAN HEERDEN, IAN WIID, PAUL VAN HELDEN, RAY-DEAN PIETERSEN, VUYISEKA MPONGOSHE
(Abstract Nr 50)

20. **INVESTIGATING THE DIAGNOSTIC POTENTIAL OF CCL2 (MCP-1) FOR THE DETECTION OF MYCOBACTERIUM BOVIS INFECTION IN AFRICAN BUFFALOES (SYNCERUS CAFFER).**
ROSS MCFADYEN
(Abstract Nr 51)

21. **WORKING TOWARD 90% OF HIV INFECTED PEOPLE KNOWING THEIR STATUS. WHAT CAN THE DATA FROM COMMUNITY-BASED HIV COUNSELING AND TESTING IN CAPE TOWN TEACH US?**
SUE-ANN MEEHAN, KAREN JENNINGS, JUANITA ATENDSE, NULDA BEYERS
(Abstract Nr 52)

22. **ASSESSING TUBERCULOSIS DIAGNOSTIC YIELD FROM AN XPERT® MTB/RIF-BASED ALGORITHM USING A NON-RANDOMISED STEPPED WEDGE DESIGN.**
PREN NAIDOO, RORY DUNBAR, CARL LOMBARD, NULDA BEYERS
(Abstract 53)

23. **GENOTYPIC AND EPIDEMIOLOGICAL CHARACTERISATION OF METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS AND COAGULASE NEGATIVE STAPHYLOCOCCAL (CONS) STRAINS ISOLATED AT TYGERBERG HOSPITAL.**
KRISTIEN NEL VAN ZYL
(Abstract Nr 54)

23. **THE IMPACT OF AGR TYPE AND AGR FUNCTIONALITY ON BACTERIAL PHYSIOLOGY IN STAPHYLOCOCCUS AUREUS.**
MAE NEWTON-FOOT, KIM G.P. HOEK, ANDREW C WHITELAW
(Abstract Nr 55)

24. **ANTHROPOMETRY AND REPRODUCTIVE ORGANS' HISTOLOGY OF LEAN AND DIET-INDUCED OBESE MALE WISTAR RATS TREATED WITH HIGHLY ACTIVE ANTI-RETROVIRAL THERAPY.**
IBUKUN P. OYEYIPO, HANS STRIJDOM, FRANS P. EVERSON, GERHARD VAN DER HORST, STEFAN S. DU PLESSIS
(Abstract Nr 56)

25. **OPTIMIZATION OF FLOW CYTOMETRIC METHODS FOR MYCOBACTERIAL VIABILITY DISCRIMINATION AND CELL ENUMERATION.**
TRISHA PARBHOO, JOMIEN MOUTON, SAMANTHA SAMPSON
(Abstract Nr 57)

26. **THE ASSOCIATION BETWEEN TUBERCULOSIS AND THE DEVELOPMENT OF INSULIN RESISTANCE IN ADULTS WITH PULMONARY TUBERCULOSIS IN THE WESTERN SUB-DISTRICT OF THE CAPE METROPOLE REGION.**
PHILIPS L, BLAAUW R, NEL DG, VISSER J
(Abstract Nr 58)

27. **DECIPHERING THE PHYSIOLOGICAL STATE OF DRUG RESISTANT MYCOBACTERIUM TUBERCULOSIS STRAINS**
C.M PULE, G.E LOUW, R.M WARREN, J.M MOUTON, P.D VAN HELDEN, S.L SAMPSON.
(Abstract 59)

28. **DIAGNOSTIC TOOL EVALUATION: DETECTION OF MYCOBACTERIAL INFECTIONS IN WARTHOGS (PHACOCHOERUS AFRICANUS) USING SEROLOGICAL TESTS.**
EDUARD ROOS, MICHELE MILLER, SVEN PARSONS
(Abstract 60)

29. **INVESTIGATION OF THE ROLE OF ERGOTHIONEINE IN MYCOBACTERIUM TUBERCULOSIS**
CARINE SAO EMANI, BIENYAMEEN BAKER, CARINE SAO EMANI, IAN WIID, MONIQUE JOY WILLIAMS
(Abstract Nr 61)

30. **PROTEOMIC CHANGES IN M. TUBERCULOSIS TREATED WITH SULFAMETHOXAZOLE (SMX).**
RAJESH SARKAR, LUBABALO MACINGWANA, CEBISA MDLADLA, RAY-DEAN PIETERSEN, BIENYAMEEN BAKER, IAN WIID
(Abstract Nr 62)

31. **IDENTIFICATION OF NOVEL CANDIDATE GENES FOR SUSCEPTIBILITY TO TUBERCULOSIS BY IDENTIFYING DISEASE-CAUSING MUTATIONS IN INDIVIDUALS WITH PIDS**
NIKOLA SCHLECHTER, ANDRE FRANKE, BRITT-SABINA PETERSEN, EILEEN G. HOAL, MARDELLE SCHOEMAN, MICHAEL URBAN, MONIKA ESSER, MARLO MOLLER, CRAIG KINNEAR

(Abstract Nr 63)

32. **TLR1, 2, 4, 6, 8 AND 9 VARIANTS ASSOCIATED WITH TUBERCULOSIS SUSCEPTIBILITY: A SYSTEMATIC REVIEW AND META-ANALYSIS**
HAIKO SCHURZ, MICHELLE DAYA, EILEEN G. HOAL, MUNEEB SALIE
(Abstract Nr 64)

33. **RAPID, BLOOD AND BONE MARROW BASED TB DIAGNOSTIC TEST WHICH CHARACTERISES AND DISTINGUISHES BETWEEN BCG, LATENT AND ACTIVE TB USING FLOW CYTOMETRY BY MEASURING INTRACELLULAR CYTOKINES RELEASED BY CD4 T HELPER CELLS.**
CANDICE I SNYDERS, CARMEN SWANEPOEL, LEONARD MUTEMA, RAVNIT GREWAL, TIMOTHY REID
(Abstract Nr 65)

34. **PROFESSIONALS' AND PATIENTS' PERSPECTIVES TOWARDS DISCLOSING INCIDENTAL FINDINGS OF PLEIOTROPIC RESULTS: PRELIMINARY FINDINGS FROM AN ONLINE SURVEY DISTRIBUTED TO STUDENTS**.
JACQUI STEADMAN
(Abstract Nr 66)

35. **EXPLORING DRUG RESISTANT TUBERCULOSIS PROFILES IN THE WEST COAST DISTRICT OF THE WESTERN CAPE PROVINCE, SOUTH AFRICA.**
PHOPHI TSHAVHUNGWE, ELIZABETH STREICHER, JOHN SIMPSON, KAREN JACOBSON, MARY BUCKLEY, PAUL VAN HELDEN, ROBIN WARREN
(Abstract Nr 67)

36. **FINE-SCALE POPULATION STRUCTURE IN SOUTHERN AFRICA.**
CAITLIN UREN, DEAN BOBO, ALICIA R MARTIN, JULIE GRANKA, CHRISTOPHER R GIGNOUX, PAUL VAN HELDEN, MARLO MÖLLER
(Abstract Nr 68)

37. **DATA DRIVEN APPROACH TO COLLECTING QUALITY DATA.**
DEWALD VAN DEVENTER, BLIA YANG, FRANCIONETTE ESAU
(Abstract Nr 69)

37. **CLOFAZIMINE: MECHANISM OF RESISTANCE WITHIN M. TUBERCULOSIS.**
HANRI VISSER, MARGARETHA DE VOS, RUBEN M. VAN DER MERWE, THOMAS C. VICTOR, PAUL D. VAN HELDEN, ROBIN M. WARREN, LYNTHIA V. PAUL
(Abstract Nr 70)

38. **PERCUTANEOUS CORE NEEDLE BIOPSIES: THE YIELD IN SPINAL TUBERCULOSIS.**
JAMES WATT
(Abstract Nr 71)

39. **ASSOCIATION BETWEEN GENOTYPIC AND PHENOTYPIC PYRAZINAMIDE RESISTANCE IN ISONIAZID AND RIFAMPICIN MONO-RESISTANT AND MDR MYCOBACTERIUM TUBERCULOSIS ISOLATES.**
MICHAEL WHITFIELD, ELIZABETH STREICHER, IRENE MARDAROWICZ, LESLEY SCOTT, WENDY STEVENS, SAMANTHA SAMPSON, PAUL VAN HELDEN, ROBIN WARREN, ANNELIES VAN RIE
(Abstract Nr 72)

40. **DESIGN, SYNTHESIS AND IN VITRO ANTITUBERCULOSIS ACTIVITY OF 2(5H)-**

ANDILE H. NGWANE, BIENYAMEEN BAKER, IAN J.F. WIID, JENNY-LEE PANAYIDES, KELLY CHIBALE, LUBBE WIESNER
(Abstract Nr 73)

41. **GENERATION AND PHENOTYPIC CHARACTERISATION OF RV1460 MUTANTS OF MYCOBACTERIUM TUBERCULOSIS.**
DANICKE WILLEMSE, PROF RM WARREN, DR MJ WILLIAMS
(Abstract Nr 74)

42. **STRATEGY FOR REACHING THE MALE POPULATION FOR HOME-BASED HIV TESTING.**
BLIA YANG, DEWALD VAN DEVENTER, FRANCIONETTE ESAU
(Abstract Nr 75)

43. **EFAVIRENZ POPULATION PHARMACOKINETICS AMONG HIV-INFECTED SOUTH AFRICANS.**
SIMBARASHE PETER ZVADA, SHERWIN SY, NIKOLAUS BAUER, MIRJAM VON BIBRA, DANIEL CLEMENS, HARTWIG KLINKER, HARTMUT DERENDORF, BERND ROSENKRANZ
(Abstract Nr 76)

Theme 3 / Tema 3

Violence, Injuries, Trauma and Rehabilitation / Geweld, Beserings, Trauma en Rehabilitasie

Lecture Hall 7 / Lesingsaal 7

Welcome 08:45 – 09:00: Prof QA Louw

FIRST SESSION / EERSTE SESSIE (Lecture Hall 7)

Chairperson / Voorsitter: Prof QA Louw

09h00-09h15 **DIAGNOSING TRAUMA AND PATHOLOGY IN DRY BONE WITH THE AID OF RADIOLOGY**
AMANDA ALBLAS, LINDA M GREYLING, JACKLYNN WALTERS, GEORGE WW WAGENER, RICHARD D PITCHER
(Abstract Nr 77)

09h15-09h30 **CAN FRAGMENT-SPECIFIC FIXATION BE USED TO TREAT INTRA-ARTICULAR DISTAL RADIUS FRACTURES WHEN USING FLUOROSCOPY?**
MARI THIART AJMAL IKRAM ROB P. LAMBERTS
(Abstract Nr 78)

09h30-09h45 **DOES THE PROTOTYPE 'EXPERIMENTAL ' CHAIR FACILITATE MORE POSTURAL CHANGES IN COMPUTING ADOLESCENTS COMPARED TO A NORMAL SCHOOL CHAIR?**
DR. SJAN-MARI VAN NIEKERK
(Abstract Nr 79)

09h45-10h00 **AN INVESTIGATION INTO THE TRUNK KINEMATICS OF PEOPLE WITH STROKE DURING GAIT**
ADNIL W TITUS QA LOUW, S HILLIER, G INGLIS-JASSIEM
(Abstract Nr 80)

10h00-10h30 **TEA AND POSTER DISCUSSION**

SECOND SESSION / TWEEDE SESSIE (Lecture Hall 7)

Chairperson / Voorsitter: Prof QA Louw

10h30-10h45 **CLINICAL PRACTICE GUIDELINES FOR THE MANAGEMENT OF CHRONICMUSCULOSKELETAL PAIN IN PRIMARY HEALTH CARE: A SYSTEMATIC REVIEW**
DV ERNSTZEN, QA LOUW, S HILLIER
(Abstract Nr 81)

10h45-11h00 **AN UPDATE ON THE PREVALENCE OF LOW BACK PAIN IN AFRICA: A SYSTEMATIC REVIEW AND META-ANALYSIS**
LINZETTE MORRIS, KURT DANIELS, QUINETTE LOUW
(Abstract Nr 82)

11:00 – 11:30 **STATE OF THE ART PRESENTATION 3 - PROF W DERMAN**
Title: *"Secrets of the Alchemists" - A behind the scenes tour of what really happens in the life and training of Paralympic athletes.*

11h45-12h30 **LUNCH** (Foyer between Lecture Hall 11 and 12) and **POSTER DISCUSSIONS**

MAIN PROGRAMME / HOOFPROGRAM (Lecture Hall 11)

12h30-13h00 **DEAN'S ADDRESS**

13H00-13h15 Introduction of the **GUEST SPEAKER**

13h15-14h00 **GUEST SPEAKER -** Prof Wim de Villiers, Rector and Vice-Chancellor of Stellenbosch University
Title: *Transformation through Research*

14h00-14h30 **TEA AND POSTER DISCUSSIONS**

POSTERS / PLAKKATE

1. **RENAL ARTERY EMBOLISATION: INDICATIONS AND UTILISATION IN THE DEPARTMENT OF UROLOGY AT TYGERBERG HOSPITAL**
   RUPERT PRETORIUS, PROFESSOR ANDRÉ VAN DER MERWE, DR. KENNY DU TOIT, DR. AMIR ZARRABI
   (Abstract Nr 83)

2. **THE INFLUENCE OF MEDIA REPORTS ON CALLS RECEIVED AT THE TYGERBERG POISON INFORMATION CENTRE REGARDING SPIDER BITES**
   CATHARINA E DU PLESSIS, CHERYLYNN A WIUM, DANIËL J. VAN HOVING
   (Abstract Nr 84)

3. **PREVALENCE OF SPINAL PATHOLOGY IN EMBALMED CADAVERS USED FOR MEDICAL DISSECTION AT STELLENBOSCH UNIVERSITY, SOUTH AFRICA.**
   ELSJE-MÁRIE GELDENHUYS, AMANDA ALBLAS, ELSIE HELENA BURGER, SANET HENRIËT KOTZÉ
   (Abstract Nr 85)

4. **THE ASSOCIATION BETWEEN ALCOHOLIC LIVER DISEASE (ALD) AND HEALED CRANIO-MAXILLOFACIAL FRACTURES SUGGESTIVE OF INTERPERSONAL VIOLENCE (IPV) IN A SOUTH AFRICAN CADAVER POPULATION.**
   SANET KOTZÉ, ELSJE-MARIE GELDENHUYS, LINDA GREYLING, ELSIE BURGER, AMANDA ALBLAS
   (Abstract Nr 86)

Theme 4 / Tema 4

Non-Communicable Diseases / Nie-oordraagbare Siektes

Main Lecture Hall / Hoofvoorlesingsaal

Welcome 08h45-09h00: Prof MR Moosa

FIRST SESSION / EERSTE SESSIE (Main Lecture Hall / Hoofvoorlesingsaal)

Session Chair / Sessie Voorsitter: Prof Hans Strijdom

09h00-09h15 **"BLACKOUTS" & SUDDEN DEATH IN THE APPARENTLY WELL AND YOUNG – THE CASE OF LONG QT SYNDROME: MISSED OPPORTUNITIES FOR A DIAGNOSIS AND TREATMENT.**
P BRINK, A GOOSEN, M HERADIEN
(Abstract Nr 87)

09h15-09h30 **BRIDGING THE GAP BETWEEN CLINICAL RESEARCH EVIDENCE AND PRACTICE: IMPLEMENTING THE SOUTH AFRICAN NATIONAL EVIDENCE-BASED ASTHMA GUIDELINE IN PRIVATE AND PUBLIC PRACTICE IN THE CAPE METROPOLE.**
MICHAEL KARL PATHER, BOB MASH
(Abstract Nr 88)

09h30-09h45 **THE EFFECTS OF TUMOUR NECROSIS FACTOR-ALPHA ON THE VIABILITY AND DIFFERENTIATION POTENTIAL OF ADIPOSE-DERIVED STEM CELLS (ADSCS).**
HANEL SADIE-VAN GIJSEN, WILLIAM F FERRIS
(Abstract Nr 89)

09h45-10h00 **LUPUS MYOCARDITIS IN THE WESTERN CAPE, SOUTH AFRICA: ANALYSIS OF CLINICAL AND ECHOCARDIOGRAPHIC FEATURES**
R DU TOIT, PG HERBST, A VAN RENSBURG, L DU PLESSIS, HR REUTER, AF DOUBELL
(Abstract Nr 90)

10h00-10h30 **TEA AND POSTER DISCUSSIONS**

SECOND SESSION / TWEEDE SESSIE (Main Lecture Hall / Hoofvoorlesingsaal)

Session Chair / Sessie Voorsitter: Prof Paul Brink

10h30-10h45 **TREATMENT OUTCOMES IN CML PATIENTS TREATED WITH TYROSINE KINASE INHIBITORS AT A TERTIARY TEACHING HOSPITAL IN SOUTH AFRICA**
GERHARD SISSOLAK, JACQUES BADENHORST, JANAMI STEENKAMP, PASCALE WILLEM
(Abstract Nr 91)

10h45-11h00 **THE PATHOLOGY OF THE VERTEBRAL COLUMN ASSOCIATED WITH OSTEOPOROSIS IN A SKELETAL COLLECTION SPECIFIC TO THE WESTERN CAPE**
ANNELI MERLE DU PLESSIS
(Abstract Nr 92)

11h00-11h15 **BETA-3 ADRENERGIC RECEPTOR MEDIATED CARDIOPROTECTION**
R. SALIE, A.K.H. ALSALHIN, E. MARAIS, A. LOCHNER
(Abstract Nr 93)

11h15-11h30 **EVALUATING POINT OF CARE TESTING FOR GLYCATED HAEMOGLOBIN IN PRIMARY CARE FACILITIES OF THE WESTERN CAPE**
ROBERT MASH, ABI UGOAGWU, COBUS VOS, RAJIV ERASMUS, MEGAN RENSBURG
(Abstract Nr 94)

11h30-11h45 **Questions and Discussion**

11h45-12h30 **LUNCH** (Foyer between Lecture Hall 11 and 12) and **POSTER DISCUSSIONS**

MAIN PROGRAMME / HOOFPROGRAM (Lecture Hall 11)

12h30-13h00 **DEAN'S ADDRESS**

13H00-13h15 Introduction of the **GUEST SPEAKER**

13h15-14h00 **GUEST SPEAKER -** Prof Wim de Villiers, Rector and Vice-Chancellor of Stellenbosch University
Title: *Transformation through Research*

14h00-14h30 **TEA AND POSTER DISCUSSIONS**

THIRD SESSION / DERDE SESSIE (Main Lecture Hall / Hoofvoorlesingsaal)

Session Chair / Sessie Voorsitter: Prof Hannah Simonds

14h30-15h00 **STATE OF THE ART PRESENTATION 4 -PROF VIKASH SEWRAM**
Title: *Envisioning A Continent Free Of Cancer*

15h00-15h15 **OBESE PATIENTS WITH HYPERTENSIVE HEART DISEASE HAVE FASTER ATRIO-VENTRICULAR CONDUCTION THAN NON-OBESE CONTROLS**
WARREN STILWANEY
(Abstract Nr 95)

15h15-15h30 **STEM CELL IMPAIRMENT IN OBESITY ASSOCIATED TYPE 2 DIABETES: DESENSITIZATION OF IL-6/STAT3 SIGNALLING.**
MARI VAN DE VYVER, KATHRYN MYBURGH, WILLIAM FERRIS
(Abstract Nr 96)

15h30-15h45 **CHARACTERISATION OF THE PHENOTYPE AND GENOTYPE IN A FAMILY WITH SYMPTOMATIC HYPOKALAEMIA**
PIETER DU TOIT VAN DER MERWE, MOGAMAT RAZEEN DAVIDS, MEGAN RENSBURG
(Abstract Nr 97)

15h45-16h00 **AUDIT OF STANDARD OF CARE MEASURES AND COMPLICATIONS IN A TERTIARY TYPE I DIABETIC (DM1) CLINIC.**
JOCELYN HELLIG, KAREN BARNARD, BRYNN ASCOTT-EVANS
(Abstract Nr 98)

16h00-16h15 **LIQUID BASED VS CONVENTIONAL CYTOLOGY FOR EVALUATION OF FINE NEEDLE ASPIRATION BIOPSIES PERFORMED BY PULMONARY PHYSICIANS.**
AYANDA MFOKAZI, CA WRIGHT, M LOUW, F VON GROOTE-BIDLINGMAIER, PT SCHUBERT, CFN KOEGELENBERG, AH DIACON
(Abstract Nr 99)

16h15-16h30 **CHARACTERIZATION OF B-CELL NEOGENESIS IN THE PANCREAS OF STZ-INDUCED DIABETIC RAT FOLLOWING PDL TREATMENT: A PRELIMINARY STUDY**
SHARNU HENDRI SNIJMAN, VENANT TCHOKONTE-NANA
(Abstract Nr 100)

16h30-16h45 **TEA AND POSTER DISCUSSIONS**

POSTERS / PLAKKATE

1. **QUALITY OF CARE FOR PATIENTS WITH NON-COMMUNICABLE DISEASES IN THE DEDZA DISTRICT, MALAWI**
   RACHEL WOOD, LISA VAN DER MERWE, VANESSA VILJOEN AND BOB MASH
   (Abstract Nr 101)

2. **RADIOLOGICAL ANALYSIS OF SKELETAL METASTASES FROM CERVICAL CANCER**
   JACKLYNN WALTERS, AMANDA A. ALBLAS, LINDA M. GREYLING, RICHARD D. PITCHER, G.W.W. WAGENER
   (Abstract Nr 102)

3. **A CROSS SECTIONAL CARDIOVASCULAR HEALTH PROFILE OF A REPRESENTATIVE POPULATION FROM THE UITSIG COMMUNITY IN CAPE TOWN**
   CLARA MARINCOWITZ, INGRID WEBSTER, CORLI WESTCOTT, NYIKO MASHELE, HANS STRIJDOM
   (Abstract Nr 103)

4. **MYOCARDIAL FUNCTIONING AND RESPONSE TO ISCHEMIA/REPERFUSION INJURY FOLLOWING MANIPULATION OF THE ATM PROTEIN KINASE**
   BARBARA HUISAMEN, YOLANDI ESPACH
   (Abstract Nr 104)

5. **THE EFFECTS OF ROOIBOS (ASPALATHUS LINEARIS) AND MELATONIN ON VASCULAR FUNCTION IN A RAT MODEL OF NICOTINE-INDUCED VASCULAR INJURY**
   MICHELLE SMIT-VAN SCHALKWYK, SHANTAL WINDVOGEL, HANS STRIJDOM
   (Abstract Nr 105)

6. **GA-68 DOTANOC PET/CT FOR NEUROENDOCRINE TUMOURS: EXPERIENCE AT WESTERN CAPE ACADEMIC PET/CT CENTRE**
   ALEXANDER DORUYTER, ANNARE ELLMANN, SIETSKE RUBOW

(Abstract Nr 106)

7. **ESTABLISHING THE CALU-3 CELL LINE: A MODEL FOR THE INVESTIGATION OF THE DEPOSITION AND DRUG DELIVERY OF SURFACTANT BASED PRESSURIZED METERED-DOSE INHALER (PMDI)**
   JOHAN SMITH, JOHANN VAN ZYL, LYNE VAN RENSBURG
   (Abstract Nr 107)

8. **THE EFFECTS OF ANTIRETROVIRAL THERAPY ON CARDIOMETABOLIC PARAMETERS IN A HIGH FAT DIET RAT MODEL OF OBESITY.**
   AMANDA GENIS, FRANS PIETER EVERSON , HANS STRIJDOM, TOPE OGUNDIPE
   (Abstract Nr 108)

9. **CALCULATED GLOBULIN AS A TOOL FOR ANTIBODY DEFICIENCY SCREENING – IDEAS FOR IMPLEMENTATION IN AFRICA**
   MEGAN RENSBURG, MONIKA ESSER, JONATHAN PETER.
   (Abstract Nr 109)

10. **THE EFFECT OF CINNAMON EXTRACT ON FAT ACCUMULATION AND ADIPOCYTE GENE EXPRESSION IN 3T3-L1 CELLS**
    AUS TARIQ ALI, BIENYAMEEN BAKER, PAUL VAN HELDEN, RAJIV T ERASMUS, RAY-DEAN D PIETERSEN
    (Abstract Nr 110)

11. **PDL –STIMULATED PANCREATIC DUCT CELLS GENERATE ISLETS AND EXOCRINE TISSUE IN VITRO**
    JUZIEL MANDA, VENANT TCHOKONTE -NANA, BENEDICT JOHN PAGE
    (Abstract Nr 111)

12. **ANTHROPOMETRIC AND MICROSCOPIC ANALYSIS OF SPERMATOZOA AND REPRODUCTIVE ORGANS IN AGED OBESE RATS**
    BONGEKILE SKOSANA, GUILLAUME ABOUA, STEFAN DU PLESSIS
    (Abstract Nr 112)

13. **INVESTIGATING THE SUITABILITY OF STANDARDIZED EUROFLOW PANELS FOR THE CHARACTERISATION AND DIAGNOSIS OF CHRONIC LYMPHOCYTIC LEUKEMIA (CLL) IN THE TYGERBERG HOSPITAL (TAH), SOUTH AFRICA.**
    AKIN E ABAYOMI, BONGANI NKAMBULE, CARMEN S SWANEPOEL, FUNGAI MUSAIGWA, RAVNIT K. GREWAL
    (Abstract Nr 113)

14. **IN VITRO STUDY ON THE PROTECTIVE EFFECTS OF QUERCETIN ON NICOTINE METABOLITE-INDUCED TOXICITY ON HUMAN SPERMATOZOA**
    DALE GOSS, IBUKUN P. OYEYIPO, BONGEKILE T. SKOSANA, BASHIR M. AYAD, STEFAN S. DU PLESSIS
    (Abstract Nr 114)

15. **PHENACETIN METHOD DEVELOPMENT AND VALIDATION, AND INHIBITION OF CYP1A2 BY THREE HERBAL SUPPLEMENTS**
    BERND ROSENKRANZ, CHARLES AWORTWE, CHARLIZE WHITE, PATRICK, J. BOUIC.
    (Abstract Nr 115)

16. **TRI-LEAFLET MITRAL VALVES – WHEN LIGHTING STRIKES THRICE**
    ANNARI VAN RENSBURG

(Abstract Nr 116)

17. **AUDIT OF HYPERFERRITINAEMIA AND THE CAUSES THEREOF AT AN ACADEMIC HOSPITAL IN CAPE TOWN, SOUTH AFRICA**
    MARIZA HOFFMANN, RAJIV T ERASMUS, ROSHAAN KARIEM
    (Abstract Nr 117)

18. **STREPTOZOTOCIN-INDUCED EXPERIMENTAL DIABETES IS ASSOCIATED WITH DISRUPTION OF TOTAL ISLET COMPOSITION**
    PATRICIA CLARA KOTZE, REGGIE WILLIAMS, VENANT THOKONTE-NANA.
    (Abstract Nr 118)

19. **A DESCRIPTIVE STUDY OF THE PATTERNS OF ISLET MICROVASCULATURE IN THE HUMAN PANCREAS**
    BRYAN BERGSTEEDT, VENANT TCHOKONTE-NANA
    (Abstract Nr 119)

20. **OMNIPAQUETM INTRAVENOUS CONTRAST INTERFERENCE IN CAPILLARY ZONE ELECTROPHORESIS**
    ESMÉ HITCHCOCK, MARIZA HOFFMANN, RAZAAN DAVIS, WESSEL MEYER
    (Abstract Nr 120)

21. **INCORPORATING NON-COMMUNICABLE DISEASE SCREENING INTO COMMUNITY-BASED HIV COUNSELLING AND TESTING IN CAPE TOWN, SOUTH AFRICA**
    MARGARET VAN NIEKERK, HEATHER DRAPER, SUE-ANN MEEHAN
    (Abstract Nr 121)

Theme 5 / Tema 5

Mental Health and Neurosciences/Geestesgesondheid en Neurowetenskappe

JN DE VILLIERS BOARDROOM / JN DE VILLIERS RAADSAAL

Welcome 10h45-11h00: Prof Soraya Seedat

FIRST SESSION / EERSTE SESSIE (JN de Villiers Boardroom / JN de Villiers Raadsaal)

Session Chair / Sessie Voorsitter: Ms Debbie Marais

11h00-11h15 **THE EFFECT OF OCCUPATIONAL THERAPY-LED DRUMMING GROUPS ON MENTAL WELL-BEING AMONG PSYCHIATRIC INPATIENTS WITH MOOD DISORDERS**
NICOLA ANN PLASTOW ET AL.
(Abstract Nr 122)

11h15-11h30 **IDENTIFICATION OF SEQUENCE VARIANTS IN PARKINSON'S DISEASE-CAUSING GENES IN A GROUP OF SOUTH AFRICAN BLACK PARKINSON'S DISEASE PATIENTS USING A TARGETED RESEQUENCING APPROACH**
SORAYA BARDIEN-KRUGER ET AL.
(Abstract Nr 123)

11h30-11h45 **IRON DEFICIENCY IN TWO CHILDREN DIAGNOSED WITH MULTIPLE SCLEROSIS – REPORT ON WHOLE EXOME SEQUENCING**
SUSAN VAN RENSBURG ET AL.
(Abstract Nr 124)

11h45-12h30 **LUNCH** (Foyer between Lecture Hall 11 and 12) and **POSTER DISCUSSIONS**

MAIN PROGRAMME / HOOFPROGRAM (Lecture Hall 11)

12h30-13h00 **DEAN'S ADDRESS**

13H00-13h15 Introduction of the **GUEST SPEAKER**

13h15-14h00 **GUEST SPEAKER -** Prof Wim de Villiers, Rector and Vice-Chancellor of Stellenbosch University
Title: *Transformation through Research*

14h00-14h30: **TEA AND POSTER DISCUSSIONS**

SECOND SESSION / TWEEDE SESSIE (JN de Villiers Boardroom / JN de Villiers Raadsaal)

Session Chair / Sessie Voorsitter: Dr Melony Hendricks

14h30-14h45 **ATPAF1 AND SEPT9 ARE NOVEL SUBSTRATES OF PARKIN: IMPLICATIONS FOR PARKINSON'S DISEASE**
WILLIAM HAYLETT ET AL.
(Abstract Nr 125)

14h45-15h00 **OCULAR PENETRATION OF ANTI-RETROVIRAL DRUGS IN A RABBIT MODEL**
DAVID MEYER ET AL.
(Abstract Nr 126)

15h00-15h30 **STATE OF THE ART PRESENTATION 5 – DR SIAN HEMMINGS**

Title: *The Microbiome In Psychiatry: From Bowel To Brain*

15h30-15h45 **PROLONGED EXPOSURE TREATMENT FOR PTSD IN A THIRD WORLD, TASK SHIFTING, COMMUNITY-BASED ENVIRONMENT**
JACO ROSSOUW ET AL.
(Abstract Nr 127)

15h45-16h00 **THE PREVALENCE OF ANATOMICAL VARIATIONS OF THE CEREBELLAR ARTERIES AND ITS CLINICAL RELEVANCE IN A WESTERN CAPE POPULATION**
DANIELLE NIKSCH
(Abstract Nr 128)

16h00-16h15 **MERIT AWARD PRESENTATION AS JUDGED AT THE DEPARTMENTAL RESEARCH DAY OF THE DEPARTMENT OF PSYCHIATRY:**
GENETIC INVESTIGATION OF APPETITIVE AGRESSION IN SOUTH AFRICAN FORMER YOUNG OFFENDERS: THE INVOLVEMENT OF SEROTONIN TRANSPORTER
K XULU, J SOMER, M HINSBERGER, R WEIERSTALL, T ELBERT, S SEEDAT, S HEMMINGS
(Abstract Nr 129)

16h15-16h30 **BEST PRESENTATION AS JUDGED AT THE DEPARTMENTAL RESEARCH DAY OF THE DEPARTMENT OF PSYCHIATRY:**
PREFONTAL CORTICAL THINNING IN HIV IS ASSOCIATED WITH IMPAIRED STRIATAL FUNCTIONING
S DU PLESSIS, M VINK, J JOSKA, E KOUTSILIERI, A BAGADIA, D STEIN, R EMSLEY
(Abstract 130)

16h30-16h45 **TEA AND POSTER DISCUSSIONS**

POSTERS / PLAKKATE

1. **MODIFICATION OF THE ASSOCIATION BETWEEN EARLY ADVERSITY AND OBSESSIVE-COMPULSIVE DISORDER BY POLYMORPHISMS IN THE MAOA, MAOB AND COMT GENES**
NATHANIEL WADE MCGREGOR, CHRISTINE LOCHNER (STELLENBOSCH UNIVERSITY - PSYCHIATRY), NATHANIEL WADE MCGREGOR (STELLENBOSCH UNIVERSITY - PSYCHIATRY

AND GENETICS), ISABEL CALMARZA FONT (STELLENBOSCH UNIVERSITY - PSYCHIATRY), DAN STEIN (UNIVERSITY OF CAPE TOWN - PSYCHIATRY AND MENTAL HEALTH), SIAN HEMMINGS (STELLENBOSCH UNIVERSITY - PSYCHIATRY)
(Abstract 131)

2. **ADVOCACY IN ACTION: A CASE MODEL OF THE SOUTH AFRICAN DEPRESSION & ANXIETY GROUP**
   LIAN TALJAARD, CHRISTINE LOCHNER (STELLENBOSCH UNIVERSITY - PSYCHIATRY), DAN STEIN (UNIVERSITY OF CAPE TOWN - PSYCHIATRY AND MENTAL HEALTH), ZANE WILSON (SOUTH AFRICAN DEPRESSION & ANXIETY GROUP)
   (Abstract 132)

3. **COGNITIVE PERFORMANCE DURING THE FIRST YEAR OF TREATMENT IN FIRST-EPISODE SCHIZOPHRENIA: A CASE-CONTROL STUDY**
   MARIUS RIAAN OLIVIER, BONGINKOSI CHILIZA (UNIVERSITY OF STELLENBOSCH - PSYCHIATRY), LAILA ASMAL (UNIVERSITY OF STELLENBOSCH - PSYCHIATRY), MARIUS RIAAN OLIVIER (UNIVERSITY OF STELLENBOSCH - PSYCHIATRY), MARTIN KIDD (UNIVERSITY OF STELLENBOSCH - CENTRE FOR STATISTICAL CONSULTATION), ROBIN EMSLEY (UNIVERSITY OF STELLENBOSCH - PSYCHIATRY), SANJA KILLIAN (UNIVERSITY OF STELLENBOSCH - PSYCHIATRY)
   (Abstract 133)

4. **COGNITIVE CHANGES IN ALCOHOL-INDUCED PSYCHOTIC DISORDER.**
   MELANY LEONIE HENDRICKS, MELANY LEONIE HENDRICKS (STELLENBOSCH UNIVERSITY - DEPARTMENT OF PSYCHIATRY), DAAN NEL, (STELLENBOSCH UNIVERSITY - DEPARTMENT OF STATISTICS), HELENA THORNTON (UNIVERSITY OF CAPE TOWN - DEPARTMENT OF PSYCHIATRY), ROBIN EMSLEY (STELLENBOSCH UNIVERSITY - DEPARTMENT OF PSYCHIATRY), GERHARD JORDAAN (STELLENBOSCH UNIVERSITY - DEPARTMENT OF PSYCHIATRY)
   (Abstract 134)

5. **RESTING FUNCTIONAL CONNECTIVITY IN SOCIAL ANXIETY DISORDER AND THE EFFECT OF PHARMACOTHERAPY**
   ALEXANDER DORUYTER, GERHARD JORDAAN (STELLENBOSCH UNIVERSITY - DEPARTMENT OF PSYCHIATRY), DAN STEIN (MRC UNIT FOR STRESS AND ANXIETY DISORDERS), CHRISTINE LOCHNER (MRC UNIT FOR STRESS AND ANXIETY DISORDERS), PATRICK DUPONT (KATHOLIEKE UNIVERSITEIT LEUVEN - LABORATORY FOR COGNITIVE NEUROLOGY AND MEDICAL IMAGING CENTER), JAMES WARWICK (STELLENBOSCH UNIVERSITY - DEPARTMENT OF MEDICAL IMAGING AND CLINICAL ONCOLOGY, DIVISION OF NUCLEAR MEDICINE)
   (Abstract 135)

6. **SINGLE VOXEL PROTON MAGNETIC RESONANCE SPECTROSCOPY (1H-MRS) AND VOLUMETRY OF THE AMYGDALA IN SOCIAL ANXIETY DISORDER IN THE CONTEXT OF EARLY DEVELOPMENTAL TRAUMA**
   DAVID ROSENSTEIN (SARCHI: PTSD PROGRAM - PSYCHIATRY), AARON T HESS (RADCLIFFE DEPARTMENT OF MEDICINE UNIVERSITY OF OXFORD, UNITED KINGDOM - UNIVERSITY OF OXFORD CENTER FOR CLINICAL MAGNETIC RESONANCE RESEARCH), JONATHAN ZWART (UNIVERSITY OF THE WESTERN CAPE - DEPARTMENT OF PHYSICS & ASTRONOMY,), FATIMA AHMED-LEITAO (SARCHI: PTSD PROGRAM - PSYCHIATRY), SORAYA SEEDAT (SARCHI: PTSD PROGRAM - PSYCHIATRY)
   (Abstract 136)

7. **THE HISTOPATHOLOGY OF THE BLOOD VESSELS OF THE CIRCLES OF WILLIS IN THE WESTERN CAPE REGION.**
   RITA-LIEZL DREYER

(Abstract 137)

8. **SYMPTOM AWARENESS AND PREFRONTAL CORTICAL THICKNESS IN FIRST EPISODE SCHIZOPHRENIA**
   LAILA ASMAL, BONGINKOSI CHILIZA (STELLENBOSCH UNIVERSITY - PSYCHIATRY), LAILA ASMAL (STELLENBOSCH UNIVERSITY - PSYCHIATRY), MATTHIJS VINK (UNIVERSITY MEDICAL CENTER UTRECHT - PSYCHIATRY), ROBIN EMSLEY (STELLENBOSCH UNIVERSITY - PSYCHIATRY), STEFAN DU PLESSIS (STELLENBOSCH UNIVERSITY - PSYCHIATRY)
   (Abstract 138)

9. **INVESTIGATING COMT VARIANTS IN ANXIETY SENSITIVITY IN SOUTH AFRICAN ADOLESCENTS**
   LYNDON JACQUES ZASS
   (Abstract 139)

10. **A STUDY OF GENE AND PROTEIN EXPRESSION OF PARKIN IN DERMAL FIBROBLASTS FROM PARKINSON'S DISEASE PATIENTS WITH PARKIN MUTATIONS.**
    GENEVIE BORRAGEIRO (STELLENBOSCH UNIVERSITY - MOLECULAR BIOLOGY AND HUMAN GENETICS), CHRISNA SWART (STELLENBOSCH UNIVERSITY - MOLECULAR BIOLOGY AND HUMAN GENETICS), WILLIAM HAYLETT (STELLENBOSCH UNIVERSITY - MOLECULAR BIOLOGY AND HUMAN GENETICS), CELIA VAN DER MERWE (STELLENBOSCH UNIVERSITY - MOLECULAR BIOLOGY AND HUMAN GENETICS), SORAYA BARDIEN (STELLENBOSCH UNIVERSITY - MOLECULAR BIOLOGY AND HUMAN GENETICS)
    (Abstract 140)

11. **CHANGES IN BODY MASS AND METABOLIC PROFILES OVER 12 MONTHS IN PATIENTS WITH FIRST-EPISODE SCHIZOPHRENIA WITH ASSURED ANTIPSYCHOTIC ADHERENCE**
    BONGA CHILIZA, LAILA ASMAL (STELLENBOSCH UNIVERSITY - PSYCHIATRY), PIET OOSTHUIZEN (STELLENBOSCH UNIVERSITY - PSYCHIATRY), EVETTE VAN NIEKERK (STELLENBOSCH UNIVERSITY - HUMAN NUTRITION), RAJIV ERASMUS (STELLENBOSCH UNIVERSITY - CHEMICAL PATHOLOGY), MARTIN KIDD (STELLENBOSCH UNIVERSITY - STATISTICAL CONSULTATION), ANIL MALHOTRA (THE ZUCKER HILLSIDE HOSPITAL - PSYCHIATRY RESEARCH), ROBIN EMSLEY (STELLENBOSCH UNIVERSITY - PSYCHIATRY)
    (Abstract 141)

12. **THE RELATIONSHIP BETWEEN NUMBER OF TRAUMATIC EVENTS, SLEEP QUALITY AND THE DEVELOPMENT OF POSTTRAUMATIC STRESS SYMPTOMS IN A SAMPLE OF SOUTH AFRICAN ROAD TRAFFIC COLLISION SURVIVORS**
    SHARAIN SULIMAN (STELLENBOSCH UNIVERSITY - PSYCHIATRY), SORAYA (SEEDAT - PSYCHIATRY)
    (Abstract 142)

13. **INFANT ATTACHMENT AND MATERNAL DEPRESSION AS PREDICTORS OF NEURODEVELOPMENTAL AND BEHAVIOURAL OUTCOMES AT FOLLOW-UP**
    JANI NOTHLING (STELLENBOSCH UNIVERSITY - PSYCHIATRY), BARBARA LAUGHTON (STELLENBOSCH UNIVERSITY - PEDIATRICS AND CHILD HEALTH), SORAYA SEEDAT (STELLENBOSCH UNIVERSITY - PSYCHIATRY)
    (Abstract 143)

14. **REVIEW OF THE ANATOMY OF THE MIDDLE CEREBRAL ARTERY AND ITS ANOMALIES**
    KAREN CILLIERS (STELLENBOSCH UNIVERSITY - BIOMEDICAL SCIENCE), BENEDICT JOHN PAGE (STELLENBOSCH UNIVERSITY - BIOMEDICAL SCIENCE)
    (Abstract 144)

15. **HOW WELL ARE OUR FIRST YEAR STUDENTS? INTERNATIONAL STUDY ON STUDENT HEALTH AND WELLNESS: PRELIMINARY FINDINGS**
    JANINE ROOS (MENTAL HEALTH INFORMATION CENTRE OF SOUTHERN AFRICA - DEPARTMENT OF PSYCHIATRY, STELLENBOSCH UNIVERSITY), CHRISTINE LOCHNER (MENTAL HEALTH INFORMATION CENTRE OF SOUTHERN AFRICA, SU/UCT MRC UNIT ON ANXIETY & STRESS DISORDERS - DEPARTMENT OF PSYCHIATRY, STELLENBOSCH UNIVERSITY), LIAN TALJAARD (SU/UCT MRC UNIT ON ANXIETY & STRESS DISORDERS - DEPARTMENT OF PSYCHIATRY, STELLENBOSCH UNIVERSITY), DAN J STEIN (SU/UCT MRC UNIT ON ANXIETY & STRESS DISORDERS - DEPARTMENT OF PSYCHIATRY AND MENTAL HEALTH, UNIVERSITY OF CAPE TOWN)
    (Abstract 145)

16. **EFFECTS OF HIV AND CHILDHOOD TRAUMA ON BRAIN MORPHOMETRY AND NEUROCOGNITIVE FUNCTION**
    GEORGINA SPIES (STELLENBOSCH UNIVERSITY - PSYCHIATRY), FATIMA AHMED-LEITAO (STELLENBOSCH UNIVERSITY - PSYCHIATRY), CHRISTINE FENNEMA-NOTESTINE (UNIVERSITY OF CALIFORNIA SAN DIEGO - PSYCHIATRY AND RADIOLOGY), MARIANA CHERNER (UNIVERSITY OF CALIFORNIA SAN DIEGO - PSYCHIATRY), SORAYA SEEDAT (STELLENBOSCH UNIVERSITY - PSYCHIATRY)
    (Abstract 146)

17. **COGNITIVE FUNCTION IN WOMEN WITH HIV INFECTION AND EARLY LIFE STRESS**
    GEORGINA SPIES (STELLENBOSCH UNIVERSITY - PSYCHIATRY), CHRISTINE FENNEMA-NOTESTINE (UNIVERSITY OF CALIFORNIA SAN DIEGO - PSYCHIATRY AND RADIOLOGY), MARIANA CHERNER (UNIVERSITY OF CALIFORNIA SAN DIEGO - PSYCHIATRY), SORAYA SEEDAT (STELLENBOSCH UNIVERSITY - PSYCHIATRY)
    (Abstract 147)

18. **SELECTIVE ATTENTION IN PRENATAL METHAMPHETAMINE EXPOSED CHILDREN AGED SEVEN TO EIGHT YEARS**
    MARINA STEPHENS (SU/UCT MRC UNIT ON STRESS AND ANXIETY DISORDERS, STELLENBOSCH UNIVERSITY - PSYCHIATRY), MAJA KWIATKOWSKI (UNIVERSITY OF CAPE TOWN - PSYCHOLOGY, UNIVERSITY OF CAPE TOWN), DAN J STEIN (SU/UCT MRC UNIT ON ANXIETY AND STRESS DISORDERS & UCT DEPARTMENT OF PSYCHIATRY AND MENTAL HEALTH - PSYCHIATRY, STELLENBOSCH UNIVERSITY & PSYCHIATRY AND MENTAL HEALTH, UNIVERSITY OF CAPE TOWN), KIRSTEN A. DONALD (UNIVERSITY OF CAPE TOWN - DEPARTMENT OF PAEDIATRICS AND CHILD HEALTH), ANNERINE ROOS (SU/UCT MRC UNIT ON ANXIETY AND STRESS DISORDERS, STELLENBOSCH UNIVERSITY - PSYCHIATRY)
    (Abstract 148)

19. **STRUCTURAL CONNECTIVITY IN SIX-YEAR OLD PRENATAL METHAMPHETAMINE EXPOSED CHILDREN**
    ANNERINE ROOS (STELLENBOSCH UNIVERSITY - PSYCHIATRY), JEAN-PAUL FOUCHE (STELLENBOSCH UNIVERSITY - PSYCHIATRY), DAN J STEIN (UNIVERSITY OF CAPE TOWN / STELLENBOSCH UNIVERSITY - PSYCHIATRY AND MENTAL HEALTH), KIRSTEN A DONALD (UNIVERSITY OF CAPE TOWN - PAEDIATRICS AND CHILD HEALTH)
    (Abstract 149)

20. **RESILIENCE IN SOCIAL ANXIETY DISORDER AND POSTTRAUMATIC STRESS DISORDER IN THE CONTEXT OF CHILDHOOD TRAUMA**
    SUSANNE BAKELAAR, MELANIE BISHOP (STELLENBOSCH UNIVERSITY - PSYCHIATRY), SUSANNE BAKELAAR (STELLENBOSCH UNIVERSITY - PSYCHIATRY), DAVID ROSENSTEIN (STELLENBOSCH UNIVERSITY - PSYCHIATRY), PROFESSOR SORAYA SEEDAT (STELLENBOSCH UNIVERSITY - PSYCHIATRY)
    (Abstract 150)

21. **SOCIAL ANXIETY DISORDER (SAD) AND CHILDHOOD TRAUMA: BEHAVIORAL INHIBITION, BEHAVIORAL ACTIVATION AND QUALITY OF LIFE**
    SUSANNE BAKELAAR, CAROLIEN, J. W. H., (CENTRE OF EXCELLENCE FOR KORSAKOFF AND ALCOHOL-RELATED COGNITIVE DISORDERS, VINCENT VAN GOGH INSTITUTE FOR PSYCHIATRY, V - PSYCHIATRY), SUSANNE BAKELAAR (STELLENBOSCH UNIVERSITY - PSYCHIATRY), MELANIE BISHOP (STELLENBOSCH UNIVERSITY - PSYCHIATRY), PROFESSOR SORAYA SEEDAT (STELLENBOSCH UNIVERSITY - PSYCHIATRY)
    (Abstract 151)

22. **FOOD ACTIVITIES AND THE MAINTENANCE OF IDENTITY IN LATER LIFE**
    NICOLA ANN PLASTOW
    (Abstract 152)

23. **THE ROLE OF NON-CODING RNAS IN FEAR EXTINCTION**
    STEFANIE MALAN-MÜLLER
    (Abstract 153)

24. **THE DEVELOPMENT OF THE VISUAL SCREENING TOOL FOR DEPRESSION AND ANXIETY DISORDERS: ADDRESSING BARRIERS TO SCREENING FOR MENTAL ILLNESS IN DIABETES AND HYPERTENSION**
    ZIMBINI OGLE (STELLENBOSCH UNIVERSITY - PSYCHIATRY), LIEZL KOEN (STELLENBOSCH UNIVERSITY - PSYCHIATRY), DANA NIEHAUS (STELLENBOSCH UNIVERSITY - PSYCHIATRY)
    (Abstract 154)

25. **COMORBIDITY IN GAMBLING DISORDER: PRELIMINARY DATA**
    NATASCHA HORAK (US/UCT MRC UNIT ON ANXIETY & STRESS DISORDERS - PSYCHIATRY, STELLENBOSCH UNIVERSITY), HEIDI SINCLAIR (NATIONAL RESPONSIBLE GAMBLING PROGRAMME, SOUTH AFRICA - PSYCHIATRY AND MENTAL HEALTH, UNIVERSITY OF CAPE TOWN), LIAN TALJAARD (US/UCT MRC UNIT ON ANXIETY & STRESS DISORDERS - PSYCHIATRY, STELLENBOSCH UNIVERSITY), DAN J. STEIN (US/UCT MRC UNIT ON ANXIETY & STRESS DISORDERS - PSYCHIATRY AND MENTAL HEALTH, UNIVERSITY OF CAPE TOWN), CHRISTINE LOCHNER (US/UCT MRC UNIT ON ANXIETY & STRESS DISORDERS - PSYCHIATRY, STELLENBOSCH UNIVERSITY)
    (Abstract 155)

26. **CHILDHOOD ABUSE AND NEGLECT AS PREDICTORS OF DEFICITS IN VERBAL AUDITORY MEMORY IN NON-CLINICAL ADOLESCENTS WITH LOW ANXIETY PRONENESS**
    LINDI MARTIN (STELLENBOSCH UNIVERSITY - PSYCHIATRY), SORAYA SEEDAT (STELLENBOSCH UNIVERSITY - PSYCHIATRY),
    (Abstract 156)

27. **MATERNAL MENTAL HEALTH: A PROSPECTIVE NATURALISTIC STUDY OF THE OUTCOME OF PREGNANCY IN WOMEN WITH MAJOR PSYCHIATRIC DISORDERS IN AN AFRICAN COUNTRY**
    EILEEN THOMAS (MATERNAL MENTAL HEALTH STUDY, DEPARTMENT OF PSYCHIATRY, UNIVERSITY OF STELLENBOSCH), E DU TOIT, L KOEN, D NIEHAUS (MATERNAL MENTAL HEALTH STUDY, DEPARTMENT OF PSYCHIATRY, UNIVERSITY OF STELLENBOSCH)
    (Abstract 157)

DEMONSTRATIONS

1. **VIRTUAL REALITY EXPOSURE THERAPY IN A SOUTH AFRICAN CONTEXT**
    STEFAN DU PLESSIS, H DE VILLIERS, D VAN DEN HEEVER, S SEEDAT
    (Abstract 158)

Theme 6 / Tema 6

Perioperative Sciences/ Perioperatiewe Wetenskappe

Lecture Hall 7 / Lesingsaal 7

11h45-12h30 **LUNCH** (Foyer between Lecture Hall 11 and 12) and **POSTER DISCUSSIONS**

MAIN PROGRAMME / HOOFPROGRAM (Lecture Hall 11)

12h30-13h00 **DEAN'S ADDRESS**

13H00-13h15 Introduction of the **GUEST SPEAKER**

13h15-14h00 **GUEST SPEAKER -** Prof Wim de Villiers, Rector and Vice-Chancellor of Stellenbosch University
Title: *Transformation through Research*

14h00-14h30 **TEA AND POSTER DISCUSSIONS**

FIRST SESSION / EERSTE SESSIE (Lecture Hall 7)

Session Chair / Sessie Voorsitter: Prof RP Lamberts

14h30-14h45 **HEMATURIA AS SCREENING TEST FOR BLADDER INVASION BY CARCINOMA OF THE CERVIX CAN DECREASE THE USE OF STAGING CYSTOSCOPY**
DR S WESSELS
(Abstract Nr 159)

14h45-15h00 **DIFFERENTIAL RENAL FUNCTION CALCULATION USING CONTRAST ENHANCED COMPUTED TOMOGRAPHY**
DR. K DU TOIT
(Abstract Nr 160)

15h00-15h15 **COMPARISON OF A LOW-COST HOME UROFLOW METER (UROWATCH) AND THE ELECTRONIC DANTEC URODYN 1000 UROFLOW METER**
DR CM MEINTJES
(Abstract Nr 161)

15h15-15h30 **ASSESSMENT OF VARIATION IN UROFLOWMETRY PARAMETERS IN ASYMPTOMATIC YOUNG MALE VOLUNTEERS AND MIDDLE-AGED MEN WITH LOWER URINARY TRACT SYMPTOMS**
DR CM MEINTJES

(Abstract Nr 162)

15h30-16h00 **STATE OF THE ART PRESENTATION 6 - PROF A VAN DER MERWE**

Title: *Penile Transplant*

16h00-16h15 **THE USE OF PROPOFOL FOR SEDATION IN MEDICAL THORACOSCOPY**
DR MJ VORSTER
(Abstract Nr 163)

16h15-16h30 **EXTRA TIME FOR QUESTIONS / DISCUSSION**

16h30-16h45 **TEA AND POSTER DISCUSSIONS**

SECOND SESSION / TWEEDE SESSIE (Lecture Hall 7)

Session Chair / Sessie Voorsitter: Prof RP Lamberts

16H45-17h00 **A CRITICAL REVIEW OF A NEUROTRAUMA SERVICE : THE EFFECTS OF TECHNOLOGICAL ADVANCEMENTS ON PATIENT MANAGEMENT**
MR IS WALKER, DR A VLOK
(Abstract Nr 164)

17h00-17h15 **VARIATIONS IN TRANSVERSE FORAMINA OF CERVICAL VERTEBRAE: A PRELIMINARY STUDY**
DR JC MARAIS
(Abstract Nr 165)

17h15-17h30 **TRANSCATHETER VALVE REPLACEMENTS OF ALL 4 HEART VALVES AT TYGERBERG HOSPITAL.**
DR H WEICH
(Abstract Nr 166)

17h30-17h45 **EXTRA TIME FOR QUESTIONS / DISCUSSION**

POSTERS / PLAKKATE

NONE

Theme 7 / Tema 7

Maternal and Child Health / Moeder en Kind Gesondheid

Lecture Hall 12 / Lesingsaal 12

Welcome 10h00-10h15: Prof Mariana Kruger

FIRST SESSION / EERSTE SESSIE (Lecture Hall 12)

Session Chair / Sessie Voorsitter: Dr Amy Slogrove

10h15-10h30 **SURVEILLANCE OF CHILDHOOD TUBERCULOSIS DRUG RESISTANCE IN CAPE TOWN, SOUTH AFRICA: INCREASING RIFAMPICIN MONO-RESISTANCE**
H. SIMON SCHAAF, ELISABETTA WALTERS, ANNEKE C. HESSELING, CORNELIA RAUTENBACH, CORNE BOSCH, ANTHONY J. GARCIA-PRATS
(Abstract Nr 167)

10h30-10h45 **STOOL DNA EXTRACTION FOR IMPROVED MYCOBACTERIUM TUBERCULOSIS DETECTION IN CHILDREN**
CORNE BOSCH
(Abstract Nr 168)

10h45-11h00 **PRESENTATION AND OUTCOME OF CHILDREN WITH CULTURE-CONFIRMED ISONIAZID-RESISTANT RIFAMPICIN-SUSCEPTIBLE TUBERCULOSIS**
ANTHONY GARCIA-PRATS, LIENKI DU PLESSIS, ANDRE BURGER, HEATHER R. DRAPER, JAMES A. SEDDON, KLASSINA ZIMRI, ANNEKE C. HESSELING, H. SIMON SCHAAF
(Abstract Nr 169)

11h00-11h15 **BACTERIOLOGICAL RESPONSE TO TREATMENT IN CHILDREN WITH CONFIRMED INTRATHORACIC TUBERCULOSIS**
ELISABETTA WALTERS, MARIEKE VAN DER ZALM, ANNE-MARIE DEMERS, CORNE' BOSCH, H SIMON SCHAAF, MEGAN PALMER, ROBERT P GIE, ANNEKE C HESSELING
(Abstract Nr 170)

11h15-11h30 **IMPLEMENTATION OF A MULTI-LEVEL INTERVENTION TO IMPROVE ISONIAZID PREVENTATIVE THERAPY TO CHILD TB CONTACTS IN SOUTH AFRICA**
KAREN DU PREEZ, LIENKI DU PLESSIS, AC HESSELING
(Abstract Nr 171)

11h30-11h45 **UTILIZATION OF PAEDIATRIC ISOLATION FACILITIES IN A TB-ENDEMIC SETTING**
ANGELA DRAMOWSKI, MARK F COTTON, ANDREW WHITELAW
(Abstract Nr 172)

11h45-12h00 **HEALTHCARE-ASSOCIATED INFECTIONS IN CHILDREN: KNOWLEDGE, ATTITUDES AND PRACTICE OF PAEDIATRIC HEALTHCARE PROVIDERS AT TYGERBERG HOSPITAL, CAPE TOWN**
ANGELA DRAMOWSKI, ANDREW WHITELAW, MARK F COTTON
(Abstract Nr 173)

12h00-12h15 **THE PREVALENCE OF MOTOR IMPAIRMENT IN GRADE R LEARNERS IN MAINSTREAM PUBLIC SCHOOLS IN THE WEST COAST DISTRICT OF SOUTH AFRICA**
JANKE VAN DER WALT, NICOLA PLASTOW, MARIANNE UNGER
(Abstract Nr 174)

12h15-12h30 **LUNCH** (Foyer between Lecture Hall 11 and 12) and **POSTER DISCUSSIONS**

MAIN PROGRAMME / HOOFPROGRAM (Lecture Hall 11)

12h30-13h00 **DEAN'S ADDRESS**

13H00-13h15 Introduction of the **GUEST SPEAKER**

13h15-14h00 **GUEST SPEAKER -** Prof Wim de Villiers, Rector and Vice-Chancellor of Stellenbosch University
Title: *Transformation through Research*

14h00-14h30 **TEA AND POSTER DISCUSSIONS**

SECOND SESSION / TWEEDE SESSIE (Lecture Hall 12)

Session Chair / Sessie Voorsitter: Dr Helena Rabie

14h30-14h45 **MISSED AND USED OPPORTUNITIES IN HEALTH STATUS ASSESSMENT OF CHILDREN**
RENEE BLAAUW, LYNETTE DANIELS, LISANNE DU PLESSIS, NELENE KOEN, LIESBET KOORNHOF, MARITHA MARAIS, DAAN NEL, EVETTE VAN NIEKERK, JANICKE VISSER
(Abstract Nr 175)

14h45-15h00 **AN INVESTIGATION OF THE FACTORS INFLUENCING FOOD CHOICES OF MOTHERS OF PRIMARY SCHOOL CHILDREN IN THE METRO-NORTH EDUCATION DISTRICT OF THE WESTERN CAPE PROVINCE, SOUTH AFRICA.**
YOLANDE SMIT, SUSANNA MARIA KASSIER, NELENE KOEN
(Abstract Nr 176)

15h00-15h15 **INFANT FEEDING CHOICES AND EFFECTS ON INFANT MORBIDITY IN PMTCT PROGRAMS TRANSITIONING TO "OPTION B+" IN WESTERN CAPE, SOUTH AFRICA. THE MOTHER INFANT HEALTH STUDY**
MARK F. COTTON, MOLEEN ZUNZA, MONIKA ESSER
(Abstract Nr 177)

15h15-15h30 **UNIVERSAL INFANT MORBIDITY RISK FACTORS MAY NOT BE THE SOLE DRIVERS OF INFECTIOUS MORBIDITY IN HIV EXPOSED UNINFECTED INFANTS**

AMY L. SLOGROVE, MARK F. COTTON, TOBIAS R. KOLLMANN, DAVID P. SPEERT, MONIKA M. ESSER, JOEL SINGER, JULIE A. BETTINGER
(Abstract Nr 178)

15h30-15h45 **LOW BIRTH HIV INFECTION RATE IN INFANTS FROM HIGH-RISK-FOR-TRANSMISSION PREGNANCIES IN SOUTH AFRICA**
JEAN MARITZ, AURELIE NELSON, VIVIAN COX, GERT UVES VAN ZYL, WOLFGANG PREISER, GILLES VAN CUTSEM, HELENA RABIE, LISA JANE FRIGATI, JONATHAN BERNHEIMER, JANET GIDDY, MARK COTTON
(Abstract Nr 179)

15h45-16h00 **SYPHILIS IN HIV-INFECTED MOTHERS AND INFANTS: RESULTS FROM THE NICHD/ HPTN 040 STUDY**
THE NICHD HPTN 040 STUDY TEAM, PRESENTING AUTHOR GERHARD THERON
(Abstract Nr 180)

16h00-16h30 **STATE OF THE ART PRESENTATION 7 - PROF A HESSELING**

Title: *Novel Approaches To Tuberculosis Treatment In Children And Pregnant Women*

16h30-16h45 **BREAK & POSTER VIEWING**

THIRD SESSION / DERDE SESSIE (Lecture Hall 12)

Session Chair/ Sessie Voorsitter: Dr Viju Thomas

16H45-17h00 **FIRST TRIMESTER MEDICAL TERMINATION OF PREGNANCY AT TYGERBERG HOSPITAL: AN AUDIT OF THE FIRST YEAR OF IMPLEMENTATION**
JUDITH KLUGE, JULIA JENKINS, STEFAN GEBHARDT
(Abstract Nr 181)

17h00-17h15 **AFFORDABLE ART AND MILD STIMULATION STRATEGIES AT TYGERBERG HOSPITAL FERTILITY CLINIC: A RETROSPECTIVE ANALYSIS OF OUTCOMES.**
NICOLE ASHLEY NEL
(Abstract Nr 182)

17h15-17h30 **POSTPARTUM LAPAROSCOPIC STERILISATION: A ROLE IN SOUTH AFRICAN HEALTHCARE?**
DL PRINCE
(Abstract Nr 183)

17h30-18h15 **FINGER-SUPPER SPONSORED BY BAYER**

EVENING PROGRAM / AANDPROGRAM (Lecture Hall 12)

Session Chair/ Sessie Voorsitter: Dr Hannes van der Merwe

18h15-18h20 **Welcome and prize giving.**

Van Schaik Book prizes: Best presenter and Best poster

Unistel Prizes: Young researchers in Clinical and Laboratory Research

18h20-18h50 **JN DE VILLIERS MEMORIAL LECTURE - PROF GERHARD THERON**

Title: *Perinatal HIV*

18h50-19h20 **HOW TO AVOID BEING MISLED BY RESEARCH**

PROF JUSTUS HOFMEYR

19h20-19h45 **THE IMPACT OF OBSTETRIC CRITICAL CARE SERVICES**

DR EDUARD LANGENEGGER

POSTERS / PLAKKATE

1. **A COMPARISON OF THE EFFECT OF POLYVINYLPYRROLIDONE (PVP) AND SPERMSLOWTM ON HUMAN SPERMATOZOA**
   MARLIZE NEL
   (Abstract Nr 184)

2. **ADOLESCENTS EXPEREINCES OF MULTIDRUG-RESISTANT TUBERCULOSIS AND OF PARTICIPATION IN CLINICAL RESEARCH**
   KLASSINA ZIMRI
   (Abstract Nr 185)

3. **AEROSOLISATION OF A SYNTHETIC PULMONARY SURFACTANT SYNSURF®: BIOPHYSICAL PROPERTIES AND EFFECTS OF CHOLESTROL ON PHOSPOLIPID PROTEIN MIXTURES**
   CHRIS-MARE AGENBAG
   (Abstract Nr 186)

4. **ANTIRETROVIRAL TREATMENT IN THE FIRST MONTH OF LIFE: CHALLENGES AND OPPORTUNITIES.**
   ELKE WYNBERG, HELENA RABIE, JEAN MARITZ, LISA FRIGATI, MARC COTTON
   (Abstract Nr 187)

5. **CYTOKINE RESPONSE IN HIV-EXPOSED INFANTS WITH SEVERE NECROTIZING ENTEROCOLITIS: EARLY RESULTS OF A PROSPECTIVE STUDY**
   CORENA DE BEER, MARION ARNOLD, SAMUEL W MOORE
   (Abstract Nr 188)

6. **DIFFERENT ABSTINENCE PERIODS ALTER SPERM KINEMATICS**
   MA BASHIR, G VAN DER HORST, SS DU PLESSIS
   (Abstract Nr 189)

7. **DISCORDANT RIFAMPICIN RESISTANCE DETECTED BY XPERT MTB/RIF AND OTHER MOLECULAR AND PHENOTYPIC DRUG SUSCEPTIBILITY TESTS IN CHILDREN**
   MARIEKE MARGREET VAN DER ZALM, ELISABETTA WALTERS, CORNE BOSCH, KIM HOEK, ANNEMARIE DEMERS, HELENA RABIE, ANNEKE C HESSELING, H SIMON SCHAAF, ANDREW C WHITELAW
   (Abstract Nr 190)

8. **EVALUATION OF DIFFERENT MODELS OF TRAINING TO IMPROVE HEALTH CARE WORKER KNOWLEDGE OF CHILDHOOD TUBERCULOSIS AT PRIMARY HEALTHCARE LEVEL IN SOUTH AFRICA**
LIENKI DU PLESSIS, AC HESSELING, M PALMER, K DU PREEZ
(Abstract Nr 191)

9. **GAMETE AND EMBRYO TRANSPORT USING A TRANSPORT INCUBATOR: THE MAINTENANCE OF THE CORRECT PH AND TEMPERATURE.**
NICOLE ASHLEY NEL
(Abstract Nr 192)

10. **INDICATED PREVENTION IN SOUTH AFRICA: EFFICACY OF CASE MANAGEMENT**
MARLENE DE VRIES C SNELL, AS MARAIS, S SEEDAT, C PARRY, PA MAY
(Abstract Nr 193)

11. **NO EVIDENCE THAT ADVANCED MATERNAL HIV IS ASSOCIATED WITH INFECTIOUS MORBIDITY IN SOUTH AFRICAN HIV EXPOSED UNINFECTED INFANTS OF MOTHERS ON MATERNALLY INDICATED CART**
AMY L. SLOGROVE, MARK F. COTTON, TOBIAS R. KOLLMANN, DAVID P. SPEERT, MONIKA M. ESSER, JOEL SINGER, JULIE A. BETTINGER
(Abstract Nr 194)

12. **PHARMACOKINETICS OF RIFAMPICIN, ISONIAZID, PYRAZINAMIDE AND ETHAMBUTOL IN SOUTH AFRICAN INFANTS AT REVISED WHO-RECOMMENDED TUBERCULOSIS DOSING GUIDELINES**
AC HESSELING, ADRIE BEKKER, H MCILLERON, HR DRAPER, HS SCHAAF, L VAN DER LAAN, L WIESNER, PR DONALD, S MURRAY
(Abstract Nr 195)

13. **POISONING EXPOSURES IN INFANTS: DATA FROM THE TYGERBERG POISON INFORMATION CENTRE, CAPE TOWN, SOUTH AFRICA.**
MARKS CARINE J, VAN HOVING DANIEL J, WIUM CHERYLYNN A, DU PLESSIS CATHERINA E
(Abstract Nr 196)

14. **THE EFFECT OF INCUBATION TIME AND TEMPERATURE ON SPERM MOTILITY, HUMAN SPERM DNA AND ASSISTED REPRODUCTIVE TECHNOLOGIES (ART) OUTCOME**
ESTEE VAN ZYL
(Abstract Nr 197)

15. **THE PHARMACOKINETICS AND SAFETY OF OFLOXACIN IN CHILDREN WITH DRUG-RESISTANT TUBERCULOSIS**
ANTHONY GARCIA-PRATS, HEATHER R. DRAPER, STEPHANIE THEE, KELLY E. DOOLEY, HELEN M. MCILLERON, JAMES A. SEDDON, LUBBE WIESNER, SANDRA CASTEL, H. SIMON SCHAAF, ANNEKE C. HESSELING
(Abstract Nr 198)

16. **TRAJECTORY OF FASD ACROSS THE LIFESPAN**
DANIEL MARSDEN
(Abstract Nr 199)

17. **ESTABLISHING A STANDARD ASSAY PROTOCOL FOR THE QUANTITATIVE DETERMINATION OF SOLUBLE HUMAN LEUKOCYTE ANTIGEN-G (SHLA-G) CONCENTRATION AS A BIOMARKER FOR EMBRYO SELECTION IN ART**
LARA MAREE
(Abstract Nr 200)

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Die inhoud van hierdie afdeling is gepubliseer soos dit ontvang is**

Theme 1 / Tema 1

*H*ealth *S*ystems *S*trengthening /

*G*esondheidsisteme *V*ersterking

ORAL PRESENTATIONS / REFERATE

ABSTRACT NUMBER / ABSTRAKNOMMER: 1

RESEARCH INVOLVEMENT, FUTURE RESEARCH PARTICIPATION AND SELF-PERCEIVED RESEARCH COMPETENCE AMONG UNDERGRADUATE HEALTH SCIENCES STUDENTS.

JONAS BOVIJN *
NABEELA KAJEE
SUSAN VAN SCHALKWYK

Introduction:A decline in the number of health researchers has been noted locally and worldwide. Developing research capacity among health sciences students has been highlighted as an important cornerstone of countering this decline. The purpose of this study was to identify the degree of research involvement and its determinants; to explore attitudes towards future research participation; and to gauge self-perceived research competence levels, among undergraduate health sciences students.
Methods:Self-administered, anonymous questionnaires were issued to all undergraduates studying at the Faculty of Medicine and Health Sciences, Stellenbosch University, between June and October 2014. The questions (closed- and open-ended) were divided into two main sections, namely demographic factors and questions exploring the main study outcomes.
Results:A total of 1815 responses were received (sampling rate: 83.3%). Of all the respondents, 61.7% generally felt positive towards research, 83.5% had never been involved with any voluntary research activity, and 1.2 % had published in a peer-reviewed journal. Voluntary research involvement was significantly associated ($p < 0.05$) with the allied health disciplines (vs. MBChB), male gender, and prior BSc. experience of 1 year or more, after correcting for multiple variables. No significant differences were found when comparing voluntary research involvement among students from a rural versus urban background, Extended Degree Programme (EDP) versus non-EDP students, or between different age-, home-language- or ethnic groups. Students with voluntary research involvement had significantly higher self-perceived research competence scores ($p < 0.001$) and higher future research participation scores ($p < 0.001$).
Conclusions:Results of this study may aid in targeting more intensive research development and support initiatives towards specific sub-groups of students. The significant association between undergraduate research involvement, and higher self-perceived research competence levels as well as higher interest in pursuing future research activities, strengthens the drive to stimulate formal research engagement among undergraduate health sciences students.

ABSTRACT NUMBER / ABSTRAKNOMMER: 2

A TANGLED WEB OF DEFINITIONS: DECONSTRUCTING HEALTH SCIENCE STUDENTS' CONCEPT OF RESEARCH – A QUALITATIVE APPROACH

NABEELA KAJEE*
JONAS BOVIJN
SUSAN VAN SCHALKWYK

Background: The future of medicine rests on the development of new research and innovation. Today's health science students will form the backbone of tomorrow's medical community. Thus

developing a rich understanding and culture of research is paramount to achieving this academic progress. Furthermore, learning to conduct research and engage in scholarly activities are valuable skills for undergraduate health science students to acquire as part of their undergraduate training. To do so, however, it is essential that we understand how students perceive the notion of research. This can enhance educators' pedagogic decisions, specifically those relating to removing research educational barriers and enhancing engagement within the ambit of research. The literature abounds with numerous definitions of research. This study aims to examine the manner that undergraduate health sciences perceive the concept of research.
Method: A sample of 1815 Health Sciences students of the Faculty of Medicine and Health Sciences at Stellenbosch University were surveyed as part of a cross-sectional study. The written questionnaire included a qualitative aspect examining the students' definition of research. This qualitative data was analysed using the framework analysis method.
Results: In keeping with the literature, the students' responses demonstrated a wide range of perceptions, although respondents leaned largely towards a positivist understanding of research. The gaining of information, knowledge and understanding were central to the definition of research amongst students. A mechanistic approach was displayed by a sub-group of respondents. Few cited the need for and progressive purpose of research.
Conclusion: This study has explored the perceptions of research among health science students. It suggests that these perceptions are incomplete and highlights areas of misconception. This creates a platform for optimised pedagogy and institutional policy in supporting the research student experience.

ABSTRACT NUMBER / ABSTRAKNOMMER: 3

CLINICAL TEACHING OF UNDERGRADUATE MEDICAL STUDENTS: HOW DO CLINICIANS DO IT?

J BLITZ
E ARCHER
H RHODE
M DE VILLIERS
S VAN SCHALKWYK

Much clinical teaching is conducted by clinicians primarily employed for patient care. Many of these clinicians have not been formally prepared for their teaching role.
A situational analysis of clinical teaching could serve as a starting point for designing faculty development activities to support clinicians in strengthening their role as teachers in the clinical context. We sought to understand current pedagogical strategies used by clinical teachers in the clinical teaching environment.
Ethics approval was obtained for audio recording of bedside clinical teaching encounters of undergraduate medical students at an academic teaching hospital. Clinicians gave consent to be recorded over a period of time, but were not informed of exactly when the recording might occur.
The recordings were transcribed and the data then plotted against Nilsson's framework of pedagogical strategies. Of the seven strategies, those employed predominantly were "question and reply", "prompting" and "lecturing". Occasionally "demonstration" was used as a teaching strategy.
The data revealed rich information about the nature of clinical teaching. This included teaching opportunities unrecognized by the teachers; limited involvement and recognition of the student role; infrequent deconstruction of clinical reasoning.

The practice of teaching in the clinical area is not yet well understood. There seems to be a wide variation in teaching skills and approaches. The information provided by this research has enriched our understanding of current clinical teaching practices.
We will be able to use this new understanding to inform the design of more specific faculty development activities directed towards strengthening clinical teaching skills.

ABSTRACT NUMBER / ABSTRAKNOMMER: 4

ASSESSMENT OF THE IMPACT OF FAMILY PHYSICIANS IN THE DISTRICT HEALTH SYSTEM OF THE WESTERN CAPE, SOUTH AFRICA

GERMARIE FERREIRA

Introduction:The implementation of primary health care has been a global undertaking. South Africa has also committed itself to improving primary health care and the district health system. Aim and Objectives:This study aims to explore the perceived impact that family physicians have had on the performance of the health system, the quality of clinical processes and health outcomes from the perspective of the district or sub-district managers.
Methods:This was a qualitative study using in-depth interviews. Seven interviews were conducted which were recorded, transcribed and analysed.
Results:The general feeling was that the family physicians were having a positive impact on improving the performance of the health system and the quality of clinical processes, especially in the Metropole. The perceived impact on health outcomes was also positive.A few new concerns were raised from the Rural DHS regarding their performance in district hospitals, particularly in relation to surgical and anaesthetic skills, overtime, managerial engagement and sharing the clinical load.
Conclusion:It was perceived that family physicians were fulfilling the role of competent clinician, consultant and leader of clinical governance well. They seemed to have a positive impact on the clinical processes for non-communicable chronic diseases, HIV and TB, mental health, eye care, child health and obstetrics. A few concerns were expressed about their skills at rural hospitals. Access, co-ordination, comprehensiveness and efficiency of the health system were positively impacted. It was anticipated that in the long run health outcomes will be positively impacted.

ABSTRACT NUMBER / ABSTRAKNOMMER: 5

FINAL-YEAR MEDICAL STUDENTS' REFLECTIONS ON THEIR CLINICAL LEARNING EXPERIENCE IN URBAN OR RURAL SETTINGS.

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Background The potential for rural clinical training to provide transformative learning experiences for undergraduate medical students has been previously described. A five year evaluative study tracked successive cohorts of medical students who opted to spend their final year at a rural clinical school. A three-dimensional model, comprising 'person', 'participation' and 'place' was developed to explain the students' experience. It was then decided to explore the applicability of the model for students at the

urban academic hospital. Summary of workBuilding on the cohort analyses of the rural students, four focus group discussions were conducted with final-year urban trained students (n=37) to explore their perceptions of their clinical learning experience. Transcribed data were analysed thematically. Using the model as framework, emerging themes were mapped according to the three dimensions.
Summary of resultsThe urban trained students were generally appeciative of their learning opportunities, but were critical of the quality of their clinical exposure. Key themes were workload; optimalisation of time; the role of preceptors; differences across disciplines and concern for the patients.
Discussion and conclusionsEach of the themes could be situated within the model, but provided an interesting counterpoint to the rural clinical school findings. There were instances of similarity, such as students' empathy with patients and appreciation for generative relationships, and difference, in their responses to the environment. The results yielded important insights into transformative learning in both rural and urban settings. Take-home messageResearch into students' clinical learning during extended rural placements can provide useful frameworks to explore and compare experiences in more conventional urban settings.

ABSTRACT NUMBER / ABSTRAKNOMMER: 6

ECONOMIC EVALUATION OF BLENDED LEARNING IN TEACHING HEALTH RESEARCH METHODS: THREE-UNIVERSITY COLLABORATION IN SOUTH AFRICA, SWEDEN AND UGANDA

LUNGISWA NKONKI

Background Novel research training approaches are needed in Sub Saharan African universities to support strengthening of health systems and services. A 4-year EU funded project, the African Regional Capacity Development for Health Systems and Services Research (ARCADE HSSR) aims to increase blended learning (BL) in the area, as it has been identified as an accessible and flexible way to offer education. However, there is insufficient data on the costs of BL in higher education. Objective To evaluate total provider costs of BL, as implemented in ARCADE HSSR, in teaching health research methods as a three-university collaboration.
Design Retrospective evaluation was performed on a BL course on randomised controlled trials, led by Stellenbosch University (SU) in South Africa, with participating universities from Sweden and Uganda. For all three universities, costs of BL course were evaluated using activity-based costing with an ingredients approach. For SU, also costs of the same course delivered with classroom learning (CL) approach were estimated, and learning outcomes of both approaches explored using course grades as an intermediate outcome measure.
Results The total provider costs of the BL course were 68 000 USD. At SU, the costs of the BL course were 115 % higher compared the CL course. Staff costs were the major cost driver in both approaches, but total staff costs were three times higher on the BL course at SU. This implies that inter-institutional BL can be more time consuming eg. due to use of new technologies. Explorative findings indicated that there was little difference in the learning outcomes of students.
Conclusions The total provider costs of inter-institutional BL course were higher compared to CL course at SU, but long-term economic evaluations of BL with societal perspective are warranted before conclusions on full costs and consequences of BL in teaching health sciences can be made.

ABSTRACT NUMBER / ABSTRAKNOMMER: 7

WORLD TB DAY 2015: CIVIL SOCIETY WORKING WITH GOVERNMENT TO IMPROVE WELLNESS OF COMMUNITY CARE WORKERS IN CAPE TOWN, SOUTH AFRICA

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Community Care Workers (CCW`s) provide home-based care, to uninsured communities. Services include TB screening, promotion of HCT, ART and TB treatment adherence and general hygiene & safety. Studies have shown that CCWs are at high risk for HIV and TB through their exposure at work, especially if they are HIV-infected themselves. Those HIV-infected, may not be aware of their status or accessing appropriate care. To promote wellness among CCWs, the City of Cape Town (CCT) Municipality: City Health together with the Western Cape Government Department of Health identified World TB Day as an opportunity to "Care for the carer" in high disease burden communities around Cape Town. The Desmond Tutu TB Centre, in partnership with various non-governmental organisations provided integrated TB and HIV services in 3 of 8 health sub districts. Services were provided on a mobile basis (tents) at public places. CCW`s were invited to attend "wellness days". Services included HIV counselling and testing, TB screening and testing, screening: chronic diseases, STIs, family planning. All HIV and TB testing was done according to National testing algorithms and CCW`s were linked to care where necessary.There were 8 events over 6 days. 336 CCW`s accessed mobile services, of whom 62 (18%) were positive. Of the 231 (70%) tested, 5 (2%) were newly diagnosed HIV positive. 332 (99%) CCW`s screened for TB and 2 were symptomatic, of which one was diagnosed with TB and referred for treatment.Government and civil society can partner effectively in caring for CCW`s. An integrated service initiative was successful in identifying newly diagnosed CCWs with HIV and TB and referring them for care. A high proportion of CCW's were known HIV positive, indicating that many were aware of their positive status. Using "World TB day" to launch this initiative highlighted the co-existence of these two diseases.

ABSTRACT NUMBER / ABSTRAKNOMMER: 8

THE VALIDITY OF SPIROMETRY PERFORMED ON SOUTH AFRICAN NAVY DIVERS AND SUBMARINERS FROM 1 JULY 2010 –1 JULY 2012

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WAJ MEINTJES

Objectives
To assess the acceptability and reproducibility of lung function tests performed on South African Navy Divers and Submariners (SANDS) for the period 1 July 2010- 1 July 2012.
Methods
A cross sectional study design was used. All electronic records of lung function tests performed on SANDS were accessed and analysed. The variables captured included the participant age, height, weight, gender, smoking habits, mustering (diver or submariner), test operator, test date, calibration date and the acceptability and repeatability of each lung function test.
Results

A total of 550 lung function tests were analysed. 42.7% (n=235) of the tests recorded three or more acceptable curves. Of the 235 acceptable curves, 91.9% (n=216) were reproducible. Acceptability of the tests was statistically associated with individual operators, but no association was found between acceptability and the other variables.
Conclusions
Training and performance of operators is an important component in the overall validity of lung function test results.

ABSTRACT NUMBER / ABSTRAKNOMMER: 9

EVALUATION OF THE SUNHEART CARDIOLOGY OUTREACH PROGRAMME

ALFONSO JK PECORARO

Introduction: The demand for advanced cardiac care and specialized interventions is increasing. This results in bottlenecks and increased waiting times for patients requiring advanced cardiac care. Objective: To determine the value of the SUNHEART Outreach Programme to the public health care system.
Methods: An audit was performed of patients accessing the Outreach Programme for the period May 2013 to May 2014 and compared to a historical cohort of patients accessing the health care system during the preceding 6 months from October 2012 to April 2013. Access to advanced cardiac care was measured by time to initial evaluation, time to definitive diagnosis or intervention and patient compliance with appointments. The value to the health care system was also assessed by doing a cost analysis of transport of patients and health care workers as well as compliance with appointments.
Results: Data of 185 patients were included in the the audit. Sixty four patients were referred to tertiary care from October 2012 to April 2013 and 121 patients were referred to the outreach facility from May 2013 to May 2014. There was a significant reduction in waiting times with the median days to appointment of the historical cohort being 85 days compared to 18 days in the Outreach Programme cohort ($p < 0.01$). Patient compliance with appointments was significantly superior in the Outreach Programme cohort (90% vs 56%: $p < 0.01$). Valvular (36.5%) and ischaemic heart disease (35.5%) were the major pathologies requiring access to cardiac care services. Transport costs per patient treated was significantly reduced in the outreach program cohort (R118,09 vs R308,77)
Conclusion: Decentralization of services in the form of an Outreach Programme with a central hub improves access to advanced cardiac care by decreasing waiting time, improving compliance with appointments and decreasing travel costs.

ABSTRACT NUMBER / ABSTRAKNOMMER: 10

PERCEPTIONS OF CLIENTS UTILIZING A SOUTH AFRICAN UNIVERSITY'S SEXUAL HEALTH CLINIC

MARIANA VAN DER HEEVER*
ANNELEEN DAMONS
RUKSHANA ADAMS

The sexual health clinic at Stellenbosch University is attended by staff members and students. Yet limited evidence exists regarding the views and expectations of the clients on service delivery at the sexual health clinic. The aim of the study was to explore the perceptions of clients attending the sexual health services offered at the campus health clinic. The following objectives were set:• To explore the perceptions of the clients on service delivery at the sexual health clinic • To identify the needs of the clients attending the sexual health clinicA descriptive qualitative approach was applied utilizing in-depth interviews. A sample of n=15 was drawn through purposive sampling and data saturation was achieved with the sample. Since the researcher is employed as a registered professional nurse at the clinic data collection was completed by a researcher not affiliated with the university. Data was analyzed utilizing an interpretive approach. All applicable ethical principles such as anonymity, confidentiality, privacy were taken into consideration. The validity of the findings was enhanced through efforts to attain credibility, transferability, dependability and conformability.The findings of the study revealed that accessibility of the clinic is influenced by the geographical location of the clinic and that marketing and awareness of services require attention. Other themes that emerged were operational hours, waiting periods, the building of relationships with staff, consultations and financial implications. Key words: Sexual health, perceptions, students, staff

ABSTRACT NUMBER / ABSTRAKNOMMER: 11

TRENDS IN PAEDIATRIC BLOODSTREAM INFECTIONS AT A SOUTH AFRICAN REFERRAL HOSPITAL

A DRAMOWSKI, M COTTON, H RABIE, A WHITELAW

Background: The epidemiology of paediatric bloodstream infection (BSI) in Sub-Saharan Africa is poorly documented with limited data on hospital-acquired sepsis, impact of HIV infection, BSI trends and antimicrobial resistance.
Methods: We retrospectively reviewed paediatric BSI (0-14 years) at Tygerberg Children's Hospital between 1 January 2008 and 31 December 2013 (excluding neonatal wards). Laboratory and hospital data were used to determine BSI rates, blood culture contamination, pathogen profile, patient demographics, antimicrobial resistance and factors associated with mortality. Fluconazole resistant Candida species, methicillin-resistant *Staphylococcus aureus* (MRSA), multi-drug resistant *Acinetobacter baumannii* and extended-spectrum beta-lactamase (ESBL) producing Enterobacteriaceae were classified as antimicrobial resistant pathogens.
Results: Of 17001 blood cultures over 6 years, 935 cultures isolated 979 pathogens (5.5% yield; 95%CI 5.3-5.7%). Contamination rates were high (6.6%, 95%CI 6.4-6.8%), increasing over time (p=0.003). Discrete BSI episodes were identified (n = 864) with median patient age of 7.5 months, male predominance (57%) and 13% HIV prevalence. BSI rates declined significantly over time (4.6–3.1, overall rate 3.5 per 1000 patient days; 95% CI 3.3–3.7; Chi square for trend p=0.02). Gram negative pathogens predominated (60% vs 33% Gram positives and 7% fungal); *Klebsiella pneumoniae* (154; 17%), *Staphylococcus aureus* (131; 14%) and *Escherichia coli* (97; 11%) were most prevalent. Crude BSI mortality was 20% (176/864); HIV infection, fungal, Gram negative and hospital-acquired sepsis were significantly associated with mortality on multivariate analysis. Hospital-acquired BSI was common (404/864; 47%). Overall antimicrobial resistance rates were high (70% in hospital vs 25% in community-acquired infections; p<0.0001); hospital-acquired infection, infancy, HIV-infection and Gram negative sepsis were associated with resistance. *S. pneumoniae* BSI declined significantly over time (58/465 [12.5%] to 33/399 [8.3%]; p =0.04).

Conclusion: Although BSI rates declined over time, children with BSI had high mortality and pathogens exhibited substantial antimicrobial resistance in both community and hospital-acquired infections. Blood culture sampling technique and local options for empiric antimicrobial therapy require re-evaluation.

ABSTRACT NUMBER / ABSTRAKNOMMER: 12

"I HAVE A DREAM: A WORLD WITHOUT HIV..."

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MALCOLM DE ROUBAIX
CIARA STAUNTON
MELANY HENDRICKS
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GILL BLACK
THERESA ROSSOUW
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"I have a dream: a world without HIV..."Africa has a rich and contentious history of HIV cure approaches that range from mythology, cultural beliefs and religion to alternate and traditional "medications". This history is set against a backdrop of political ideology, claims of post-colonialism, pluralistic understanding of health and disease and distrust of the pharmaceutical industry. In South Africa the history of illegitimate HIV "cures" has impacted on understanding of HIV cure in contemporary medical research. As the scientific approaches to cure advance, it is becoming increasingly important to engage communities in conversations around cure to facilitate consent processes of future clinical trials.The National Institutes of Health (NIH) has encouraged scholarly work on social and ethical issues around HIV Cure research via an R01 research grant issued in 2012. As part of this multisite consortium of researchers in the United States and China, the Centre for Medical Ethics and Law has been working on projects related to the ethics of cure. Formative research comprising 15 qualitative interviews in an HIV clinic yielded interesting data on stakeholder views on cure. General awareness and knowledge of HIV cure research was suboptimal and concerns were expressed about cure strategies that could include treatment interruption. A number of bio-psycho-social risks of participating in future HIV cure trials were articulated. These findings prompted the development of an educational video to stimulate conversations about cure amongst patients and research participants. Development of the video evolved over a 12 month period as an iterative process. The actors are healthcare workers in an HIV clinic. It is intended that this 15 minute video be shown to patients in waiting rooms at HIV clinics throughout South Africa.

POSTER PRESENTATIONS / PLAKKAATAANBIEDINGS

ABSTRACT NUMBER / ABSTRAKNOMMER: 13

CAN EDUCATION, RELIGION AND BIOMEDICINE UNDERMINE THE HEALTH INDICATORS OF A RURAL COMMUNITY?

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(The lamentations of the Bomvane Chief in an ethnographic reflection of the wellness of the people his village). The Amabomvane people are proud warriors that migrated from the Southern Natal in the 17th century. After experiencing tribal wars for two centuries, the Bomvana people moved across the Mbashe River and settled down in peaceful co-existence with the Gcaleka tribe. The Bomvane tribe refused to participate in the infamous "cattle killing delusion" of the AmaXhosa. While most of the other Xhosa tribes suffered famine because of this prophecy they had obeyed, the Bomvana people grew their cattle, farmed their lands and prospered in this context. The highest determinant of health and wellbeing and the greatest indicator of good health for the Bomvana person was to live and exist as an embodiment of the Bomvana culture. This paper will give an account on how acculturation from western groups who brought in new knowledge regarding health, education and religion was gradually interfering with the Bomvana ways of knowing while on the other hand, internal changes and requirements by the government of the day forced the Bomvana male to become migrant workers. These changes impacted negatively on the Bomvana culture and split the Bomvana into two groups. One group consisted of the educated people who are usually Christians, who refuse to partake in traditional practices and are westernized to some degree and other people who are uneducated in the western way, paint themselves with red ochre and remain traditionalists. Today the quite existence of the Bomvane life is blighted by negative social health determinants with challenges on how to address these in this split community of two groups with each seeing itself as carrying the best knowledge template for the health and welfare of the Amabomvane people.

ABSTRACT NUMBER / ABSTRAKNOMMER: 14

A NEEDS ASSESSMENT FOR PALLIATIVE CARE TRAINING IN UNDERGRADUATE STUDENTS AT THE UNIVERSITY OF STELLENBOSCH

FOURIE AE, GWYTHER L

BACKGROUND: The number of patients with cancer and other life-limiting diseases continues to increase. The vast majority of patients in the Third World Countries do not have access to modern diagnostic and therapy facilities and for them palliation is all they can hope for. Palliative care is a basic human right when curative care is no longer appropriate. The World Health Organisation (WHO) challenged training institutions to ensure that palliative care is compulsory and given high recognition.PURPOSE: To conduct a needs assessment for palliative care training in undergraduate students at the University of Stellenbosch.METHODS: Two validated assessment scales were distributed via a questionnaire to all the fifth year medical students:The results of the two scales will provide a valid measure of the impact of the current undergraduate palliative curriculum at the University of StellenboschRESULTS: 21% of the students felt that their training and skills in palliative care was sufficient. Only 28% of students feel comfortable to discuss death with a patient. 52, 7% of students felt anxious about their communication skills. Certain outcomes were highlighted as challenges: Discussing death with the patient and family, answering questions on pain and suffering as well as the knowledge and management of symptoms in palliative patients.In 2013, the University of Stellenbosch dedicated 6h to the palliative care curriculum. The study indicated that communication and patient management skills were experienced as challenging by students and this correlate with the curriculum that focus only 15% respectively on these two concepts.CONCLUSION: This study highlights the need for a dedicated undergraduate palliative curriculum that would need to focus more on communication and patient management's skills to empower the next generation of medical practitioners to care for dying patients with compassion and confidence.

ABSTRACT NUMBER / ABSTRAKNOMMER: 15

AN EVALUATION OF THE ADEQUACY OF PHARMACEUTICAL SERVICES FOR THE PROVISION OF ANTIRETROVIRAL TREATMENT IN PRIMARY HEALTH CARE CLINICS

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The decentralisation of human immunodeficiency virus (HIV) treatment and care services to primary health care (PHC) has become essential for upscaling the delivery of antiretroviral therapy (ART). With the introduction of nurse-initiated and -managed antiretroviral therapy (NIMART), new challenges have emerged with regard to the prescribing and dispensing of ART by nurses. One of the key challenges is ensuring adequate pharmaceutical services at PHC clinics.The objective of the study was to evaluate the adequacy of pharmaceutical services for the provision of ART in PHC clinics.A quantitative descriptive study was undertaken in 20 (43%) randomly selected, eligible clinics in the uMgungundlovu district of KwaZulu-Natal, South Africa.Clinics used allocated medicine rooms for storing medication, as there were no pharmacies. Problems identified were: insufficient storage space (50%; n = 10); inadequate security (40%; n = 8); poor air conditioning (20%; n = 4), and functional stock outs of essential drugs (80%; n = 16). Professional nurses performed the tasks of managing drug supply and prescribing and dispensing medication, as there were no pharmacists or pharmacist's assistants in these clinics.Human resource constraints necessitate professional nurses to manage drug supplies and to prescribe and dispense medication in resource-constrained PHC clinics. Clear guidelines tailored for PHC are needed to assist nurses in maintaining pharmaceutical service standards when ART services are decentralised.

ABSTRACT NUMBER / ABSTRAKNOMMER: 16

THE ROLE OF PATIENT CARE WORKERS IN PRIVATE HOSPITALS IN THE CAPE METROPOLE

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Background to the research: Shifting of tasks to patient care workers (PCWs) has been identified as one solution to maintain standards of patient care despite economic pressure. Although PCWs have been employed in private hospitals for several years, their role remains controversial and not clearly described. This leads to uncertainty about their role and management and either resistance to their employment or potentially ineffective or unsafe use of the PCWs already employed.Aim and objectives: To explore the role of PCWs in private hospitals in the Cape Metropole regarding:-the activities of PCWs in medical and surgical wards;-the supervision of PCWs;-their position in the patient care team;-reasons for their employment; and-concerns about their role.A qualitative approach with a descriptive design was applied to explore the role of PCWs as perceived by unit managers, nurses and patient care workers. Purposive sampling was used to select fifteen participants from medical and surgical wards from three different private hospitals; one each from the three major private hospital groups in South Africa. Unit managers, professional and other nurses and patient care workers were included. Semi-structured individual interviews were conducted and recorded. Voice recordings were transcribed, analysed and coded. Six themes emerged from the data.Main findings: The activities of PCWs are focused on direct patient care and they spend much

time with patients. They are close observers of the patient's condition and report to nurses. PCWs seem to be well integrated into the patient care team and are mostly seen as nurses. Yet, there are concerns about their evolving role despite their limited training programmes and their lack of direct supervision and of regulation by a professional body. Unique contribution: Clarifying the current role of patient care workers in private hospitals.

ABSTRACT NUMBER / ABSTRAKNOMMER: 17

VIDEO SELF-ASSESSMENT AS AN AUTHENTIC TEACHING AND LEARNING STRATEGY IN CLINICAL SKILLS TRAINING

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Background
Procedural skills simulation-based training is an integral component of health professions education (Kneebone, 2005). This study was designed to develop an authentic assessment model for a MBChB clinical skills module at Stellenbosch University. Clinical teaching and training within the health professions education environment is authentic due to the nature of the profession. However, in order for students to be competent in treating their patients in the real world, and thereby ensure patient safety, clinical simulation and skills centres are utilised. By adapting the teaching model of a 3rd year clinical skills module to a blendedapproach, the researchers investigated the effects of a particular aspect of this change on student learning and the impact that these changes have had on the lecturers and resources within the environment. AimsThis project aimed to train staff to provide individualised, verbal feedback on student-generated videos of a procedural skill and explore the perceptions of staff and students.. MethodsThis descriptive case study utilised mixed methods of data collection and reporting. Students were required to produce and submit a self-recorded video of a procedural skill on the learning management system after which they were to receive verbal feedback on SUNLearn. This feedback was available to students for viewing and download in preparation for their final summative assessment.Data sources include: -Revised Study Process Questionnaire (R-SPQ-2F) (Biggs, Kember, & Leung, 2001) - Perception questionnaire- Focus group discussionsResultsThe perception questionnaire demonstrated the students' preference to this method of assessment as a means of ensuring an environment in which they were adequately prepared for clinical practice. There was however a perception that this method, which contributed to the class mark, resulted in added stressors to an already full programme.

Theme 2 / Tema 2

*I*nfectious *D*iseases / *I*nfeksiesiektes

Oral Presentations/ Referate

ABSTRACT NUMBER / ABSTRAKNOMMER: 18

UNRAVELLING THE LINK BETWEEN TYPE 2 DIABETES AND TUBERCULOSIS.

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BACKGROUND: An emerging challenge for TB control is the steadily rising number of individuals with type 2 diabetes (DM2), particularly in developing countries where TB is endemic. DM2 increases the risk of TB by three fold and worldwide there are now more people affected by TB-DM2 co-morbidity than TB-HIV infection. A better understanding of the link between TB and DM2 is essential to identify individuals at increased risk for TB progression. Therefore it is crucial to carry out investigations on the link between TB and diabetes. We present here two ongoing TB-diabetes research activities. The South African site of the TANDEM program, focuses on active pulmonary TB patients with and without DM2 and the ALERT program, a NIH-SAMRC funded study, investigates TB household contacts with and without DM2. METHODS: As part of the TANDEM study TB patients attending the TB clinics are screened for DM2. Serum and PBMCs from TB patients with and without DM2 are collected prior to TB treatment, during and at the end of treatment. Cells are phenotyped by flow cytometry and sera are analysed for cytokines using luminex, respectively. For the ALERT study household contacts of TB patients are screened for DM2, and PBMCs, monocyte and alveolar macrophage responses are measured according to DM2 status and correlated with endocrine alterations in blood. RESULTS: We show that there are significant differences in the expression of phagocytic receptors on monocytes from individuals with TB-DM comorbidity compared to TB patients, which could contribute to reduced killing capacity of Mycobacterium tuberculosis. Furthermore we show that the serum concentrations of pro- and anti-inflammatory cytokines are significantly different between active TB patients with and without DM2. CONCLUSION: Upon completion these two studies will shed light on the link between TB and diabetes in both active TB patients and household contacts with LTBI.

ABSTRACT NUMBER / ABSTRAKNOMMER: 19

SINGLE CELL ELUCIDATION OF MYCOBACTERIAL REPLICATION DYNAMICS.

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BACKGROUND: In most Mycobacterium tuberculosis (Mtb)-infected individuals, the infection persists in a latent, asymptomatic state. Therapies that aim to eliminate tuberculosis should target these dormant organisms, since these could resume replication to cause active disease. It is thought that persistent mycobacteria are antibiotic-tolerant cells that exist as small, viable, but non-replicating (VBNR) populations. Little is known about persistent mycobacteria, since they are very difficult to isolate. However, recent work has developed and exploited a technique termed Fluorescence Dilution (FD), which showed that the internalization of Salmonella by macrophages induced the formation of VBNR populations. This approach exploits 2 fluorescent reporters; a constitutive reporter allows the

tracking of viable bacteria, while an inducible reporter enables the measurement of bacterial replication. Importantly, we have successfully adapted and optimized this system for use in mycobacteria. The aim of the proposed work was to exploit the FD technology to assess whether host exposure induced the formation of VBNR "persister" bacteria, to broaden the currently limited knowledge of the biology of these bacteria. METHODS: We applied the dual reporter system to interrogate replication dynamics of M. smegmatis or M. tuberculosis during macrophage infection. RAW264.7 macrophages were infected with M. smegmatis or M. tuberculosis reporter strains and samples were analysed using flow cytometry and confocal microscopy. RESULTS: Characterization of intracellular M. smegmatis revealed that while the majority of bacteria were non-or slowly replicating, an unexpected sub-population of apparently dividing M. smegmatis could be detected. For M. tuberculosis, FD technology identified a distinct subpopulation of non-growing mycobacteria. Furthermore, the presence of VBNR and AR mycobacteria within the same macrophage after 72 hours of infection were observed. CONCLUSION: These results demonstrate the successful application of the novel dual fluorescent reporter system both in vitro and in macrophage infection models to provide a window into mycobacterial population heterogeneity.

ABSTRACT NUMBER / ABSTRAKNOMMER: 20

CAN THE COST-EFFICIENCY OF INFANT HIV DIAGNOSIS BE IMPROVED THROUGH POOLED PCR TESTING OF DRIED BLOOD SPOTS?

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CARI VAN SCHALKWYK	(South African Centre for Epidemiological Modelling and Analysis (SACEMA))
ALEX WELTE	(South African Centre for Epidemiological Modelling and Analysis (SACEMA))
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BACKGROUND: Early diagnosis followed by immediate initiation of antiretroviral therapy improves the prognosis of HIV-infected infants; however many African settings still have no or only limited access to nucleic acid testing this requires. Pooling (several samples tested together in one test) of dried blood spots (DBS) might allow significant cost savings. Aim: To investigate whether pooled PCR testing is accurate and cost effective. METHODS: Sensitivity and specificity of individual testing and pooled testing were determined using 295 specimens in 39 HIV reactive and 20 HIV non-reactive pools. A dynamic model was constructed to simulate cost savings for a one year period, based on numbers of test requests, staff and reagent costs at NHLS Tygerberg and measured preparation time. RESULTS: Pooling achieved a sensitivity of 100% (35/35; or, when low-positive/inconclusive samples were included, 38/39 i.e. 97.4%) and a specificity of 100% (20/20). Over one year (July 2012 - June 2013), the laboratory received an average of 38 samples per day with an overall HIV prevalence of 3.3%. A pooling strategy of 5 DBS per pool would have saved 66% of direct laboratory costs. While larger pool sizes are theoretically more cost effective they are not feasible with the presently used extraction procedure. Technician time spent would only be marginally less, but the median number of runs per day would have reduced by 50%. CONCLUSIONS: This laboratory feasibility study confirmed the utility of the pooling approach. Pooled polymerase chain reaction (PCR) testing to diagnose HIV infection in infants can significantly reduce diagnostic costs in settings with moderate to low prevalence rates of HIV. In the age of widespread and mostly successful prevention of mother-to-child transmission (PMTCT) programmes, this approach might bring laboratory testing within reach of many more countries and settings. In addition this might reduce barriers to introducing additional testing opportunities.

ABSTRACT NUMBER / ABSTRAKNOMMER: 21

LARGE PNCA GENE DELETIONS IN MYCOBACTERIUM TUBERCULOSIS: A NOVEL MECHANISM OF PYRAZINAMIDE RESISTANCE.

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BACKGROUND. PZA has been used for the treatment of TB for the past 50 years and therefore its continued use in new and second line-treatment regimens requires accurate drug susceptibility testing to ensure optimal treatment. PZA susceptibility testing is currently not done routinely due to the complexity of the culture based methods. Molecular methods offer a rapid means to identify mutations in the pncA gene which have been previously associated with PZA resistance. This study aimed to investigate PCR amplification failure of the pncA gene in selected clinical isolates in a standardized DNA sequencing pipeline. METHODS. A convenient sample set of 669 clinical strains with various drug susceptibility profiles and representing different strain lineages of Mycobacterium tuberculosis were sequenced using the Illumina HiSeq sequencing platform. An in-house pipeline was used to align sequencing reads to the reference M. tuberculosis H37Rv genome and identify SNPs, insertions and deletions. Deletions were confirmed by Sanger sequencing. A phylogenetic tree was constructed to investigate the relatedness of strains. RESULTS. Whole genome sequence analysis identified 23 clinical isolates in which the pncA gene was either partially or completely deleted. Six different deletion boundaries were identified, of which the deleted area ranged from 299 to 17133 bp in length. Two isolates showed mixed infections where the deletion was absent in one strain and present in another. Phylogenetic reconstructions confirmed clonality of strains with identical deletions. CONCLUSION. This study adds to the complexity of the molecular basis of PZA resistance. The absence of the pncA gene in clinical isolates needs to be considered when using molecular methods to determine PZA resistance. This study also highlights that non-essential genes can be deleted without compromising the ability of these strains to transmit. However, an in vitro growth deficit was observed in isolates harbouring these deletions.

ABSTRACT NUMBER / ABSTRAKNOMMER: 22

ASAP, AN AUTOMATED SEQUENCE ANALYSIS PIPELINE FOR WHOLE GENOME SEQUENCING DATA.

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Access to a pathogen`s genome sequence can help guide clinical intervention through molecular genotyping and subsequent phenotype prediction bases on genotype:phenotype models. However, processing whole genome sequence data is a complex process with no existing standardized

protocols. As such, there is a need for a simple and standardized pipeline for WGS data analysis and variant detection. For this reason we developed ASAP, an automated sequence analysis pipeline for whole genome sequencing (WGS) data. Although suitable for any organism, here we focus on its applications for Mycobacterium tuberculosis WGS analysis. ASAP makes use of open source and novel algorithms for automated quality control, sequence alignment, variant calling, variant annotation and phenotype prediction. Applied to M. tuberculosis, variant detection accuracy was validated by comparing to targeted amplification and Sanger sequencing. The resistance prediction model of ASAP was also compared to that of culture based DST as well to other resistance prediction software based on WGS data. The accuracy of ASAP was revealed to closely match targeted amplification and Sanger sequencing. For our sample-set, ASAP showed superior variant detection accuracy and resistance profiling to existing prediction software. The resistance prediction model used in ASAP has a high agreement with DST for first line drugs but with diminished performance for 2nd line drug resistance prediction. However, this can be attributed to model imperfections as there is a general lack of highly predictive resistance markers for 2nd line anti-TB drugs which is expected to improve over time. In conclusion, ASAP is the first fully automated pipeline for accurate variant detection in WGS data. It shows excellent performance in M. tuberculosis variant detection and resistance profiling for resistances with well characterised molecular markers. The utility of WGS in combination with tools such as ASAP is set to expand as genotype:phenotype models are continually improved**.**

ABSTRACT NUMBER / ABSTRAKNOMMER: 23

EMERGENCE OF HIV-1 SUBTYPE DIVERSITY IN SOUTH AFRICA.

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BACKGROUND: South Africa is experiencing one of the most devastating HIV-1 epidemics in the world with more than 6.4 million people infected. An estimated 2.7 million people are currently receiving antiretroviral treatment. The NHLS virology laboratory at Tygerberg Hospital is one of only two state laboratories in the country doing routine HIV-1 genotypic drug resistance testing. The aim of this study was to investigate the HIV-1 subtype diversity in samples received between 2006 and 2014. METHODS: Viral RNA was isolated, the protease (PR) and partial reverse transcriptase (RT) regions of the pol gene were amplified by RT-PCR and directly sequenced. Online subtyping tools, RIP, REGA v3, jpHMM, SCUEAL and COMET, were used for preliminary subtyping. Multiple sequence alignments were done and subtypes were inferred using Maximum Likelihood (ML) phylogenetic analysis. RESULTS: In total we have analysed 6868 sequences. Although the majority was subtype C, we have detected 192 non-C subtypes (2.8%). Samples originated from Gauteng, Eastern Cape, Western Cape and the Free State Provinces. Eighty one pure pol subtypes were detected: A (n=34), B (n=26), D (n=4), G (n=14) and one each of subtypes F2, H and J. Unique recombinant forms detected, included subtypes AC (n=7), BC (n=4), CD (n=23), CG (n=7), and CH (n=8) as well as a spectrum of other recombinants. An increasing number of complex recombinants (n=21) were also detected. CONCLUSIONS: The detection of multiple subtypes and unique and complex recombinant forms in South Africa is of concern and indicates a complex and evolving epidemic. It is possible that these forms in the future might give rise to new circulating recombinant forms. It is of the utmost importance that we continue to monitor HIV-1 diversity in South Africa.

ABSTRACT NUMBER / ABSTRAKNOMMER: 24

PRIMARY IMMUNODEFICIENCY DISEASE MANAGEMENT IN TUBERCULOSIS ENDEMIC REGIONS – ARE WE AWARE - AND HOW DOES A REGISTRY ASSIST?

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INTRODUCTION: The diagnosis of Primary Immune Deficiency (PID) is challenging, especially in tuberculosis (TB) endemic South Africa which has the world's 3rd highest TB burden. Genetic susceptibilities to tuberculosis, the prototype being Mendelian Susceptibility to Mycobacterial Diseases (MSMD), are obscured with little knowledge on frequency and complications in these patients and PID molecular definition may yield novel information on pathways of TB control. METHODS: A registry database for primary immunodeficiency was initiated in 2008 at the National Health Laboratory Services, Tygerberg Hospital, Stellenbosch University to define South African patients with presumed or confirmed genetic immunodeficiencies. A secondary objective of the registry is awareness creation and education. From the current registry we retrospectively extracted all known cases with TB disease. RESULTS: Of 281 registered, 15 patients were identified with 28 episodes of TB, 3 co-infections with Mycobacterium avium. An additional 11 patients with Severe Combined Immunodeficiency (SCID) had 5 episodes of BCG dissemination. Excluding SCID, mycobacterial infections were linked to suspected / probable MSMD, but also to Agammaglobulinaemia in 2, Common Variable Immunodeficiency (CVID) in 2, NEMO deficiency in 2 and Interferonopathy in 1. Four patients had multiple episodes. DISCUSSION: There is no literature on prevention, screening and treatment of PID patients in TB endemic regions. The 15 patients represent a minimum estimate as 66% are from the Western Cape Province and only 12% are Black patients. With an estimated prevalence of between 2850 and 45723 PID patients and 5% developing TB disease, between 142 and 2286 cases would be expected. Genetic susceptibility to TB does not provide sufficient rationale for endemics, however further immunological and molecular identification of PID patients will enhance knowledge of TB host-defense mechanisms. To this end the research group PIDDGEN was launched to promote awareness for and investigate PID for genetic susceptibility.

ABSTRACT NUMBER / ABSTRAKNOMMER: 25

USING MULTI-WAY ADMIXTURE MAPPING TO ELUCIDATE TB SUSCEPTIBILITY IN THE SOUTH AFRICAN COLOURED POPULATION.

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The admixed South African Coloured population is ideally suited to the discovery of tuberculosis susceptibility genetic variants and their probable ethnic origins, but previous attempts at finding such variants using genome-wide admixture mapping were hampered by the inaccuracy of local ancestry inference. In this study, we infer local ancestry using the novel algorithm implemented in RFMix, with the emphasis on identifying regions of excess San or Bantu ancestry, which we hypothesize may harbour TB susceptibility genes. Using simulated data, we demonstrate reasonable accuracy of local ancestry inference by RFMix, with a tendency towards miss-calling San ancestry as Bantu. Regions with either excess San ancestry or excess African (San or Bantu) ancestry are less likely to be affected by this bias, and we therefore proceeded to identify such regions, found in cases but not in controls (642 cases and 91 controls). A number of promising regions were found (overall p-values of 7.19×10-5 for San ancestry and less than 2.00×10-16 for African ancestry), including chromosomes 15q15 and 17q22, which are close to genomic regions previously implicated in TB. Promising

immune-related susceptibility genes such as the GADD45A, OSM and B7-H5 genes are also harboured in theidentified regions.In conclusion, admixture mapping is feasible in the South African Coloured population and a number of novel TB susceptibility genomic regions were uncovered.

ABSTRACT NUMBER / ABSTRAKNOMMER: 26

APPLICATION OF BECTON DICKINSON FACSTM COMBINATORIAL ANTIBODY PROFILE (FACSTM CAP) TECHNOLOGY TO THE IDENTIFICATION OF EFFICIENCY OF TUBERCULOSIS THERAPY.

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Treatment of TB patients involves a six-month multi-drug regimen, impacting negatively on treatment adherence. Some patients may not require the full six-month regimen due to less extensive disease or early treatment response. Identification of these patients would allow significant cost savings and may impact positively on treatment adherence if treatment duration could be shortened and if this subgroup constituted a significant portion of patients. The aim of this project was to identify peripheral blood mononuclear cell (PBMC) surface markers through the FACSTM CAP technology to investigate the change in expression during treatment with potential treatment monitoring utility. PBMCs were isolated from TB patients (n=33), healthy community controls (n=11) and other lung disease controls (n=9) at diagnosis of disease, week 4 and week 24. Antibodies to 252 surface markers were used to stain PBMCs, the cells were fixed in 2% paraformaldehyde and acquired on a FACS Calibur flow cytometer. Post-acquisition compensation and analysis was performed using FlowJo software. The analysis was performed by gating on the lymphocytes and overlaying sample plots on isotype controls. Statistical analysis was performed and revealed five overall treatment response markers (CD120b, CD126, CD62L, CD48 and CD29) that were significantly different (p-value <0.0002) when comparing expression levels at TB diagnosis and week 24 samples. A comparison of expression between TB at diagnosis and healthy community controls showed a significant difference for four markers (CD48, CD18, CD126 and fMLPr). IPA identified 23 biological pathways that were associated with two or more markers with significant changes during treatment which represented the inflammatory response, cell migration, differentiation and maturation and crosstalk between cells of the innate and adaptive immune responses. In conclusion, this project resulted in the identification of three promising biologically significant surface markers that require further validation as candidates for biomarkers of TB treatment response.

ABSTRACT NUMBER / ABSTRAKNOMMER: 27

ETHIONAMIDE RESISTANCE IN SECOND-LINE DRUG NAÏVE TB PATIENTS REVEALED BY WHOLE GENOME SEQUENCING.

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BACKGROUND: Undiagnosed resistance to the second-line drug ethionamide (ETH) compromises standard MDR-TB treatment and leads to acquisition of additional resistance. ETH resistance can be conferred by mutations in ethA, which goes largely undetected especially in the absence of MDR-TB. This is of particular concern in the Eastern Cape where an ethA mutation is found in non-MDR forms of the strain type responsible for the majority of MDR and XDR cases. AIM: To confirm causality of

ethA SNPs for ETH resistance and to understand the role thereof in the MDR-TB epidemic in South Africa. METHODS: Isolates from our sample collection, shown by whole genome sequencing to harbour any ethA, but no inhA promoter mutations (also conferring ETH resistance) were selected and subjected to MGIT960 ETH testing (n=39). Further isolates previously tested by MGIT960 for ETH resistance and without inhA promoter mutations were selected to determine the presence of ethA mutations by Sanger sequencing (n=57).Results: Thirteen different SNPs in ethA were found in 39 clinical isolates. Seven of these SNPs have previously been described to confer ETH resistance (n=3) or not (n=4). We describe an additional six SNPs. DISCUSSION: The ethA gene appears to be prone to mutation, with 43 different previously described mutations, and an additional 6 SNPs described here. In addition to documenting novel ETH resistance-causing SNPs, these results confirm ETH resistance in some isolates that are ETH-naïve. ETH testing is not routinely done at initial MDR-TB diagnosis, implying that MDR-TB patients may be treated with a weakened regimen. An inadequate regimen can lead to acquisition of further resistance in addition to being unable to effect culture conversion in patients infected with ETH resistant strains, promoting transmission. We strongly recommend comprehensive susceptibility testing for TB drugs before commencement of treatment.

ABSTRACT NUMBER / ABSTRAKNOMMER: 28

THE PREVALENCE AND PRESENTATION OF TUBERCULOSIS IN A CADAVER POPULATION IN CAPE TOWN, SOUTH AFRICA.

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Pulmonary pathology, particularly pulmonary tuberculosis (PTB) is a major health problem in the Western Cape Province, South Africa. The aim of this study was to determine the prevalence of pulmonary pathology, particularly PTB in a cadaver cohort used for medical dissections that originated mainly a low socio-economic, high TB burden community. In addition, statistically significant trends in terms of pulmonary pathology will be shown. Formalin-embalmed cadavers (n=127) consisting of 87 males and 40 females were dissected and investigated for the presence and distribution of pulmonary pathology. Detailed photographs of the lungs were taken, prior to the removal of sections for histology. The samples were processed to wax, sectioned at 5µm and viewed with a Zeiss light microscope. Pulmonary TB was a common finding in the cadaver population with 97/127 (76.4%) cadavers showing macroscopic and microscopic signs of TB. A statistically significant sex disparity was observed with males being more commonly affected ($p<0.05$). A significant negative correlation was observed between pulmonary emphysema and PTB in the cadaver cohort, suggesting that the presence of emphysema was not as a result of PTB. In addition and contrary to the literature, pulmonary adhesions, pneumoconiosis, pleural TB and effusions were not statistically associated with PTB in the cadaver cohort. This study therefore provides a holistic insight to the prevalence and distribution of PTB as well as its association with concomitant pulmonary pathology observed in a cadaver cohort from a low socio-economic, high TB burden community.

ABSTRACT NUMBER / ABSTRAKNOMMER: 29

MEDICAL INTERNS AND OCCUPATIONAL HAZARDS: AN IMPORTANT INFECTION PREVENTION AND CONTROL OPPORTUNITY.

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BACKGROUND AND AIM: Medical interns are frequently exposed to occupational hazards during patient care and performance of potentially hazardous clinical procedures. This study determined medical interns' baseline knowledge, attitudes and practices regarding infection prevention and control (IPC) and evaluated IPC practices at their undergraduate training institutions. METHODS: Self-administered, anonymous questionnaires were completed by first-year medical interns at Tygerberg Hospital at an internship orientation session. Data collection took place over two successive years (2014-2015). A validated questionnaire established interns' experiences of occupational hazards, focusing on needle-stick injuries (NSI) and tuberculosis (TB) exposure (using closed- and open-ended questions; including Likert-scales.) RESULTS: Forty-eight interns, trained at 7 South African universities, completed the survey. The majority reported having receiving formal undergraduate training on NSI (90%) and TB-IPC (83%). Fewer respondents felt well prepared to deal with the occupational hazards of NSI (69%) and TB exposure (71%). As students, 38% had sustained a NSI, whilst 44% knew one or more fellow medical students that had developed active TB. Interns scored significantly worse on the TB-IPC (45%) than the NSI (65%) knowledge section (mean difference 20%, 95% CI 15-25%, $p < 0.001$). All respondents (100%) indicated that being diagnosed with TB would significantly impact on their quality of life. Most interns reported inconsistent application of TB-IPC practices at their respective undergraduate training institutions. CONCLUSIONS: Knowledge of occupational hazard prevention (especially TB-IPC knowledge) at internship commencement is poor despite high reported coverage of these topics at undergraduate level. Given high exposure rates to NSI and TB in internship, these findings warrant further IPC training post-graduation. IPC practices, particularly with regards to TB-IPC, remain inconsistently applied at all teaching hospitals represented in this study.

ABSTRACT NUMBER / ABSTRAKNOMMER: 30

A SIX-MARKER SERUM BIOSIGNATURE SHOWS PROMISE IN THE DIAGNOSIS OF TB DISEASE IN AFRICAN PRIMARY HEALTH CARE CLINIC ATTENDEES SUSPECTED PULMONARY TB.

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AMELIA C. CRAMPIN (Karonga Prevention Study)
MARIETA VAN DER VYVER (University of Namibia - School of Medicine)
RAWLEIGH HOWE (Armauer Hansen Research Institute),
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AND THE AE-TBC CONSORTIUM

BACKGROUND: There is an urgent need for simple, rapid, inexpensive and yet accurate tools for the diagnosis of TB disease at points-of-care in resource-limited settings. We investigated the accuracy of host biomarkers detected in serum samples obtained from individuals with suspected TB disease at primary health care clinics situated in six African countries, for the diagnosis of TB disease. METHODS: We collected serum samples from individuals presenting with symptoms requiring investigation for pulmonary TB, prior to microbiological diagnosis of TB disease. We then evaluated the levels of 28 host inflammatory biomarkers in the stored serum samples using the Luminex

platform. On the basis of laboratory, clinical and radiological findings, participants were classified into the following groups using a pre-established diagnostic algorithm: definite TB, probable TB, possible TB, questionable disease status or no-TB. RESULTS: In a pilot study conducted on 148 individuals recruited from two study sites, a 5-marker serum biosignature diagnosed TB disease with a sensitivity of 86% and specificity of 90%. We then evaluated the accuracy of this biosignature in a validation cohort including 717 individuals who were recruited from field sites situated in five countries. Of the 702 individuals who were finally analyzed in the validation study, 175 were definite TB cases, 11 were probable and 29 were possible TB cases whereas 487 of the study participants did not have TB. A 6-marker biosignature comprising of CRP, transthyretin, IFN-γ, Complement factor H, apolipoprotein-A1 and IP-10 ascertained TB disease with a sensitivity of 89% and specificity of 76.0%, with a negative predictive value 94.0%, in the test sample set. CONCLUSION: We have identified a host serum biosignature with promise in the diagnosis of TB disease regardless of HIV infection status or ethnicity in Africa. These results hold promise for the development of a field-friendly point-of-care screening test for TB.

ABSTRACT NUMBER / ABSTRAKNOMMER: 31

PERSISTENT AND NEW LESIONS ON 18F-FDG PET/CT PULMONARY TUBERCOLOSIS LESIONS AFTER TREATMENT.

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BACKGROUND: 18-Fluorodeoxyglucose (FDG) labelled Positron Emission Tomography/Computerized Tomography (PET/CT) combines information on radiolabeled glucose uptake, which indirectly reflects inflammation, with structural changes as measured by CT. This imaging has shown potential to measure treatment response and predict outcome. Recently we evaluated the PET/CT scans taken at diagnosis and after 6 months of standard treatment for 100 patients with active Pulmonary Tuberculosis (PTB). We reported that 86% of the patients had lesions that still appeared active at the end of treatment and 35% had new and/or deteriorating lesions when compared to baseline. However, the overall quantified inflammatory burden showed a significant decline on treatment and correlated well with time to sputum culture conversion and treatment outcome. AIM: To investigate what happens to residual lung lesions a year after TB treatment completionMethod: 100 patients with sputum culture positive Pulmonary TB was followed up during and after standard treatment. FDG PET/CT's were performed at baseline, month 1 and month 6 (M6) of treatment and a subset of 50 patients had repeat scans 1 year after the end of treatment (EOT+1). The scans were thoroughly evaluated and compared to clinical and microbiological outcomes. RESULTS: When compared to the M6 scans, most residual lesions showed improvement on the scans done 1 year after the end of treatment. However, only 32% was completely resolved, while 34% improved across all lesions and another 34% revealed at least one deteriorating or new lesion in keeping with active TB. Patients with recurrent disease after the treatment phase were more likely to have higher burden of lung disease at M6 and EOT+1.CONCLUSION: The persistence and emergence of inflammatory lesions after TB treatment raises important questions about our understanding of sterilizing cure. Further microbiological analysis is ongoing to establish if this signifies MTB persistence in most treated TB cases.

Posters/ Plakkate

ABSTRACT NUMBER / ABSTRAKNOMMER: 32

UROGENITAL TUBERCULOSIS IN A REGION WITH A HIGH PREVALENCE OF HUMAN IMMUNODEFICIENCY VIRUS INFECTION AND MULTI-DRUG RESISTANT TUBERCULOSIS.

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INTRODUCTION AND OBJECTIVE: Data on urogenital tuberculosis (UGTB) are scant. The objective of the present study was to describe the clinical characteristics of patients with UGTB in a region with a high prevalence of human immunodeficiency virus (HIV) infection. MATERIALS AND METHODS: A retrospective review was performed of the clinical records of 84 patients seen at our institution (an academic tertiary care centre) from July 2007 to March 2014 with a confirmed diagnosis of UGTB. Acid-fast bacilli (AFB) smear, urine tuberculosis culture, urine tuberculosis polymerase chain reaction (PCR), and histopathologic findings were used for patient selection. RESULTS: The median age of patients was 42.3 years (range 13.4 to 79.6). The male to female ratio was 3:1. The median time from initial presentation to definitive diagnosis of UGTB was 5.3 weeks (range 0.1 to 286.6). Concomitant TB affected the lungs (46.4%), abdomen and skeletal system (both 4.8%), brain (3.6%), and lymph nodes (2.4%) Thirty-five (42.2%) patients were HIV-positive. Multi-drug resistant (MDR) Mycobacterium tuberculosis was identified in 11.9 % of the patients. The most common organs involved were the kidneys (48.8%), the testis/epididymis (48.8%), the ureter (33%) and bladder (25%). In 42 patients (50%) more than one organ system was involved. Multi-drug therapy (isoniazid, rifampicin, pyrazinamide, ethambutol) was given for a mean of 6.6 months (range 6 to 24) in all patients. Procedures related to UGTB included orchidectomy (20.2%), ureteral stent insertion (16.7%), nephrostomy placement (15.5%), nephrectomy (8.3%), ureteric dilatation (6%), and cystoplasty (2.4%). Eight (9.5%) patients died during a mean followup of 35.8 months (range 1 to 1304). CONCLUSION: UGTB is a destructive disease in which surgery still plays an important part. More than one organ of the urogenital tract is frequently affected. It remains a potentially lethal disease, especially when associated with HIV and MDR infection.

ABSTRACT NUMBER / ABSTRAKNOMMER: 33

THE IDENTIFICATION OF NOVEL PROTEINS INVOLVED IN IRON-SULPHUR CLUSTER BIOGENESIS IN MYCOBACTERIUM TUBERCULOSIS.

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Iron-sulphur (Fe-S) clusters are chemically versatile cofactors required by proteins involved in diverse biological processes. The first step in the synthesis of Fe-S clusters requires a cysteine desulphurase, which catalyses transfer of sulphur from L-cysteine to a scaffold protein. In Mycobacterium tuberculosis this enzyme is encoded by the csd gene. We aim to identify accessory proteins involved in Fe-S cluster biosynthesis using a mass spectrometry-based approach. Our first approach involved generating a Csd-specific antibody to capture Csd-containing protein complexes. We investigated the utility of three expression vectors for the soluble expression of Csd in E. coli, namely, pET28a, pGEX-6P-1, and pMAL-c5x to generate a 6xHistidine-fusion, GST-fusion, and maltose-binding protein (MBP)-fusion, respectively. Protein over-expression and solubility was analysed by SDS-PAGE. Next, we generated a construct for expressing a Csd-6xHis-tag fusion protein in mycobacteria, aiming to capture Csd-containing protein complexes using a nickel IMAC resin. The resulting plasmid was transformed into M. smegmatis and expression conditions optimised. Following induction of the Csd-6xHis-fusion protein in M. smegmatis, protein extracts were generated and a His-tag affinity purification was performed to enrich for Csd-containing complexes. Protein complexes were analysed

by SDS-PAGE. The expression of mycobacterial proteins as fusions with MBP and GFP were previously shown to increase solubility in E. coli. Csd, however, could not be expressed as a soluble fusion protein. Using a tetracycline-responsive expression system in M. smegmatis, however, resulted in a significant portion of the Csd-6XHis fusion in the soluble fraction. SDS-PAGE analysis showed that potential Csd interacting partners could be identified when enriching for Csd-containing complexes using a Nickel IMAC resin. Expressing Csd as a fusion-protein in an organism closely related to Mtb was more promising. Using mass spectrometry, the identification of novel proteins that interact with Csd will contribute to our understanding of Fe-S cluster biogenesis in mycobacteria.

ABSTRACT NUMBER / ABSTRAKNOMMER: 34

INVESTIGATING CELL SURFACE MOLECULES AND RECEPTORS IN TB SUSCEPTIBILITY: THE ROLE OF MHC AND LRC.

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Despite the identification of numerous susceptibility genes for tuberculosis (TB) a large proportion of the heritability of this complex disease remains unidentified. The Major Histocompatibility complex (MHC) and Leukocyte Receptor Complex (LRC) are comprised of several immune-related genes and play an important role in regulating the host immune response. Based on genome-wide data several loci in these complexes were previously found to alter susceptibility to tuberculosis (TB) in the South African Coloured (SAC) and Gambian populations. These regions are prime examples of highly polymorphic genes and allele frequencies are highly variable across different populations. Next-generation sequencing analysis of this region together with Sanger sequencing verification identified 3 novel SNPs in the SAC population. All three of the novel SNPs were localised to the same transcription factor binding site which binds to the large subunit of RNA polymerase II. It is therefore possible that the presence of the SNPs will affect binding efficacy in the recognition site and may affect gene expression and resultant protein synthesis. These novel variants are all excellent candidates to investigate in susceptibility to TB. An HLA-C SNP (rs2922997), previously associated with leprosy, was investigated in a case-control association study to determine its possible role in TB susceptibility. Statistical analysis using logistic regression showed that the rs2922997 was associated with TB in the SAC ($p = 0.029$, OR = 1.81; 95% CI: 1.16 – 2.80). The G allele for rs2922997 was deemed to be the risk-allele as it is more frequent in cases compared to controls. This research provides insight into the complexity of tuberculosis pathogenesis and helps to elucidate genetic predisposition to this complex infectious disease that affects millions of lives worldwide.

ABSTRACT NUMBER / ABSTRAKNOMMER: 35

DEVELOPMENT OF A DIAGNOSTIC ASSAY FOR M. SURICATTAE INFECTION IN MEERKATS.

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BACKGROUND: Mycobacterium suricattae, a novel member of the Mycobacterium tuberculosis complex, is the cause of tuberculosis (TB) in meerkats (Suricata suricatta) and may lead to significant morbidity and mortality in this species. Diagnostic tools for the sensitive and specific detection of M. suricattae infection in meerkats are currently unavailable. Therefore, the aim of this study was to develop an accurate cytokine-release assay for TB in this species. MATERIALS AND METHODS: Whole blood from M. suricattae-exposed and -unexposed meerkats was incubated with pokeweed mitogen (PWM), PC-HP peptides and phosphate-buffered saline, respectively. Using plasma from PWM-

stimulated blood, commercial antibodies were screened in various combinations and concentrations to optimise the detection of meerkat interferon-gamma (INF-ɣ) and interferon gamma-induced protein 10 (IP-10). Selected anti-IP-10 antibodies were used in an enzyme-linked immunosorbent assay (ELISA) to measure immunological responses to PC-HP in whole blood. A diagnostic cut-off value was calculated as the mean, plus twice the standard deviation, of the PC-HP-specific IP-10 responses in M. suricattae-unexposed meerkats. RESULTS: The IP-10 ELISA was significantly more sensitive than the IFN-ɣ ELISA. The optimal antibody combination for the IP-10 ELISA was anti-bovine capture antibody (0.5µg/ml) with anti-human detection antibody (0.25µg/ml). A diagnostic cut-off value was calculated as a PC-HP-specific IP-10 response of 0.038 (optical density). Test results for M. suricattae-exposed meerkats from groups with and without a history of clinical TB cases were compared. Ten of ten animals from the group known to have clinical TB cases tested positive and eight of ten animals from the group with no known TB cases tested negative. CONCLUSION: The PC-HP IP-10 assay can be used to distinguish between M. suricattae-infected and –uninfected meerkats and will aid in epidemiological studies to improve our understanding of the disease in meerkat populations.

ABSTRACT NUMBER / ABSTRAKNOMMER: 36

COMPUTATIONAL ANALYSIS OF THE IMMUNOGENICITY OF M. TUBERCULOSIS PPE_MPTR PROTEINS.

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Understanding host-pathogen interactions is a key step to gaining a greater understanding of the pathogenesis of M. tuberculosis (Mtb). This study focuses on a set of Mtb proteins, the PPE_MPTR's, which have been implicated in the interaction between Mtb and the host immune system. The PPE_MPTR family of proteins represent one of the most genetically diverse set of proteins within the Mtb proteome, and are major contributors to genome polymorphism. Although the function of these proteins remains largely unknown, a possible argument that these proteins represent a source of antigenic variation can be made. To investigate the hypothesis that genetic diversity within PPE_MPTR T-cell epitopes differentially modulates human immune response, an in silico analysis of the PPE_MPTR proteins has been performed. Binding of a peptide to an HLA molecule is required for activation of antigen specific T-cells, and various computational tools exist to predict binding of peptide sequences to various HLA alleles. Using a collection of known Mtb epitopes from the Immune Epitope Database (IEDB), an evaluation of the current open source HLA class II prediction tools has been performed. As a result, the optimal epitope prediction pipeline for Mtb proteins has been determined and has been used to predict possible T-cell epitopes within the PPE_MPTR proteins. Characterisation of the genetic diversity of these proteins is also an essential step in improving our understanding of this protein family. Next generation sequencing data has been used to investigate the level of sequence diversity within these proteins, and the impact of genetic variants on binding of PPE_MPTR epitopes to HLA class II molecules will be investigated. The resulting epitopes predicted from this study may be an important finding for the development of subunit vaccines for Mtb.

ABSTRACT NUMBER / ABSTRAKNOMMER: 37

TARGETED DEEP SEQUENCING OF DRUG RESISTANCE ASSOCIATED GENES TO INVESTIGATE HETEROGENEITY IN MYCOBACTERIUM TUBERCULOSIS POPULATIONS.

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Antibiotic resistance in M. tuberculosis is a worldwide problem, as it drastically affects patient outcome and treatment logistics. The development of drug resistance is due to the acquisition of mutations in drug resistance conferring genes. Early detection of drug resistance and therefore treatment failure is vital to improve patient therapy and prevent the transmission of drug resistance strains. Thus, it is important to develop a method which is able to accurately detect 1% minority variants responsible for drug resistance as well as accurately predicting early onset of treatment failure. The aim of this study is to develop an ultrasensitive method to detect resistance causing mutations in specific M. tuberculosis Fluoroquinolone resistance causing genes directly from sputum using targeted deep sequencing. Furthermore, to use deep sequencing to determine whether underlying resistant clones were initially present and subsequently selected for under antibiotic pressure or whether drug resistant clones emerge during treatment as a result of a mutation.Participants are multi drug resistant tuberculosis (TB) patients which will receive one of four levofloxacin doses together with an optimized background regimen. Next Generation Sequencing technology will be used to deep sequence M. tuberculosis specimens directly from sputum at baseline and monthly intervals for 6 months. Primers will be designed to amplify the quinolone resistance-determining region of gyrA and gyrB. Primers will be optimized with polymerase chain reaction. Subsequently an adapter and a barcode will be added to each primer. Method validation with clinical isolates known to be heteroresistant, as well as with a dilution series of known wild type and mutant ratios will be done. The Ion Torrent Proton 318 Chip will be used for targeted deep sequencing.This study will determine the sensitivity and capability of targeted deep sequencing to detect underlying variance which has major implications for treatment of drug resistance.

ABSTRACT NUMBER / ABSTRAKNOMMER: 38

PATIENT SATISFACTION AND TREATMENT ADHERENCE OF STABLE HIV INFECTED PATIENTS IN ART ADHERENCE CLUBS AND CLINICS.

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BACKGROUND: South Africa had a 75% increase in access to antiretroviral treatment (ART) in 2011. Effective strategies to manage access to treatment need to be implemented into ART programs. ART adherence clubs is a new strategy that is being implemented in various parts of South Africa. The aim of the study was to investigate whether stable HIV infected patients on antiretroviral treatment who receive care in ART adherence clubs are more satisfied and more adherent to treatment than those who receive care in primary health care clinics. METHODS: A cross-sectional study was done to examine the relationships between patient satisfaction and treatment adherence in ART adherence clubs and clinics in the Eden district, Western Cape. Established questionnaires were used to measure patient satisfaction and self-reported treatment adherence. RESULTS:The study included 320 participants (98 club and 222 clinic) from 13 primary health care clinics. The analyses showed higher levels of satisfaction are predicted with club participants compared to clinic participants ($p = 0.006$). There was no significant difference between clinic and club participants with regards to treatment adherence. However the odds of being adherent was more likely in participants that were satisfied (OR=0.47, 95%CI [0.25 to 0.88], $p = 0.019$). CONCLUSION: ART adherence clubs provide a service

that patients are more satisfied with, although they are not more adherent to treatment. This strategy may therefore be effective for the delivery of long-term care for patients on ART.

ABSTRACT NUMBER / ABSTRAKNOMMER: 39

WHOLE GENOME SEQUENCING REVEALS GENOMIC HETEROGENEITY AND ANTIBIOTIC PURIFICATION IN MYCOBACTERIUM TUBERCULOSIS ISOLATES.

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BACKGROUND: Whole genome sequencing is more frequently being used to describe bacterial populations and therefore it is important to investigate the reliability of this methodology to identify clonal variants present in a minor percentage of the population. The identification of sub-populations within the context of WGS is dependent on the read frequency cut-off values used in the standard variant filtering approach. This study aimed to define a reliable cut-off for identification of low frequency sequence variants and to subsequently investigate genetic heterogeneity and the evolution of drug resistance in Mycobacterium tuberculosis. METHODS: Single colony forming units were selected from 14 M. tuberculosis rifampicin mono-resistant clinical isolates. Two of these patients had follow up isolates which were shown to be multi-drug resistant (MDR) by routine drug susceptibility testing (DST). Genomic DNA was isolated from single colonies for each rifampicin mono-resistant M. tuberculosis isolate and the primary cultures of the paired M. tuberculosis isolates demonstrating intra-patient evolution of isoniazid resistance. The whole genomes of the M. tuberculosis isolates were sequenced using either the Illumina MiSeq or Illumina HiSeq platforms. RESULTS AND DISCUSSION: Our data enabled us to define a read frequency cut off of 30% to accurately detect heterogeneous variants. Using this cut-off we demonstrated high genetic diversity between single colonies isolated from one population, showing that single colonies are not a true reflection of the genetic diversity within the whole population and vice versa. We further showed that numerous heterogeneous variants emerge and then disappear during the evolution of isoniazid resistance and subsequently new variants emerge in the resistant population. This suggests that the genome of M tuberculosis is more dynamic than previously thought, suggesting preparedness to respond to a changing environment.

ABSTRACT NUMBER / ABSTRAKNOMMER: 40

WHOLE GENOME SEQUENCE ANALYSIS OF MYCOBACTERIUM SURICATTAE.

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Tuberculosis occurs in various mammalian hosts and is caused by a wide range of Mycobacterium species. A recently described species, M. suricattae, has been reported to cause tuberculosis in meerkats (Suricata suricatta) in Southern Africa. The preliminary genetic analysis showed it to be closely related to the M. tuberculosis complex dassie bacillus. Here, we make use of whole genome sequencing to describe the genome of M. suricattae, confirming known and novel regions of difference, SNPs and IS6110 insertion sites. To better determine its evolutionary position in the phylogeny of the Mycobacterium tuberculosis complex, we used genome wide phylogenetic analysis to show that M. suricattae clusters with the chimpanzee bacillus, isolated in West Africa. We also propose an evolutionary scenario for the M. africanum lineage 6 complex, showing the evolutionary relationship of M. africanum and chimpanzee bacillus, and the closely related members M. suricattae, dassie bacillus and M. mungi.

ABSTRACT NUMBER / ABSTRAKNOMMER: 41

THE ROLE OF GLUTAMATE DEHYDROGENASE IN CELLULAR STRESS.

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M. bovis BCG acts as a model organism for *M. tuberculosis*, the causative agent for the disease tuberculosis. To effectively combat the *M. tuberculosis* and the rise in drug resistance, novel chemotherapeutic agents acting upon novel pathways are required. Central nitrogen metabolism is an essential pathway to all living organisms and in the case of *M. tuberculosis*, this pathway may provide vulnerabilities which could be targeted. Glutamate dehydrogenase (GDH) is responsible for the combustion of glutamate to ammonia and 2-oxoglutarate and is an essential enzyme in *M. tuberculosis*. Here we demonstrate a previously unknown requirement of GDH to both acidic stress and nitric oxide stress. We were able to show that addition of ammonia to cultures challenged with nitric oxide ameliorates the killing mechanism. In addition, *M. bovis* BCG mutants lacking GDH experienced a marked decline in cell viability in murine macrophages compared to wild type. Our results indicate that the catabolism of glutamate may be a crucial function during infection of macrophage cells. Furthermore we have contributed to the understanding of mycobacterial physiology and how the unique metabolism of mycobacteria is able to withstand sub-optimal environments associated with infection.

ABSTRACT NUMBER / ABSTRAKNOMMER: 42

THE ASSOCIATION BETWEEN TUBERCULOSIS AND HYPERTROPHIC PULMONARY OSTEOARTHROPATHY IN A CADAVER POPULATION FROM THE WESTERN CAPE, SOUTH AFRICA.

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Tuberculosis (TB) is a worldwide major health problem. Hypertrophic pulmonary osteoarthropathy (HPOA) is clinically characterized by a triad of digital clubbing, periostitis and arthritis and is commonly associated with intrathoracic malignancies. The aim of the present study was to determine the association between HPOA and concomitant pulmonary TB lesions observed in a cadaver population from a high tuberculosis (TB) burden community in the Western Cape, South Africa. Formalin-embalmed cadavers (n=124) consisting of 85 males and 39 females were dissected at the Division of Anatomy and Histology, Faculty of Medicine and Health Sciences, Stellenbosch University. Prior to dissection, full-body digital X-rays were obtained using the Lodox® Statscan® digital imaging system. After gross dissection the skeletal remains were processed and investigated for signs of periostitis. Pulmonary TB (PTB) was observed in 94/124 (75.8%) and HPOA in 15/124 (12.1%) cadavers showing a statistical significant association between pulmonary TB lesions and HPOA. Digital finger clubbing however, was observed in only 2/15 (13.3%) cadavers while clubbing of the feet was absent. Traditionally, HPOA is an indicator of rare paraneoplastic pulmonary carcinoma, however, it was commonly associated with PTB in the present study. Therefore, in patients with clinical signs of synovitis, arthritis, chronic erythema, paresthesia and hyperhidrosis, HPOA must be suspected which may be indicative of PTB rather than pulmonary carcinomas. This is particularly true for patients in clinical health centers and public hospitals in developing countries where PTB is a common problem.

ABSTRACT NUMBER / ABSTRAKNOMMER: 43

CANDIDATE BIOMARKERS FOR THE DIAGNOSIS OF MYCOBACTERIUM BOVIS INFECTION IN AFRICAN BUFFALOES (SYNCERUS CAFFER).

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BACKGROUND: In humans, candidate biomarkers for the diagnosis of Mycobacterium tuberculosis infection include monocyte-derived chemokine IFN-γ-induced protein 10 (IP-10), monokine induced by interferon gamma (MIG), monocyte chemoattractant protein (MCP)-1, MCP-2, MCP–3 and interleukin 1 receptor antagonist (IL1-RA). We aimed to evaluated commercially available bovine enzyme linked immunosorbent assays (ELISA) and a human IP-10 ELISA to measure IP-10, MIG, MCP-1, MCP-2, MCP-3 and IL1-RA in buffalo plasma in order to identify sensitive markers of the immune response to M. bovis-specific peptides. MATERIAL AND METHODS: Randomly selected buffaloes were tested using the single intradermal comparative tuberculin test (SICTT) and modified QuantiFERON® TB-Gold (in tube) system. All candidate biomarkers' mRNA sequences were determined in the buffalo and compared to their homologues in cattle. Eighteen SICTT/mQFT-positive

buffaloes were tested using these bovine ELISAs and human IP-10 ELISA. RESULTS: All mRNA sequences of the selected cytokines showed high homology with those of domestic cattle (97–99%) as did the derived amino acid sequences (97–99%). This high sequence homology supports the use of bovine ELISAs for the detection these cytokines in buffaloes. MCP-1 concentration showed a positive correlation with that of IFN-γ ($p=0.0077$) and occurs in far greater abundance in buffalo blood than in human samples. Using a bovine IP-10 ELISA, levels of this cytokine were found to be significantly increased in antigen-stimulated blood samples from M. bovis-positive buffaloes ($p<0.0001$) and IP-10 was detected in far greater abundance than IFN-γ. CONCLUSION: Measurement of IP-10 with this ELISA may prove to be a sensitive marker of M. bovis infection in African buffaloes.

ABSTRACT NUMBER / ABSTRAKNOMMER: 44

THE ASSOCIATION BETWEEN PULMONARY TUBERCULOSIS AND PERIOSTIC RIB LESIONS IN A CADAVER POPULATION FROM A HIGH TUBERCULOSIS BURDEN, WESTERN CAPE, SOUTH AFRICA.

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Pulmonary tuberculosis (TB) is one of the most common delayed-type hypersensitivity reactions known to man. Osteological TB lesions are known to occur with hematogenous dissemination being the most common route of infection. The aim of the present study was to determine the association between an underlying pulmonary tuberculosis (PTB) infection and the presence of periostic rib lesions in a cadaver population.Formalin-embalmed cadavers (n=124, 85 males and 49 females) at the Division of Anatomy and Histology, Department of Biomedical Science, Stellenbosch University were dissected, analyzed and photographed for signs of PTB. After gross dissection, soft tissue was removed from the skeletal remains and the skeletal remains examined for the presence of periostotic lesions on the visceral aspects of the ribs. Pulmonary TB was observed in 97/124 (78.2%) cadavers, while periostic rib lesions were seen in 35/124 (28.2%) cadavers. Bilateral rib involvement was observed in 25/35 (71.5%) cadavers, while unilateral right and left side involvement were observed in 4/35 (11.4%) and 6/35 (17.1%) cadavers. The occurrence of periostic rib lesions were determined in the cadaver population and compared with the presence of PTB. In TB-negative cadavers, 20% presented with periostotic lesions on the visceral aspects, while in TB-positive cadavers, 32% presented with periostotic rib lesions. No statistical association was observed between an underlying PTB infection and the presence of periostotic rib lesions. This study has shown hematogenous dissemination of TB is uncommon and that the proliferative rib lesions are not related to TB but rather suggests underlying bacterial pleuritis.

ABSTRACT NUMBER / ABSTRAKNOMMER: 45

PHOSPHATE ABC TRANSPORTER SYSTEMS REGULATE THE LEVEL OF RIFAMPICIN RESISTANCE IN MYCOBACTERIUM TUBERCULOSIS.

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BACKGROUND⇒Evidence demonstrating the differential dynamics in the population structure of Mycobacterium tuberculosis within a clinical specimen has been reported recently. It is thus suggested that the phenotype of an entire population reflects the average of the phenotypic characteristic of individual clones within a population. We hypothesise that the resistance phenotype, as measured by the minimum inhibitory concentration (MIC), reflects an average of the MICs of individual clones present in the clinical specimen. METHODS ⇒Single cell colonies from M. tuberculosis rifampicin mono-resistant clinical isolates with genetic backgrounds representing the X and Beijing genotypes were purified. Subsequent selection criteria included the presence of the rpoB S531L mutation and the differential low and high rifampicin MIC's for each genotype. Genomic DNA was extracted from each single cell culture and sequenced using the Ion Torrent platform. Single nucleotide polymorphisms and InDels were called using the bioinformatic suite, Ion Reporter. RESULTS⇒The level of rifampicin resistance for both the X and Beijing genotype were as follows: the low MIC= 40µg/ml and high MIC >150µg/ml. In the X genotype, 2 unique variants were identified in the high MIC single cell, with 3 variants in the low MIC. Additionally, in the Beijing genotype, 5 unique variants were identified in the high MIC single cells, while 8 variants were identified in the low MIC. CONCLUSION⇒The insertion in or deletion of ABC transporters may be linked to the low levels of rifampicin resistances within the single cell colonies isolated from two different clinical isolates. We postulate that these natural knockouts demonstrate low rifampicin MICs as they are unable to extrude rifampicin efficiently. Phosphate ABC transporters may be important targets for the development of adjuvant drugs to improve the efficacy of TB treatment.

ABSTRACT NUMBER / ABSTRAKNOMMER: 46

THE PREVALENCE OF ANTIBODIES TO TOXOPLASMA GONDII IN SHEEP IN THE WESTERN CAPE PROVINCE OF SOUTH AFRICA.

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Toxoplasma gondii is found worldwide and is a protozoan pathogen of global importance. Infections are known to be common at lower altitudes and in warm and humid climates. T. gondii has been found in many animal species in varying environments and locations. Primary T. gondii infections in food animals, especially sheep and goats, pose a risk for abortions, stillbirths and neonatal mortalities to these animals and have health and economic implications.The seroprevalence of T. gondii antibodies in a sample of 292 sheep (Merino breed) farmed in a semi- intensive manner in the Cape Agulhas municipality of the Western Cape, South Africa was investigated. T. gondii antibody seroprevalence was determined by ELISA methodology. Overall, 23 (8%, 95% CI: 4.7688-10.9846) of the sheep tested positive for T. gondii antibodies. There was no statistically significant relationship between seroprevalence and age of the sheep. The highest number of seropositive sheep (17 out of 33) was in the 28 to 40 months old group; a total number of 19 sheep were seropositive by 40 months and 23 were seropositive by 76 months, there were no seropositive sheep in the 16 to 28 months old group.The reported seroprevalence rate of 8% in this study is higher than the previously reported figures of 6.0% in the Western Cape Province and 4.7% overall in South Africa in 2007. Given that the farming of sheep is economically significant in South Africa this may pose a threat to the production of the small stock industry as well as to public health and food security. We therefore recommend that further and ongoing surveillance should be done in order to identify high-risk animal populations so that local control measures can be put in place to prevent inter-species disease spread.

ABSTRACT NUMBER / ABSTRAKNOMMER: 47

GENOTYPIC CHARACTERIZATION AND STRAIN DIVERSITY OF TOXOPLASMA GONDII FROM INFECTED HUMAN AND ANIMAL TISSUES FROM THE WESTERN CAPE OF SOUTH AFRICA.

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Toxoplasma gondii is an obligate intracellular protozoan pathogen of global importance. There is no data on the genetic diversity of T. gondii in South Africa even though such data is vital for understanding of the distribution, circulation and transmission of the pathogen. Several studies have argued that genotypes do play a role in the clinical expression of human toxoplasmosis, there is also an observed geographic bias in the distribution of T. gondii genotypes.The aim of this study was to determine T. gondii genotypes in infected human and animal host samples from the Western Cape Province of South Africa. Genotyping was performed using a single multiplex polymerase chain reaction assay detecting 15 microsatellite markers located on 11 different chromosomes. Results were analysed by Bayesian statistical modeling, neighbor-joining tress reconstructed based on genetic distances, FST and linkage disequilibrium.17 PCR positive human samples and 11 PCR positive animal samples out of 109 human and 39 animal samples screened were genotyped. Of the 17 human samples, there were 8 (47.1%) Type II, 2 (11.7%) Atypical, 1 (5.9%) Type III and 6 (35.3%) untypable genotypes. Of the 11 animal samples there were 9 (81.8%) Type II and 2 (18.2%) Atypical genotypes. The Type II clonal lineage was predominant in both human and animal infected hosts in this study making up 60.7% of the observed genotypes for all samples. The presence of atypical strains implies a deviation from the classical Types I, II and III lineages observed in Europe and North America and could imply a higher genetic diversity such as has been observed in South America and also in some other Africa countries. Further studies on larger sample sets need to be done in order to have a comprehensive understanding of the population structure and genetic diversity of T. gondii in South Africa.

ABSTRACT NUMBER / ABSTRAKNOMMER: 48

RIFAMPICIN-RESISTANT MYCOBACTERIUM TUBERCULOSIS INCREASE IN SPUTUM FROM PATIENTS ON RIFAMPICIN MONOTHERAPY FOR 14 DAYS.

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INTRODUCTION: Rifampicin (RMP) resistance is due to mutations within the rpoB gene of Mycobacterium tuberculosis. Spontaneous mutations occur at a rate of 1 in 10-9 cell divisions. RMP chemotherapy is expected to increase the proportion of RMP resistant bacteria in sputum. We investigated clinical isolates from TB patients under RMP monotherapy for 14 days for the prevalence of RMP resistance. METHODS: Fourteen newly diagnosed patients with drug-sensitive, smear-positive pulmonary TB were treated daily with RMP (10mg/kg) for 2 weeks. M tuberculosis strains were isolated from sputum collected before and at day 14 of treatment. We assessed minimum inhibitory concentrations (MIC) for RMP on solid and in liquid culture, mutation rate and frequency at the critical concentration of 1µg/ml RMP, and the mutant prevention concentration (MPC) of RMP. All isolates were tested with GeneXpert and spoligotyped. RESULTS: We found increases of the mean MIC on solid medium from 0.45 to 0.75µg/ml (P=0.0004) and in liquid medium from 0.095 to 0.14µg/ml

(P=0.05), of the mean mutation frequency from 0.33*10-7 to 209.6*10-7 (P=0.0007), of the mean mutation rate from 0.03*10-7 to 1.7*10-7 (P<0.0001), and of the mean MPC from 182.9µg/ml to 251.4µg/ml (P=0.05). Spoligotyping identified a predominance of Beijing strains (44%). All isolates were GeneXpert negative for RMP resistance before and after RMP monotherapy. DISCUSSION AND CONCLUSION: Strain types were expected in our area. Monotherapy with RMP for 14 days caused a measurable and statistically significant increase in the prevalence of RMP-resistant M tuberculosis in sputum but this increase did not appear to be clinically relevant as determined by GeneXpert. KEYWORDS: Mycobacterium tuberculosis, Rifampicin, multidrug-resistance tuberculosis, Minimum inhibitory concentration, Mutant prevention concentration, Beijing strain.

ABSTRACT NUMBER / ABSTRAKNOMMER: 49

GLOBAL/HIGH-THROUGHPUT ANALYSIS OF DNA-BINDING PROTEINS IN MYCOBACTERIUM SMEGMATIS

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BACKGROUND:Elucidating changes in the Mycobacterium tuberculosis transcriptome in response to stresses encountered within the host environment, including drug treatment, is critical for understanding pathogen adaptation to these adverse conditions. These studies are often limited to micro-array or ChIP-seq analysis where the transcription factor initiating a transcriptional response is known. A large number of predicted genes in the M. tuberculosis genome have unknown functions, and it is therefore plausible to hypothesize that a subset of these proteins are involved in transcriptional regulation. In this study we aim to develop a method that will identify novel DNA binding proteins in M. tuberculosis. For the purposes of establishing this method we used the closely related, non-pathogenic and fast growing organism Mycobacterium smegmatis. METHOD: M. smegmatis was cultured under standard conditions to early log phase and then treated with formaldehyde to crosslink protein-DNA complexes. The complexes were captured onto a solid matrix using an anti-RNA polymerase antibody and an on-matrix tryptic digestion performed. Eluted peptides were analyzed by high resolution LC-MS/MS and DNA binding proteins were identified using the Andromeda search algorithm as part of MaxQuant 1.2.2.5. RESULTS:Preliminary data obtained using M. smegmatis confirmed that our method selectively enriched for proteins known to be bound to DNA. These included the RNA polymerase complex, ribosomal proteins and other RNA associated proteins. In addition, we identified proteins required for energy metabolism. The reproducibility of this method is currently being evaluated. CONCLUSION:The identification of proteins that are associated with DNA in M. tuberculosis will provide insights into the essential cellular processes of transcription and potentially identify novel proteins involved in the regulation of these processes.

ABSTRACT NUMBER / ABSTRAKNOMMER: 50

THE HOST RESPONSE TO A CLINICAL MDR MYCOBACTERIAL STRAIN CULTURED IN A DETERGENT FREE ENVIRONMENT: A GLOBAL TRANSCRIPTOMICS APPROACH

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The use of polyoxyethelene sorbate (Tween) compounds in the culturing of various Mycobacterium tuberculosis (M. tb) strains was introduced almost 70 years ago and has proven to be an efficient and successful method for obtaining diffuse homogenous, non-aggregating cultures. Over the years literature has suggested that the use of Tween compounds alter phenotypic as well as biochemical characteristics of M. tb such as colony formation, cell wall surface and ultrastructure. The Mycobacterial cell wall is composed of a unique array of lipids which constitute 60% of the cell wall. Tween compounds function to solubilise these lipids and to a certain extent 'erode' the bacterial capsule. Bacterial cell surface receptors are essential for binding to and associating with macrophage cell surface receptors in order for effective internalisation and innate immune response initiation. For the first time we provide the host pro-inflammatory transcription profile in response to infection with non-Tween 80 cultured mycobacteria and provide evidence of a largely differential response. This data suggests that Tween cultured M. tb are not recommended for use in infection experiments.

ABSTRACT NUMBER / ABSTRAKNOMMER: 51

INVESTIGATING THE DIAGNOSTIC POTENTIAL OF CCL2 (MCP-1) FOR THE DETECTION OF MYCOBACTERIUM BOVIS INFECTION IN AFRICAN BUFFALOES (SYNCERUS CAFFER).

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BACKGROUND: Current standard diagnostic tests for Bovine tuberculosis (BTB) rely on the detection of cell-mediated immunity (CMI) to Mycobacterium bovis antigens. The interferon gamma release assay (IGRA) is an in vitro diagnostic test that quantifies the secretion of interferon gamma (IFN-y) by lymphocytes in response to pathogen-specific antigen stimulation. We aimed to assess the performance of an alternative diagnostic biomarker, MCP-1. MATERIALS AND METHODS: Whole blood from M. bovis-exposed buffaloes was incubated overnight in QuantiFERON Nil tubes, containing saline, and TB-antigen tubes, containing ESAT-6/CFP-10 peptides. Antigen-specific IFNg was measured by ELISA and animals were defined as IGRA-positive and –negative. Using a bovine MCP-1 ELISA we assessed the ability of this cytokine to distinguish between the positive and negative cohorts. We further evaluated the stability of MCP-1 during storage on protein saver cards (PSC), as well as its ability to withstand heat-shock at 65°C. Plasma was blotted onto PSCs and stored at room temperature (RT) for 11 days, after which an ELISA was performed using the blots from the cards as test sample. In a separate experiment, stimulated plasma was heated at 65°C for 20 minutes at dilutions of 1:5, 1:20 and 1:100 before quantification via MCP-1 ELISA. RESULTS: Levels of MCP-1 were significantly higher in antigen-stimulated blood samples from the test positive cohort compared to the negative cohort ($p = <0.05$). MCP-1 concentrations in plasma stored at RT on PSCs were similar to those in plasma stored at -20C. The concentration of MCP-1 increased after heat-shock in a dilution dependant manner with the highest dilution measuring the highest concentration of MCP-1. CONCLUSION: MCP-1 has potential as a diagnostic marker for M.bovis infection in African buffaloes. The results of its long term stability and heat-shock survival are further benefits for its use as a diagnostic marker.

ABSTRACT NUMBER / ABSTRAKNOMMER: 52

WORKING TOWARD 90% OF HIV INFECTED PEOPLE KNOWING THEIR STATUS. WHAT CAN THE DATA FROM COMMUNITY-BASED HIV COUNSELING AND TESTING IN CAPE TOWN TEACH US?

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BACKGROUND: Increasing access to HIV counselling and testing (HCT) is vital to ensure that 90% of people living with HIV know their status. Research studies show that the HIV positivity rate is higher among those previously untested (first time testers) compared to those who have tested before (repeat testers). During 2014, in Cape Town district, 18% of the public sector population was tested. Data on whether clients are first time or repeat testers is recorded, but is not aggregated as part of routine monthly data, resulting in little knowledge of how many are being reached for the first time. This study presents data from 2 community-based HCT strategies on HIV prevalence in first time and repeat testers. METHOD: The Desmond Tutu TB Centre implements community-based HCT according to national guidelines. HCT is provided from; (1) stand-alone fixed centres (2) "pop-up" tents and mobile van. Data were collected between January 2013 and December 2014. Routine data (sex, age) were collected as well as additional data on tester type (first time or repeat tester). A qualitative component allowed for a sample of clients to be interviewed to better understand the barriers and enablers to HIV testing. RESULTS: 36 474 self-referred clients accessed HCT; 15% were first time testers (5% positivity) of which 63% were male. HIV prevalence was higher at stand-alone centres (7%) compared to mobile services (4%) and highest among females within the age group 25-49 years (8%). Qualitative research findings showed that uptake of HCT was influenced by accessibility and acceptability of the service. CONCLUSION: Community-based HCT strategies can reach significant numbers of males and females in higher HIV prevalent groups of age 25-49 years and those who have never tested previously, especially males. Community-based HCT can be implemented to increase testing coverage in high burden areas.

ABSTRACT NUMBER / ABSTRAKNOMMER: 53

ASSESSING TUBERCULOSIS DIAGNOSTIC YIELD FROM AN XPERT® MTB/RIF-BASED ALGORITHM USING A NON-RANDOMISED STEPPED WEDGE DESIGN.

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Setting: Primary health services in Cape Town, South Africa, where Xpert® MTB/RIF was introduced as a screening test for all presumptive tuberculosis (TB) cases. Study Aim: To compare TB diagnostic yield between an existing smear/culture-based algorithm and a newly introduced Xpert® MTB/RIF-based algorithm.Methods: We identified the full sequence of sputum tests for presumptive TB cases at 60 primary health sites in selected periods between October 2010 and December 2013 from electronic laboratory data. The proportion of TB cases identified as sites transitioned to the Xpert-based algorithm was assessed using a non-randomised stepped-wedge design. A binomial regression model was used to assess the difference in TB yield between algorithms and the time effect.Results: The probability of a identifying a TB case was 20.9% in the smear/culture-based algorithm compared to 17.9% in the Xpert-based algorithm. The overall yield declined by -0.9% (95% CI -1.2% to -0.6%)($p<0.001$) per time point. When estimates were adjusted for the time effect, there was no significant difference in yield between the algorithms with a risk difference of 0.3% (95% CI -1.8% to 2.3%) ($p=0.796$) in the Xpert-based algorithm. The Xpert-based algorithm had a lower proportion of Xpert-negative cases with culture tests undertaken (17.9% compared to 35.5% for smear-negative

cases).Conclusion: Introduction of an Xpert-based algorithm did not produce the expected increase in TB diagnostic yield. Studies are required to assess whether improving adherence to the algorithm, particularly for Xpert-negative, HIV-infected individuals, will increase yield.

ABSTRACT NUMBER / ABSTRAKNOMMER: 54

GENOTYPIC AND EPIDEMIOLOGICAL CHARACTERISATION OF METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS AND COAGULASE NEGATIVE STAPHYLOCOCCAL (CONS) STRAINS ISOLATED AT TYGERBERG HOSPITAL

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Staphylococcus aureus (S. aureus) is a commensal microorganism that colonises approximately 50% of the human population and yet, it is one of the most important human pathogens. It has the ability to rapidly acquire resistance (particularly to the β-lactam class of antibiotics) by the mecA gene. This is situated on a large mobile genetic element, known as the staphylococcal cassette chromosome mec (SCCmec). At least eleven different SCCmec types have been identified and described to date, based on the combination of different mec and ccr gene complexes. Preliminary data generated in our laboratory suggests that the largest cluster of our MRSA isolates from blood culture specimens (34%) may contain a novel SCCmec type as well as a potentially novel variant of SCCmec type I (17%). We aim to describe the epidemiology and genotypic characteristics of MRSA and CoNS strains isolated at Tygerberg Hospital, South Africa, with a specific focus on determining the prevalence, source and full genetic characterisation of the potentially novel SCCmec type.

ABSTRACT NUMBER / ABSTRAKNOMMER: 55

THE IMPACT OF AGR TYPE AND AGR FUNCTIONALITY ON BACTERIAL PHYSIOLOGY IN STAPHYLOCOCCUS AUREUS

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The bacterial pathogen, Staphylococcus aureus, can cause a broad spectrum of infections; from asymptomatic colonisation, to opportunistic wound infection, adhesion and colonisation of fitted medical devices, invasion of the bloodstream and dispersion to cause diverse invasive metastatic infections; demonstrating its ability to regulate gene expression in response to stress stimuli. The accessory gene regulator (agr) is a global gene regulator and important mediator of virulence in S. aureus. Agr is involved in quorum sensing, intra-species communication and regulation of biofilm development and controls the expression of cell wall-associated and secreted virulence factors; thereby influencing virulence, drug tolerance and resistance, and ultimately disease outcome in both methicillin susceptible and methicillin resistant S. aureus infections (MSSA and MRSA respectively). The agr locus consists of four genes in the RNAII operon, agrBDCA, and the delta-hemolysin (hld) gene in the RNAIII operon. Four agr types, type I to IV, have been identified based on distinct polymorphisms in agrB, agrD and agrC and agr dysfunctional strains of S. aureus have been identified, based on the associated delta-hemolysin activity. The different agr types and agr functional and dysfunctional strains have been shown to influence disease presentation, severity and mortality. This study investigates the molecular and physiological mechanisms associated with agr type and functionality using a set of clinical isolates obtained from Tygerberg Hospital. The specific agr mutations associated with agr dysfunctionality in these clinical isolates as well as the effect of agr

functionality and agr type on various physiological conditions such as antibiotic tolerance and biofilm formation are described.

ABSTRACT NUMBER / ABSTRAKNOMMER: 56

ANTHROPOMETRY AND REPRODUCTIVE ORGANS' HISTOLOGY OF LEAN AND DIET-INDUCED OBESE MALE WISTAR RATS TREATED WITH HIGHLY ACTIVE ANTIRETROVIRAL THERAPY

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The prevalence of obesity among the HIV-infected population on highly active antiretroviral therapy (HAART) is prominent. There is growing yet conflicting evidence regarding the effects of HAART on reproductive function and paucity of information on the mechanistic interplay between HAART, obesity and reproductive changes. This study aimed to investigate the effects of HAART on anthropometry parameters, as well as testicular and epididymal histology in lean and diet-induced obese (DIO) rats. Rats (males, 180-200g, n= 10/group) were treated orally for 16 weeks. Group I served as the vehicle lean group fed with standard rat chow and Group II as vehicle DIO group fed with chow supplemented with sucrose and condensed milk. Groups III and IV were lean and DIO groups treated with HAART for the latter 6 weeks. At the end of the experimental period, biometric measurements were obtained. Testosterone assay and histology was also performed. Values were expressed as mean ± S.E.M. as compared by ANOVA. Results showed an increase in body weight in the vehicle DIO group when compared to the vehicle lean group (438.5g±15.67 vs. 287g±17.52; $p < 0.05$) and in the treated DIO group compared to the treated lean group (479.0g±21.14 vs. 392.5g±13.03; $p < 0.05$). Testicular weight was decreased in the treated DIO group when compared to the treated lean group (3.308g±0.10 vs. 2.889g±0.09; $p < 0.05$), while testosterone levels followed a similar trend. Histology of the testis showed epithelial degeneration, interstitial vascular congestion and thickened basement membrane in the DIO groups, which was more pronounced in the treated group. These data implies that obesity is a confounding factor causing detrimental effects on male reproductive organs and interfering with the treatment regimens effectiveness. Reduction in the organ weight might be associated with decreased testosterone resulting from degeneration and disorganization in the cytoarchitecture.

ABSTRACT NUMBER / ABSTRAKNOMMER: 57

OPTIMIZATION OF FLOW CYTOMETRIC METHODS FOR MYCOBACTERIAL VIABILITY DISCRIMINATION AND CELL ENUMERATION

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INTRODUCTION In the majority of individuals infected with Mycobacterium tuberculosis, the infection persists in an asymptomatic latent state. However, the population of viable cells exhibits heterogeneity and can include a subpopulation of viable but non-culturable (VBNC) bacteria. VBNC bacteria may evade environmental stresses, while regaining virulence upon resuscitation. A major challenge in studying VBNC cells is the difficulty in detecting them by conventional culture-based methods. In general, the slow growth of mycobacteria hampers both basic and clinical research, and a rapid method for enumeration of mycobacteria is highly desirable. In this study, we aim to rapidly identify and enumerate the various physiological states of mycobacteria within a heterogeneous

population using the LIVE/DEAD BacLight Bacterial Viability and counting kit. METHODS We applied the LIVE/DEAD BacLight Bacterial Viability kit to detect and enumerate both viable and non-viable Mycobacterium smegmatis exploiting flow cytometry. Two nucleic acid stains were used; SYTO9 permeates both live and dead cells, while propidium iodide (PI) penetrates cells with compromised cell walls. Additionally, bacteria were killed using different techniques to test the accuracy of the kit. RESULTS Preliminary results indicate the distinction between live and dead cells due to the successful optimization of the kit for M. smegmatis. The kit also shows promise for developing a rapid, culture-free counting method for mycobacteria. CONCLUSION These results suggest the feasibility of a real-time tool to distinguish and enumerate live, dead and VBNC cells within a heterogeneous mycobacterial population. The identification of VBNC cells will allow us to further study the adaptation of this state in relation to the mechanism of resuscitation, the effects of antibiotics and to what degree virulence is maintained in a VBNC population.

ABSTRACT NUMBER / ABSTRAKNOMMER: 58

THE ASSOCIATION BETWEEN TUBERCULOSIS AND THE DEVELOPMENT OF INSULIN RESISTANCE IN ADULTS WITH PULMONARY TUBERCULOSIS IN THE WESTERN SUB-DISTRICT OF THE CAPE METROPOLE REGION.

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The existence of a bi-directional relationship between tuberculosis (TB) and Insulin Resistance (IR)/Diabetes Mellitus has previously been described in the literature. Although diabetes has been linked to increased TB risk, the relationship between TB as a causative factor for IR remains unclear. This study aimed to determine whether an association exists between TB and IR development in adults with pulmonary tuberculosis. This observational, cross-sectional study evaluated participants at baseline for IR prevalence via anthropometrical and biochemical measures, as well as diagnostic IR tests [Homeostasis Model Assessment (HOMA-IR) and Quantitative Insulin Sensitivity Check Index (QUICKI)]. Selected participants were also followed-up at intervals of two and five months whilst on TB treatment. The prevalence of IR was 25.4% at baseline, which was calculated using a HOMA-IR cut-off point of 2.477. Patients with IR were shown to be younger ($p=0.04$) and had a higher fasting insulin level ($p<0.01$). There was no significant difference between IR levels in participants during the follow-up period. Most of the participants (61.0%) presented with a normal BMI at baseline. The majority of anthropometrical measurements showed a significant increase over the follow-up period, albeit more in the first two months of treatment. The majority of participants had an increased CRP (84.7%) and decreased HDL cholesterol (69.5%) at baseline. Several biochemical markers (CRP, albumin and white cell count) showed an improvement during the follow-up period. This study found an association between TB and IR development. A high prevalence of IR amongst TB patients highlights the need for early identification in order to facilitate a reversal of IR, as well as prevent possible IR-related complications from occurring.

ABSTRACT NUMBER / ABSTRAKNOMMER: 59

DECIPHERING THE PHYSIOLOGICAL STATE OF DRUG RESISTANT MYCOBACTERIUM TUBERCULOSIS STRAINS

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RATIONALE: The rising incidence of drug resistant Mycobacterium tuberculosis strains negatively influences Tuberculosis control. These strains evade the killing action of old and new anti-TB drugs, rendering current therapy ineffective and resulting in prolonged treatment. Additionally, limited data exist on the physiological changes of M.tb during treatment. For this reason, we aim to assess the physiological changes of M.tb at the protein level during antibiotic treatment. Objective: To decipher how the physiological state of drug resistant M.tb exposed to sub-lethal concentrations of isoniazid (INH) contributes to prolonged TB treatment. METHODS: Pan-susceptible Beijing clinical isolate (K636), K636 rifampicin resistant in vitro mutant and laboratory strain H37Rv were selected for characterization. To determine the growth, the strains were cultured in 7H9 enriched media and on 7H11 agar plates, for daily OD600 readings and CFU/ml assessment. To assess the optimal concentration of INH by a titration kill-curve, the strains were exposed to a range of INH concentrations. Additionally, total RNA was extracted and purified (after 24 hrs INH exposure), for gene expression analysis by Quantitative Real-time polymerase chain reaction (qRT-PCR) for selected genes kasA, accD6, acpM and ahpC. PRELIMINARY FINDINGS: No significant difference in growth was observed between the strains assessed. Additionally, it was observed that the sub-lethal concentration of INH is 0.03 µg/ml and 0.02 µg/ml for K636 and H37Rv, respectively. qRT-PCR is an important step to validate that the selected drug concentrations are influencing mycobacterial growth as expected, this is in progress. DISCUSSION: The variation in sub-lethal concentrations of INH observed affirms what has been shown in the literature, that H37Rv is more resistant than clinical strains. The latter suggests that the strains might employ different adaptive mechanisms to survive INH drug exposure. It is expected that associated physiological changes will be reflected in the total proteome, our ongoing work focus.

ABSTRACT NUMBER / ABSTRAKNOMMER: 60

DIAGNOSTIC TOOL EVALUATION: DETECTION OF MYCOBACTERIAL INFECTIONS IN WARTHOGS (PHACOCHOERUS AFRICANUS) USING SEROLOGICAL TESTS.

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Mycobacterium bovis has been reported in domestic pigs, wild boar, bushpigs and warthogs. Specifically, warthogs are considered to be a potential reservoir host of bovine tuberculosis (bTB) and could play an important role in the spread and maintenance of the disease within the species as well as at interfaces with other species, including domestic animals and humans. Despite this disease concern, there are no ante-mortem diagnostic tests available to screen warthogs for infection to date. In this study, we have evaluated different serological tools for their potential value in testing warthogs. These include the TB ELISA-VK (Vacunek, Spain) for suids, Elephant STAT-PAK® (Chembio Diagnostics, Inc., U.S.A.), DPP® VetTB Assay for Cervids (Chembio) and an in-house PPD ELISA. Preliminary results support the concept that multi-species serological assays can be used to detect M. bovis infections in warthogs. There was a significant difference in antibody levels between known M. bovis-positive and negative warthogs in each of the tests, as well as some degree of agreement between tests, suggesting that the assays were measuring similar responses. The STAT-PAK and DPP assays detect serum antibodies to specific mycobacterial proteins, while the PPD ELISA and TB ELISA-VK measure antibodies produced to a wider array of M. bovis antigens. Furthermore, there was a significant correlation ($r=0.87$, $p<0.0001$) of the PPD ELISA warthog results with the TB ELISA-VK results. There is however a need for a greater number of confirmed M. bovis-positive and negative animals to further evaluate these assays and to determine cut-off values for warthogs. However, the

findings indicate that 1) warthogs develop detectable humoral responses to M. bovis infection, and 2) serological assays may be useful as screening tests for bTB in this species.

ABSTRACT NUMBER / ABSTRAKNOMMER: 61

INVESTIGATION OF THE ROLE OF ERGOTHIONEINE IN MYCOBACTERIUM TUBERCULOSIS

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There are two main thiols synthesized by mycobacteria namely Mycothiol (MSH) and ergothioneine (ERG). It has been shown that MSH protects mycobacteria from oxidative stress. On the other hand, ERG is a thiol known to play a protective anti-oxidative role in eukaryotes. However, eukaryotes do not synthesize it; they obtain it from their diet. Very little is known of the role of ERG in mycobacteria, we have shown recently that it protects *M. smegmatis* from oxidative stress. Five enzymes are involved in ERG biosynthesis, namely EgtA, EgtB, EgtC, EgtD, and EgtE. In other to identify the ideal drug target we generated mutants deficient in each enzyme and studied their role in the production of ERG and in the physiology of *M. tuberculsosis*. In addition we generated an ERG-MSH deficient double mutant. Quantification of ERG in the mutants indicates that EgtE is not essential for ERG biosynthesis and so cannot be a good drug target. Growth curve analyses of the mutants revealed that ERG-deficient mutants struggle to grow during the stationary phase which is an indication that ERG may be essential for the survival of dormant *M. tuberculosis* during latent tuberculosis. Therefore ERG biosynthesis may constitute a new drug target against latent tuberculosis. However, more validation experiments are needed to confirm this assertion.

ABSTRACT NUMBER / ABSTRAKNOMMER: 62

PROTEOMIC CHANGES IN M. TUBERCULOSIS TREATED WITH SULFAMETHOXAZOLE (SMX).

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BACKGROUND: The emerging multidrug resistance to currently available first line drugs (isoniazid, rifampicin, pyrazinamide) of TB warrants alternative treatment approaches with broad-spectrum efficacy towards M. tuberculosis. Recent availability of the 'omics platform' could be informative for high-throughput screening and validation of the new drug targets. The 'forgotten antibiotics' for the treatment of TB has been reintroduced to the pipe line of new TB drug discovery. In this context, the sulfonamides group of drugs are considered for the treatment of M. tuberculosis and which has been shown before to be effective against M. tuberculosis OBJECTIVES: 1) To investigate the role of Sulfamethaoxazole (SMX) in cross resistance with other antibiotics. 2) To evaluate alternative targets of SMX in M. tuberculosis and evaluate the mechanism of action of SMX. RESULTS & METHODS: Orbit-trap Mass spectrometry analysis was used to evaluate proteomic changes in two strains of M. tuberculosis (INH sensitive and INH resistance strain)in response to stimulation with low doses (Sub-MIC) of SMX (sulfonamides group of antibiotics) at 2 hrs of post-exposure. Preliminary data reveals

that differentially regulated proteins following treatment with SMX in both drug sensitive and drug resistance strains of M. tuberculosis involving oxidative stress and drug efflux mechanisms.

ABSTRACT NUMBER / ABSTRAKNOMMER: 63

IDENTIFICATION OF NOVEL CANDIDATE GENES FOR SUSCEPTIBILITY TO TUBERCULOSIS BY IDENTIFYING DISEASE-CAUSING MUTATIONS IN INDIVIDUALS WITH PIDS

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Although approximately 33% of the world's population is infected with M. tuberculosis, the causative agent of tuberculosis (TB), only 10% of infected individuals will develop active disease. While the genotype of invading strains and environmental factors have been shown to be crucial in disease outcome, host genetic factors are just as important. Although several investigations have successfully identified genes involved in TB susceptibility, it is certain that more susceptibility genes exist. Identifying these genes in a complex disease such as TB is, however, challenging. We believe that the answers may lie in the genomes of individuals suffering from a group of inherited primary immunodeficiency disorders (PIDs) for which multiple infections with M. tuberculosis is a common feature. We hypothesize that genes causing these PIDs could be plausible candidate genes for increased TB susceptibility in the general population. We therefore aimed to identify novel TB susceptibility genes by finding gene mutations in patients with PIDs characterized by increased TB susceptibility. We recruited six PID patients between eight and 17 years of age. Once written informed consent was obtained, their exomes were sequenced using the Illumina HiSeq. Bioinformatics techniques were used to identify variations from the reference human genome for each patient. Bioinformatics analysis of the sequence data identified a large amount of potential candidate genes, which were subsequently prioritized to 11 genes currently being investigating further, based on OMIM and HGMD database entries. At least one variant in the TAP1 gene has been identified for which functional studies will be done to investigate its involvement in the disease. This study is on-going and several analyses still need to be done. We believe the identification of these disease-causing mutations would provide us with novel candidate genes to screen for TB susceptibility in the general population.

ABSTRACT NUMBER / ABSTRAKNOMMER: 64

TLR1, 2, 4, 6, 8 AND 9 VARIANTS ASSOCIATED WITH TUBERCULOSIS SUSCEPTIBILITY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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BACKGROUND: Studies investigating the influence of toll-like receptor (TLR) polymorphisms and tuberculosis susceptibility have yielded varying and often contradictory results in different ethnic groups. A meta-analysis was conducted to investigate the relationship between TLR variants and susceptibility to tuberculosis, both across and within specific ethnic groups. METHODS: An extensive database search was performed for studies investigating the relationship between TLR and TB susceptibility. Data was subsequently extracted from included studies and statistically analysed. RESULTS: 32 articles involving 18907 individuals were included in this meta-analysis, and data was extracted for 14 TLR polymorphisms. Various genetic models were employed. An increased risk for TB was found for the CC, GA and GG genotypes of TLR2 (rs3804100) and TLR9 (rs352139) respectively and a decreased risk was identified for the AG genotype of TLR1 (rs4833095). The T allele of TLR6 (rs5743810) conferred protection across all ethnic groups. Other variants, such as TLR1 rs5743618, TLR2 rs3804099, TLR4 rs4986790, TLR8 rs3764879, TLR9 rs1870884 and rs5743836 as well as GT(n) repeats in the TLR2 promoter region were not associated with disease in this meta-analysis. Subgroup analysis of TLR2 rs5743708 showed an increased susceptibility to TB in the Asian ethnic group for the A allele, which conferred protection in the Hispanic group, while the T allele of TLR4 rs4986791 increased TB susceptibility in the Asian subgroup. Finally TLR8 rs3764880 conferred protection against TB in females. DISCUSSION: Although general associations were identified, most TLR variants showed no significant association with TB indicating that additional studies investigating a wider range of pattern recognition receptors are required in order to gain a better understanding of this complex disease, before the data can be used for real world applications.

ABSTRACT NUMBER / ABSTRAKNOMMER: 65

RAPID, BLOOD AND BONE MARROW BASED TB DIAGNOSTIC TEST WHICH CHARACTERISES AND DISTINGUISHES BETWEEN BCG, LATENT AND ACTIVE TB USING FLOW CYTOMETRY BY MEASURING INTRACELLULAR CYTOKINES RELEASED BY CD4 T HELPER CELLS.

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INTRODUCTION: Accurate TB diagnostics still faces challenges due to the limitations of current assays. There's a need for a rapid diagnostic assay to distinguish between BCG, latent and active TB. Most current diagnostic tools use sputum or body fluids in their assays. The diagnosis of disseminated TB in the absence of a sputum sample or body fluid still remains a challenge. This study aims to develop and validate a rapid flow cytometry (FC) blood and bone marrow-based TB test to diagnose and distinguish between BCG, latent and active TB by measuring cytokines released by CD4 T cells following exposure to TB specific antigens. Additionally this study aims to detect TB in patients who cannot produce sputum such as immunocompromised patients, in whom disseminated TB is suspected clinically. The results could add important strategic focus for managing TB in resource constrained environments. METHODS: TB positive and HIV-1 negative/positive patients will be recruited from Tygerberg Hospital. Whole blood will be stimulated for 18 hours with either TB antigens (ESAT6 & CFP10), or Staphyloccous entertoxin B. Thereafter sample preparation for multicolour FC follows a whole blood no-centrifuge intracellular staining protocol. CD45+CD3+ T cells will be delineated into the following subsets: naïve (CD45RO-CD27+), central memory (CD45RO+CD27+), effector memory (EM)(CD45RO+CD27-) and terminally differentiated EM

(CD45RO-CD27-). Anticipated RESULTS: Expression dynamic of intracellular cytokines TNF-α and IFN-γ and the exhaustion marker TIM-3 on the T-cell subsets will be studied to classify results as active TB, latent TB or BCG vaccinated individuals. DISCUSSION: FC will provide us with a higher positive predictive value when compared to the current conventional gold standard methods for distinction between BCG, latent and active TB. Furthermore it may supersede the more advanced techniques such as GeneXpert in the diagnosis of disseminated TB and could certainly represent a potential diagnostic tool within our setting.

ABSTRACT NUMBER / ABSTRAKNOMMER: 66

PROFESSIONALS' AND PATIENTS' PERSPECTIVES TOWARDS DISCLOSING INCIDENTAL FINDINGS OF PLEIOTROPIC RESULTS: PRELIMINARY FINDINGS FROM AN ONLINE SURVEY DISTRIBUTED TO STUDENTS.

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BACKGROUND: Genetic research often involves examining multiple genes, some of which may be pleiotropic. Since official guidelines on pleiotropic incidental findings (IFs) have not yet been established in South Africa, it is beneficial to acquire a greater understanding of perspectives towards the disclosure of IFs in the context of pleiotropic results.Aims: This study aimed to investigate the opinions of students towards the disclosure of incidental findings in genetics research. METHODS: The sample consisted of 151 students from the Faculty of Medicine and Health Sciences at Stellenbosch University and the University of Cape Town. Data was collected by means of a cross-sectional online survey that was emailed to students and completed anonymously. PRELIMINARY FINDINGS: The majority of participants (83.3%) agreed that participants should be given the right to choose whether IFs were returned. The main factors influencing decisions to disclose IFs included the chance that treatable disorders could be identified (93.3%), participants' right to receive information (92.1%), and the moral obligation to disclose life-saving information (91.4%). 86.8% of participants agreed that they wanted to be informed about an IF associated with an adult-onset disease that was clinically actionable, 86.1% wanted to be informed of this type of finding in their child, 90.7% would disclose to adult patients and 84.8 % to minor patients. Opinions toward disclosure of findings associated with an adult onset disease that was not clinically actionable differed slightly, as 57% of participants wanted to be informed about such findings in themselves, 68% wanted to receive this information about their child, 64.2% would disclose to an adult patient and 58.7% would disclose to a minor patient. CONCLUSION: The majority of the students believed that participants have the right to receive certain IF results and that the disclosure thereof is influenced by the clinical actionability of these findings.

ABSTRACT NUMBER / ABSTRAKNOMMER: 67

EXPLORING DRUG RESISTANT TUBERCULOSIS PROFILES IN THE WEST COAST DISTRICT OF THE WESTERN CAPE PROVINCE, SOUTH AFRICA.

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BACKGROUND.The West Coast, a rural district in the Western Cape Province, has one of the highest reported tuberculosis (TB) prevalence in the Province of 1225/100 000 population. Previous molecular epidemiological studies have demonstrated that the dynamics of TB transmission vary geographically. The dynamics governing TB transmission in this region are unknown, specifically that of drug resistance TB. The aim of this study was to describe the DR-TB epidemic and identify transmission hotspots within the West Coast district of the Western Cape, South Africa. METHODS. We performed a retrospective cohort study, selecting one isolate from each of the patients diagnosed with drug resistant TB from 2008-2012. Isolates were received from all health facilities in the West Coast. We genotypically characterised the isolates by the internationally standardised spoligotyping and Sanger sequencing of drug resistance conferring genes. RESULTS. Isolates from 611 patients were genotyped and grouped according to their spoligotype pattern. Spoligotyping data revealed that X-family is the most dominant strain family (33 %), followed by the Beijing family (21 %). This is in contrast to previous studies in the rest of the Western Cape Province that found the Beijing strain family to be predominant in the province. Within the X-Family, 62 % of strains were MDR, 18 % pre-XDR, and 3% XDR. The X-family is the predominant strain in 3 of the 5 sub-districts in the region. CONCLUSION. Even though spoligotyping is considered to have low discriminatory power and could overestimate the extent of transmission, this study suggest an epidemic spread of MDR strains in the West Coast District. Our findings also highlight the regional variation of outbreaks and the need for molecular epidemiologic studies in various regions to tailor interventions to curb TB and drug resistant TB spread.

ABSTRACT NUMBER / ABSTRAKNOMMER: 68

FINE-SCALE POPULATION STRUCTURE IN SOUTHERN AFRICA.

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Recent genetic studies showed that KhoeSan populations in southern Africa are distinct from other African populations. In addition it is now known that they have largely remained isolated until approximately 2000 years ago. There are numerous KhoeSan populations that belong to three different language families. Little to no research has been completed in the field of population structure within southern Africa with the exception of evidence of a north-south split of KhoeSan populations between thirty and sixty thousand years ago. We examine new genome-wide polymorphism data for approximately 100 individuals from the ≠Khomani San and Nama populations, analyzed in conjunction with 19 additional southern African populations. Analysis has revealed fine-scale population structure, specifically in and around the Kalahari Desert. This structure does not always correspond to linguistic or subsistence categories. The Khoe-speaking Nama pastoralists and

the !Ui-speaking ≠Khomani (formerly foragers) share recent ancestry with other Khoe-speaking populations that form a rim around the Kalahari Desert regardless of subsistence strategy. Hunter-gatherer groups within and around the Kalahari form two distinct groups corresponding to the northern Juu-speakers and southern populations from all three linguistic groups. The relevance of this structure is brought to light by the association between ancestry and tuberculosis (TB) susceptibility in the South African Coloured (SAC) population, who share on average 30% of their DNA with KhoeSan populations. Further analysis may reveal segments of DNA within the SAC population, originating from a specific ancestral population, that increases/decreases the risk to progressing to active TB.

ABSTRACT NUMBER / ABSTRAKNOMMER: 69

DATA DRIVEN APPROACH TO COLLECTING QUALITY DATA.

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INTRODUCTION: The HPTN 071 Population Effects of Antiretroviral Therapy to Reduce HIV Transmission (PopART) is a cluster-randomized trial of the impact of a combination prevention package on population-level HIV incidence. An evening and weekend schedule was implemented to reach more men. The PopART combination prevention package is delivered by CHiPs (Community HIV Care Providers) who go door-to-door in the community to deliver the following:

- Home-based HIV testing
- Referral for HIV care (immediate ART in Arm A clinics & according to guidelines in Arm B clinics)
- Referral for PMTCT
- Referral for MMC
- Screen for TB, refer for TB treatment
- Screen for STI, refer for STI treatment
- Provision of male condoms and female condoms
- Linkage to care.

METHOD OF COLLECTING DATA: Data is from September thru December 2014 for men 18 years of age and above categorized into 18 to 24 yrs, 25 to 34 yrs, 35 to 44 yrs, 45 to 54 yrs, and 55 yrs+. CHiPs collect data onto a hand-held electronic data capture device (EDC) synced through wifi into the CHiPs database. RESULTS:

- 24% more men are reached from 11am – 7pm as compared to the 9am – 5pm
- 56% more (25 to 34 years) and 39% more (35 to 44 years) are reached on a Saturday as compared to a weekday
- 16% more (25 to 34 years) and 29% more (35 to 44 years) are reached from 11am – 7pm as compared to the 9am – 5pm.

CONCLUSION

- 11am – 7pm and weekend (Saturday) reached more men for home-based HIV testing than 9am – 5pm and weekdays
- Suggestion to add in a 7am – 3pm and 8am – 4pm rotation to reach men before they go to work

ABSTRACT NUMBER / ABSTRAKNOMMER: 70

CLOFAZIMINE: MECHANISM OF RESISTANCE WITHIN M. TUBERCULOSIS.

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BACKGROUND: The global increase in drug resistant tuberculosis (TB) has renewed the search for new anti-TB drugs and the repurposing of drugs that are currently used to treat other pathogenic infections. One such repurposed drug, clofazimine (CFZ), is currently used for the treatment of leprosy, caused by Mycobacterium leprae. The mechanism of action of CFZ is unknown, but it's hypothesized that CFZ is reduced by a mycobacterial type II NADH oxidoreductase. The reduction of CFZ drives the production of reactive oxygen species which are toxic to the pathogen. The aim of this study was to elucidate the mechanism of CFZ resistance. METHODS: Spontaneous in vitro CFZ resistant mutants were selected. Whole genome sequencing was done to identify SNPs which may cause CFZ resistance. RESULTS AND DISCUSSION: Mutations were identified in the transcriptional regulator Rv0678 and a fatty-acid-AMP ligase (FadD28). Mutations in Rv0678 have previously been shown to play a role in both CFZ resistance and bedaquiline cross-resistance. No link has been found between CFZ resistance and mutations in fadD28. A novel SNP in the DNA binding domain of Rv0678, A84T, was identified. Previous studies showed that mutations in Rv0678 resulted in the upregulation of mmpL5, a putative efflux pump. However, the mechanism whereby CFZ resistance occurs via increased abundance of this efflux pump in the cell wall is not clear and needs further investigation. CONCLUSION: Cross-resistance between CFZ and bedaquiline, caused by mutations in Rv0678, is of concern and may influence the planning of anti-TB drug regimens for the future. The role of the other CFZ resistance causing mutation is unclear and requires further investigation. Finally, the findings of this study support the role of Rv0678 in CFZ resistance thereby suggesting that this gene could be useful as a diagnostic marker to test for CFZ resistance in clinical isolates.

ABSTRACT NUMBER / ABSTRAKNOMMER: 71

PERCUTANEOUS CORE NEEDLE BIOPSIES: THE YIELD IN SPINAL TUBERCULOSIS.

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INTRODUCTION: Current recommendations for spinal tuberculosis (TB) not requiring open surgery include core needle biopsy to confirm TB and determine drug sensitivity. International figures show the positive culture yield from core needle biopsies is 50 -83%. Therefor the aim of this study was to (i) assess the yield of percutaneous needle biopsies; (ii) identify factors that may lead to a negative result; and (iii) determine whether, TB being suspected, needle biopsy is justified. METHODS: We

conducted a multicentre retrospective review of 44 patients treated for suspected spinal TB between January 2009 and April 2012, who did not require open surgery. Data captured included demographics, relevant history, outcome of investigations and histopathological findings in patients. RESULTS: The overall positive TB culture rate was 59%. Age, duration of symptoms, HIV and neurological status, erythrocyte sedimentation rate and core size had no statistical influence. Of the 7 patients receiving TB treatment at the time of biopsy, 3 were culture-positive. Multidrug resistance was evident in 12% of positive cultures. The positive culture yield was 40% at Tygerberg Hospital and 75% at Groote Schuur Hospital, with no difference in histological yield. This was attributed to the practice of decontaminating specimens prior to culture at Tygerberg Hospital. The highest culture yield (32%) came from samples showing non-necrotising chronic inflammatory changes. CONCLUSION: Percutaneous biopsy remains an important tool to diagnose and manage spinal TB. The yield of transpedicular biopsies in this study was comparable with international figures. Specimen decontamination prior to culture had a direct negative influence on biopsy culture yield, as did prior TB treatment.

ABSTRACT NUMBER / ABSTRAKNOMMER: 72

ASSOCIATION BETWEEN GENOTYPIC AND PHENOTYPIC PYRAZINAMIDE RESISTANCE IN ISONIAZID AND RIFAMPICIN MONO-RESISTANT AND MDR MYCOBACTERIUM TUBERCULOSIS ISOLATES.

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BACKGROUND: Pyrazinamide (PZA) plays an integral part in anti-tuberculosis treatment. PZA will likely remain an important component of treatment regimens for drug-susceptible and multidrug-resistant TB (MDR-TB) because of its distinctive mode of action. However little is understood about the prevalence of PZA resistance with rifampicin (RIF) and isoniazid (INH) mono-resistant cohorts. METHODS: A total of 87 isolates that were INH mono-resistant, 391 isolates RIF mono-resistant and 370 MDR-TB isolates according to the MTBDRplus line probe assay were identified from a culture bank housed at Stellenbosch University, South Africa. The pncA gene was sequenced for all isolates including up- and downstream regions. Isolates were phenotypically tested using the BACTEC MGIT 960 PZA drug susceptibility test (DST) at a concentration of 100µg/ml. INH or RIF mono-resistant were subjected to culture based phenotypic DST (BACTEC 960 SIRE kit) to confirm INH or RIF mono-resistance, respectively. RESULTS: 79 (95%CI: 90.8%, 99.1%) of the 87 INH mono-resistant isolates were found to be wild type for pncA; 318 (95%CI: 81.5%, 93.2%) of the 391 RIF mono-resistant isolates were found to be wild type for pncA; and 184 (95%CI: 49.7%, 96.4%) of the 370 MDR-TB isolates were found to be wild type for pncA. All isolates with a wild type pncA genotype were confirmed as PZA sensitive using the PZA DST. A total of 62 different mutations were identified in the pncA gene. CONCLUSION: A clear increase in PZA resistance is observed from INH mono-resistance (9.2%) to RIF mono-resistance (18.5%) and finally to MDR-TB (50.3%). This question's the utility of PZA in the WHO recommended standardised MDR-TB treatment regimen. The development of simplified routine diagnostic methods for PZA susceptibility will be essential if new treatment regimens continue to rely on the inclusion of PZA.

ABSTRACT NUMBER / ABSTRAKNOMMER: 73

DESIGN, SYNTHESIS AND IN VITRO ANTITUBERCULOSIS ACTIVITY OF 2(5H)-

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A series of 2(5H)-furanone-based compounds were synthesized from commercially available mucohalic acids. From a library of 24 first generation compounds, three showed inhibitory activity (10 µg/ml) of at least 35% against M. smegmatis mc2 155 growth (Bioscreen C system). In screening the active first generation compounds for growth inhibition against M. tuberculosis H37Rv, 14 was identified as the most active, with a minimum inhibitory concentration (MIC99) of 8.07 µg/ml (BACTEC 460 system). No cross-resistance was observed with some current first-line anti-TB drugs, since it similarly inhibited the growth of multi-drug resistant (MDR) clinical isolates. 14 showed a good selectivity for mycobacteria since it did not inhibit the growth of selected Gram-positive and Gram-negative bacteria. 14 showed synergistic activity with rifampicin (RIF) and additive activity with isoniazid (INH) and ethambutol (EMB). Time-kill studies showed that 14 is bacteriostatic to mycobacteria, but cytotoxic to the Chinese Hamster Ovarian (CHO) cell line. A second generation library of 34 derivatives with improved anti-TB activity and decreased CHO cell cytotoxicity was synthesized. After screening the second generation library against M. tuberculosis H37Rv, two active compounds were identified with 22 and 26 exhibiting MIC values of 2.62 µg/ml and 3.07 µg/ml respectively. When compared to 14 (IC50 = 1.82 µg/ml), cytotoxicity of the second generation compounds against CHO cells was decreased for both 22 (IC50 = 38.24 µg/ml) and 26 (IC50 = 45.58 µg/ml). Two lead compounds were identified from this study, with selectivity indices (SI) of 14.64 and 14.85 for compounds 22 and 26 respectively.

ABSTRACT NUMBER / ABSTRAKNOMMER: 74

GENERATION AND PHENOTYPIC CHARACTERISATION OF RV1460 MUTANTS OF MYCOBACTERIUM TUBERCULOSIS.

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Iron-sulphur clusters (Fe-S) are protein cofactors involved in multiple cellular processes. Since clusters are sensitive to oxidation they are synthesised by Fe-S cluster biogenesis systems. In Mycobacterium tuberculosis (Mtb), the Rv1460-Rv1461-Rv1462-Rv1463-csd-Rv1465-Rv1466 operon (suf operon) is thought to encode the major Fe-S cluster biogenesis system. All these genes, except Rv1460, are predicted to be essential for in vitro growth of Mtb. Rv1460 encodes a probable transcriptional regulator, although its role in regulation of the suf operon and in bacterial physiology is unclear.The aim of this study is to determine the effect of deleting Rv1460 on suf operon expression and bacterial physiology.Three allelic exchange substrates for introducing mutations/deletions into Rv1460 in Mtb H37Rv by homologous recombination were generated. These substrates would either delete Rv1460 entirely (ΔRv1460), delete the DNA binding domain of Rv1460 (Rv1460ΔDNAbd) or introduce premature stop codon within Rv1460 (Rv1460stop). A complementation vector was generated by cloning Rv1460 along with its native promoter into a vector that integrates into the

mycobacterial chromosome at the attB site. Allelic exchange mutagenesis was performed by two-step selection in the presence and absence of the complementation vector.The ΔRv1460 and Rv1460ΔDNAbd mutants could only be generated when a copy of Rv1460 was present elsewhere in the chromosome. This suggests that Rv1460 is essential under the conditions investigated and contradicts previous predictions that Rv1460 is non-essential in vitro. Unexpectedly, we were able to generate the Rv1460stop mutant. Evaluation of the growth of the Rv1460stop mutant revealed a growth defect under standard culture conditions. This phenotype was restored to wild-type levels by genetic complementation. The Rv1460stop mutant provides us with a valuable tool to study the role of Rv1460 in the regulation of the suf operon and mycobacterial physiology as a whole.

ABSTRACT NUMBER / ABSTRAKNOMMER: 75

STRATEGY FOR REACHING THE MALE POPULATION FOR HOME-BASED HIV TESTING.

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INTRODUCTION: The HPTN 071 (PopART) is a community-randomised trial of the impact of a combination prevention package on population-level HIV incidence. The prevention package comprises annual rounds of Home-based HIV testing by Community HIV Care Providers (CHiPs) who refer clients for HIV care. In response to a low proportion of males being reached, evening and weekend work schedules were implemented. In South Africa, black African men aged 25 - 49 years are identified as a key population due to having a higher HIV prevalence above the national average.
METHOD OF COLLECTING DATA: CHiPs collect data on a hand-held electronic data capture (EDC) device. There are two weekly schedules: Monday - Friday and Tuesday - Saturday. For weekdays, there are three work hour rotations: 9am - 5pm, 10am - 6pm, and 11am - 7pm. The average number of HIV tests per day for men was analysed from 1 September - 13 December 2014.
RESULTS:

- 10,563 HIV tests were included in the analysis with an average of 207 HIV tests per day.
- 28% (204 to 262) more HIV tests on average were completed on a Saturday as compared to a weekday; 37% (127 to 174) among the 25 - 49 year olds.
- 38% (184 to 255) more HIV tests on average were completed for the 11am - 7pm shift as compared to the 9am - 5pm shift during weekdays; 39% (115 to 160) among the 25 - 49 year olds. On average, 164 HIV tests were completed per 10am - 6pm shift.

CONCLUSION:

- Working evening and weekend schedules substantially increased the average number of HIV tests per day in men
- Early hour work shifts for Home-based HIV testing, occupational testing, and community caravan testing at high traffic areas are now being considered to reach men

ABSTRACT NUMBER / ABSTRAKNOMMER: 76

EFAVIRENZ POPULATION PHARMACOKINETICS AMONG HIV-INFECTED SOUTH AFRICANS.

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Population pharmacokinetic modeling and simulation is helping in finding the optimal dose efavirenz among patients. However, there is limited efavirenz pharmacokinetic models in the literature with combined clinical data from children and adults. The aim of this study was to describes the population pharmacokinetics of efavirenz in children and adults including pregnant women, and to investigate factors which may affect the pharmacokinetics of efavirenz. Methods: Patients included comprised of HIV-positive adults (N=271), children (N=48) and pregnant women (N=63) in South Africa. The patients were sampled at steady state, one blood sample obtained from each participant. Efavirenz serum concentration were determined using a validated high performance liquid chromatography method. NONMEM 7.3 was used for the population pharmacokinetic modelling of efavirenz. Prior pharmacokinetic information of efavirenz, guided model building. FOCE-I and full Markov Chain Monte Carlo Bayesian (MCMCB) algorithms were utilized. Total body weight was included through allometric scaling on clearance and volume parameters. A mixture model with 3 subpopulations was used to group the drug-metabolism phenotypes of these patients. Results: The population pharmacokinetics of efavirenz was best described by a one compartment model with first-order absorption and elimination. Interindividual variability was incorporated in the oral clearance and volume of distribution. The parameter estimates of FOCE-I were almost identical to MCMCB; FOCE-I was preferred due to shorter computational time. The clearances scaled for 70 kg patient were 6.3, 10.1 and 16.0 L/hr for the slow, intermediate and fast metabolisers with approximately 50% of the adults grouped as rapid metaboliser and the majority from this group being females. No other covariates were identified.Conclusions: In this study, population pharmacokinetics of efavirenz were adequately described in children and adults, and our results show that adults are at risk of low levels of efavirenz with females being at a higher risk.

Theme 3 / Tema 3

Violence, Injuries, Trauma and Rehabilitation / Geweld, Beserings, Trauma en Rehabilitasie

Oral Presentations/ Referate

ABSTRACT NUMBER / ABSTRAKNOMMER: 77

DIAGNOSING TRAUMA AND PATHOLOGY IN DRY BONE WITH THE AID OF RADIOLOGY

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Biological Anthropologists depend on external markings on skeletal material to determine the physical and disease history of the individual. Use of radiology in dry bone osteometric assessments is an emerging technology, although the use of full body x-rays of dry bone to aid in diagnosis of pathology and trauma lesions has not been established. While engineered for use in the South African diamond mine industry, in emergency medicine, the rapid, whole body, low-dosage LODOX Statscan proved to be of value. Forensic pathology uses the LODOX for fast, full body screening for metal and trauma examination. LODOX Statscan images are used in the current study to analyse and interpret the health status of a skeletal collection representing a Western Cape population from the 20th century. Skeletal material from the Kirsten Collection was placed in anatomical order and was examined for antemortem pathology and trauma. Each individual in the collection was then imaged with the Lodox® Statscan® digital low dose X-ray scanning system. The number of disease possibilities was limited once the process or pattern had been described by location, gross, histological and radiographic appearance. Diseases that could be observed macroscopically and were confirmed radiologically include Paget's disease, Harris lines, primary benign neoplasms (geodes, lymphoma, endochondroma, enostoses/bony islands, button osteoma), primary malignant neoplasms (chondrosarcoma), secondary skeletal metastases (bronchus carcinoma, carcinoma of the lung, cervical cancer, breast cancer), Schmorl's nodes, and rheumatoid arthritis. This novel interdisciplinary project illustrates the beneficial contribution for both the anthropologist and the radiologists in using full body x-rays to aid in diagnosis of trauma and pathology as observed on dry bone.

ABSTRACT NUMBER / ABSTRAKNOMMER: 78

CAN FRAGMENT-SPECIFIC FIXATION BE USED TO TREAT INTRA-ARTICULAR DISTAL RADIUS FRACTURES WHEN USING FLUOROSCOPY?

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INTRODUCTION:It has previously been suggested that arthroscopy could be beneficial when treating intra-articular radius fractures. However, the effectiveness of this treatment approach has not yet been reported when using fragment specific fixation.Therefore the aim of this study was to determine whether intra-articular radius fractures can be effectively treated with a fragment-specific fixation, making use of fluoroscopy and confirming the reduction with arthroscopy. METHODS:All patient that were included in this study received a CT scan to delineate the fracture fragments better. The fragments were intra-operatively treated with a fragment specific fixation, with the aim of reducing the fracture anatomically. Reductions were performed with the aid of fluoroscopy; the reduction was evaluated using an intra-operative arthroscopy. RESULTS:Forty- four patients who had sustained an intra-articular radius fracture were recruited for the study (23 male and 21 female, mean age of 43 ± 14 years). Causes of the fracture ranged from low energy falls to road accidents and most fractures (80%) could be classified as complete articular fractures (C1-C3) using the AO Muller classification system. Intra-operative arthroscopy showed that gap distances were fully reduced in 84% of the patients, while in 14% and 2% of the patients the a gap distance was 1-2 mm and >2 mm, respectively. Step distances were fully reduced in 74% of the patients while in 7% and 19% of the

patients, step distances were 0-1 mm and 1-2 mm, respectively. CONCLUSION: Although one patient (2%) had a gap distance of >2 mm, which is unacceptable, all other patients showed either no or minimal gap and step differences intra-operatively. These findings suggest that in most cases, intra-articular distal radius fractures can be treated with fragment specific fixation with the aid of fluoroscopy.

ABSTRACT NUMBER / ABSTRAKNOMMER: 79

DOES THE PROTOTYPE 'EXPERIMENTAL ' CHAIR FACILITATE MORE POSTURAL CHANGES IN COMPUTING ADOLESCENTS COMPARED TO A NORMAL SCHOOL CHAIR?

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BACKGROUND Prolonged sitting, such as when computing, has been linked to adolescent spinal pain. A chair should fit the user's body dimensions and aid the user in frequently changing sitting posture, rather than support one 'ideal' posture, such a chair is not currently available to high school learners **OBJECTIVES** To develop a novel low cost experimental dynamic chair, for use in computer class rooms. Secondly to determine whether the experimental chair encouraged more frequent spinal postural changes whilst students sat in class, compared with the current standard school chair METHODS A development and validation study was conducted. Twelve high school students were randomly selected from a conveniently selected school. Fifteen minutes of 3D posture measurements were collected in both the prototype and school computer chair. The analysis focused on the frequency of postural movement. **RESULTS** Data of eleven learners were analyzed. Pelvic rotation illustrated a substantially higher ratio (10.0) of postural changes, as well as a higher thorax rotation ratio (2.0) in the prototype chair, compared to the school chair. **CONCLUSION** We report encouraging findings from our small sample validation study of an experimental chair based on adolescent anthropometrics. This information is a small, first and necessary step in testing the effect of increased postural movement on the prevalence and intensity of musculoskeletal symptoms of high school learners in the Cape Metropole area, Western Cape, South Africa.

ABSTRACT NUMBER / ABSTRAKNOMMER: 80

AN INVESTIGATION INTO THE TRUNK KINEMATICS OF PEOPLE WITH STROKE DURING GAIT

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INTRODUCTION Approximately two out of three people with stroke experience gait restrictions. The trunk plays an important role in the symmetry, balance and stability during gait. Earlier kinematic research placed emphasis on the pelvis and its role in gait and not the trunk (a.k.a. thorax) segments. **OBJECTIVE** The aim of this pilot study was to describe the three dimensional kinematics of the thorax during gait in people with stroke. **METHODS** Seventeen subjects were recruited by means of convenience sampling for this cross-sectional study. They were males and females 18 years and older with a single cardiovascular incident; had the ability to follow simple instructions; were able to walk 10 metres without assistive devices. The eight-camera T-10 Vicon (Ltd) (Oxford, UK) system with Plug-in-Gait (PIG) model (Vicon Motion System Limited, Oxford, UK) captured kinematics during walking. Thorax kinematics and temporospatial parameters were performed in MATLAB (The

Mathworks, Natrick, MA) using custom-built scripts. The differences between the two sides (affected and unaffected) were calculated using the Sign test (statistical significance level $p<0.05$) (Stata software). **RESULTS** The sample was fairly young, recruited from one setting and were all able to walk without the use of assistive devices. The thorax remained relatively still during the full gait cycle, however kinematic asymmetry between the affected and less-affected sides were noted. In terms of tempero-spatial parameters, the participants reached functional gait speeds and exhibited symmetry in step/stride length and step/stride time between the two sides. **CONCLUSION:** This pilot study found asymmetry in thorax motion between the affected and less-affected sides of people with stroke. We recommend that a study on a larger sample be performed to identify if the noted trends will be replicated. Key WordsGait, stroke, three dimensional, kinematics, thorax, trunk.

ABSTRACT NUMBER / ABSTRAKNOMMER: 81

CLINICAL PRACTICE GUIDELINES FOR THE MANAGEMENT OF CHRONIC MUSCULOSKELETAL PAIN IN PRIMARY HEALTH CARE: A SYSTEMATIC REVIEW

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BACKGROUND: Current, high quality, evidence-based clinical practice guidelines (CPG's) that are applicable for primary health care are vital to optimise care for the large and growing population with chronic musculoskeletal (CMSK) pain. **AIM OF THE STUDY:** To systematically identify and appraise the available evidence-based CPG's for the management of adults with CMSK pain in primary health care settings. **METHODS**: A systematic review was conducted. Twelve guideline clearinghouses and six electronic databases were searched for eligible CPGs published between years 2000 to October 2014. The CPGs meeting the inclusion criteria were appraised by four reviewers using the Appraisal of Guidelines Research and Evaluation (AGREE) II. **RESULTS:** Of the 1081 records identified, 32 were eligible, and 12 CPG were included based on the application of inclusion and exclusion criteria. One included guideline originated from South Africa. Six included CPGs (50%), focussed exclusively on opioid prescription, and two (17%) focussed on musculoskeletal pain. The methodological rigour of CPG development was highly variable and the median was 66%. The median score for stakeholder involvement was 64%. The lowest median score was obtained for applicability (48%). Content analysis revealed that CPGs advocated wide variety of strategies for CMSK namely, assessment/evaluation (92%); opioid prescription (92%); care management (75%); physical therapies (58%) pharmacological (non-opioid) management (50%); behavioural therapies (50%) and complementary, dietary and occupational therapies (each 17%). **CONCLUSION**: The findings indicate that the focus of the included CPGs is on opioid prescription. Non-pharmacological management options of CMSK pain in primary health care is advocated, but are seldom included in the CPGs. The need for interdisciplinary care is highlighted. This study highlights specific areas for improvement for the development and reporting of CPGs, which may play a role in the uptake of guidelines into clinical practice.

Acknowledgement: This work is based on the research supported in part by the National Research Foundation of South Africa for the grant 85086; and the Stellenbosch University Rural Medical Education Partnership Initiative. Any opinion, finding and conclusion or recommendation expressed in this material are that of the author and the National Research Foundation does not accept any liability in this regard.

ABSTRACT NUMBER / ABSTRAKNOMMER: 82

AN UPDATE ON THE PREVALENCE OF LOW BACK PAIN IN AFRICA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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BACKGROUND: Low back pain (LBP) is one of the most prevalent musculoskeletal condition found among both developed and developing nations. The burden of LBP was however postulated to be greater in developing countries and in 2007, a systematic review found that the prevalence of LBP in Africa was rising. The following paper reports on an updated search of the current literature into the prevalence of LBP among African nations and also highlights the specific challenges faced in retrieving epidemiological information from Africa. **OBJECTIVE:** To conduct an updated search of the literature into the prevalence of LBP in Africa. **METHODS:** An updated search of all accessible bibliographic databases via the Stellenbosch University's Medical and Health Sciences Library website was conducted between April 2014 and October 2014, and again in March 2015. All English and French population-based studies into the prevalence of LBP among children, adolescents and adults living in Africa, published during and after January 2006 were included. A meta-analysis of the data was conducted using Microsoft (MS) Excel, and forest plots to illustrate summary estimates were generated. Meta-regression was also conducted to assess the causes of variability among the included studies. **RESULTS:** total of 55 studies were included in this review update (30 new studies). The majority of the studies were conducted in Nigeria (n=22;40%) and South Africa (n=15;27.3%). Fifteen (25%) of the 61 African countries are represented in this review. The combined sample size was 49 015. The combined age range for the included studies was 10 to 94 years. The lifetime, one-year and point prevalence of LBP in Africa was 44.9% (95% CI 32.9;56.9); 54.9% (95% CI 48.8;61.2) and 31.5% (95% CI 19.8,43.2), respectively. **CONCLUSION:** number of epidemiologic studies into the prevalence of LBP in Africa have emerged since our original review in 2007. This review found that the lifetime, one-year and point prevalence of LBP among African nations, was on par or higher than the global LBP prevalence reported. Prevention rather than management strategies would most likely be the answer to addressing the burden of LBP in Africa. Caution must be taken when interpreting the summary estimated provided in this current review, since high heterogeneity was displayed among included studies. Furthermore, due to the poor methodological quality found among many of the included studies, and the difficulty in sourcing and retrieving potential African studies, it is recommended that future African LBP researchers conduct methodologically robust studies and report their findings in accessible resources.

Posters/ Plakkate

ABSTRACT NUMBER / ABSTRAKNOMMER 83

Renal artery embolisation: indications and utilisation in the Department of Urology at Tygerberg Hospital

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Dr. Kenny Du Toit (Tygerberg Hospital - Urology)
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INTRODUCTION AND AIM: Recent literature on endovascular management of severe renal hemorrhage suggests that 50% of cases are due to iatrogenic renal injury. The aim of this study was to analyse the indications and outcome of renal artery embolisation at Tygerberg Hospital. **METHODS:** The clinical data of 72 Urology patients who underwent, or were considered for, renal artery embolisation August 1999 to September 2013 were reviewed. **RESULTS:** Embolisation was performed in 61 patients. The indication was traumatic renal injury in 45 (73.8%), mean age 27.6

years. Mechanism: stabbing 84.4%, blunt trauma 8.9%, gunshot 4.4%. Angiography: pseudo-aneurysm 51.1%, arteriovenous fistula 31.1%, segmental artery injury 8.9%. Embolisation success rate: 86.1% after one, 94.6% after two attempts. In 16 patients (mean age 51.8 years) the indication was malignancy (21.3%), angiomyolipoma (3.3%), post-PCNL haematuria (1.6%). Embolisation was repeated in 18.8%, eventual success rate 93.8%. Embolisation was considered but not performed in 11 patients with malignancy, mean age 62.3 years.**CONCLUSIONS:** The most common indication for renal artery embolisation was stab injury, whereas iatrogenic renal injury was an extremely rare indication. Segmental renal artery embolisation was very effective in managing severe hematuria due to renal trauma or malignancy.

ABSTRACT NUMBER / ABSTRAKNOMMER 84

THE INFLUENCE OF MEDIA REPORTS ON CALLS RECEIVED AT THE TYGERBERG POISON INFORMATION CENTRE REGARDING SPIDER BITES

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INTRODUCTION: Various factors beyond medicine and arachnology play a role in the medical effects of spiders on humans; journalism is only one of them. **OBJECTIVE:** This study aimed to determine the influence of media reports on calls received at the Tygerberg Poison Information Centre regarding spider bites. **METHODS:** A retrospective analysis of the database was conducted from January 2010 – December 2013. Media reports were obtained from a web search and the archives of all major South African newspapers and the media group 'Media24'. Calls pertaining to spider bites were compared 30 days prior to and 30 days after publication of articles covering spider bites**. RESULTS AND DISCUSSION:** The centre received 25 510 calls during the study period of which 2.6% related to spider bites. Most of these calls (72.5%) were received from the general public. Spiders were witnessed in a third of suspected spider bite cases of which only 10% were identified. Most patients presented with local swelling (25.7%), pain (18.3%) and redness (17.1%). Antivenom was advised in 5.1% of cases. An increase in calls after publications in nationally distributed newspapers/magazines was seen. Spider bite articles in individual provincial publications did not result in a statistically significant change in call-volume. History pertaining spider bite is often unreliable. A spider in the vicinity does not equal a spider bite. Necrotic arachnidism is over-diagnosed and is often a convenient diagnosis for unexplained local tissue or dermal problems. Most articles were sensationalised and not verified, leading to misinformation greatly fuelling the mythology surrounding spider bites. **CONCLUSIONS:** Nationwide media reports on spider bites raised the number of calls to the centre. Poison centres should be prepared for such a possible influx in calls. The diagnosis of spider bites should only be made with substantial evidence to help debunk the myth surrounding spider bites.

ABSTRACT NUMBER / ABSTRAKNOMMER 85

PREVALENCE OF SPINAL PATHOLOGY IN EMBALMED CADAVERS USED FOR MEDICAL DISSECTION AT STELLENBOSCH UNIVERSITY, SOUTH AFRICA.

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A wide variety of pathology affects the different regions of the spine which can be managed with surgical interventions. The aim of this study was to give a descriptive overview of the prevalence of spinal pathology in an embalmed cadaver cohort used for medical dissections at Stellenbosch University. Embalmed cadavers (n=124) from the Division of Anatomy and Histology were dissected by medical students. Soft tissue was subsequently removed to investigate skeletal pathology. Spinal pathology was observed in 74/124 (59.7%) cadavers. Vertebral osteophytes were the most common pathology with 70/124 (56.5%) cadavers affected. Of the 70 cadavers, cervical, thoracic and lumbar osteophytes were seen in 49/70 (70.0%), 44/70 (62.9%) and 65/70 (92.9%), respectively. In terms of diffuse idiopathic skeletal hyperostosis (DISH), 12/124 (9.7%) cadavers were affected with thoracic involvement being the most common region involved. This condition is characterized by ossification of the thoracic anterior longitudinal ligaments. Spinal tuberculosis or Pott's disease and surgical fusion of C5 and C6 were both observed in one cadaver (0.8%) each. Both spina bifida occulta (SBO) and spondylolysis were observed in two cadavers (1.6%) each, while one cadaver (0.8%) presented with a healed sacral fracture. This preliminary descriptive study suggests that spinal pathology is a common finding in a population as represented by medical cadavers which originated mainly from communities with a low socio-economic status. This skeletal material can therefore be used for interdepartmental collaborations in order to gain a better understanding of spinal pathology and consequently improve surgical and therapeutic interventions.

ABSTRACT NUMBER / ABSTRAKNOMMER: 86

THE ASSOCIATION BETWEEN ALCOHOLIC LIVER DISEASE (ALD) AND HEALED CRANIO-MAXILLOFACIAL FRACTURES SUGGESTIVE OF INTERPERSONAL VIOLENCE (IPV) IN A SOUTH AFRICAN CADAVER POPULATION.

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Alcoholic liver disease (ALD) and interpersonal violence (IPV) are both major problems in South Africa, particularly in the Western Cape Province. Chronic alcohol abuse results in varying stages of ALD, depending on the timespan and amount of alcohol consumed. Cranio-maxillofacial fractures, particularly fractures to the zygoma and maxilla, are indicative of IPV. The aim was to find a statistical association between the prevalence of ALD and cranio-maxillofacial fractures in a Western Cape cadaver population. Embalmed cadavers (n=124) were dissected by medical students at the Division of Anatomy and Histology, Stellenbosch University. During dissection, the liver of each cadaver was investigated for macroscopic pathology lesions. Samples for histology were routinely processed, sectioned at 5 µm and stained with hematoxylin and eosin. Soft tissue was removed from the skulls and investigated for healed cranio-maxillofacial trauma. In this study, 37/124 (29.6%) cadavers showed signs of healed fractures with the left nasal 16/124 (12.9%), right nasal 12/124 (9.7%) and left zygomatic 11/124 (8.9%) the most commonly affected bones. More males were affected than females and left-sided facial fractures were statistically more prominent than on the right. Morphologic features of ALD were observed in 24/124 (19.4%) cadavers with hepatic steatosis (fatty change) in 13/124 (10.5%) and cirrhosis in 10/124 (8.1%) cadavers. Only12/124 (9.6%) cadavers showed both ALD and healed cranio-maxillofacial trauma concurrently. Although literature indicates a statistically significant relationship between alcohol abuse and cranio-maxillofacial fractures, the present study could not confirm this correlation in our cadaver population.

Theme 4 / Tema 4

Non Communicable Diseases / Nie-oordraagbare Siektes

ORAL PRESENTATIONS / REFERATE

ABSTRACT NUMBER / ABSTRAKNOMMER: 87

"BLACKOUTS" & SUDDEN DEATH IN THE APPARENTLY WELL AND YOUNG – THE CASE OF LONG QT SYNDROME: MISSED OPPORTUNITIES FOR A DIAGNOSIS AND TREATMENT.

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The long QT syndrome (LQTS) is pro-arrhythmic cardiac disorder associated with blackouts (Transient Loss of Consciousness; TLOC). It is necessary to recognize that these events are syncope and not epilepsy or another type of attack. Sometimes the syncope-causing ventricular tachycardia may degenerate into ventricular fibrillation and death. LQTS is autosomal dominantly inherited and causal-mutations (1000+) identified in 13 genes. Through cascade screening of relatives of 26 LQTS index cases we identified 203 living persons with the same potassium channel mutation, namely KCNQ1 A341V. Histories have been collected on all of them. We also collected information on deaths of close relatives. Many symptomatic with a history of blackouts were not diagnosed with LQTS. We set out to quantitate these missed diagnoses. Of the mutation carriers 160 (79%) experienced blackouts. Only 26% was diagnosed as LQTS and appropriately treated. Epilepsy was the diagnosis in 40%. Another 34% had either laymen's explanations or medical, "vasovagal", "sick sinus syndrome", etc. A number of "near drowning" events was documented. Historic deaths before age 20 were 23. Half of these were drownings, all in able swimmers. Other examples are of a girl age 13, dying on a skating rink while under treatment for epilepsy and a boy, age 5, who "choked on water". Our experience shows gross disparities in diagnosis and consequent management in a treatable risk of sudden death. Missed opportunities for diagnoses ranged from prior to medical encounters to at and after the first presentation. The most common misdiagnosis was epilepsy in the living and drowning in the dead. Missed and misdiagnosis maybe prevented in how both lay persons and medical professionals perceive TLOC and, also, near drowning and drowning events. As said by a teacher of mine: "You only recognize what you know".

ABSTRACT NUMBER / ABSTRAKNOMMER: 88

BRIDGING THE GAP BETWEEN CLINICAL RESEARCH EVIDENCE AND PRACTICE: IMPLEMENTING THE SOUTH AFRICAN NATIONAL EVIDENCE-BASED ASTHMA GUIDELINE IN PRIVATE AND PUBLIC PRACTICE IN THE CAPE METROPOLE.

MICHAEL KARL PATHER, BOB MASH

BackgroundThe burden of asthma is increasing internationally. Evidence-based management of asthma remains an important public health aim as patients receive suboptimal care, control fall short of published guidelines and remain poor in SA.Aim:• To improve implementation of the SA national asthma guidelines in PHC.Objectives• To explore experiences, perceptions and understanding of family physicians (FPs) (academic, private and public sectors) regarding evidence-based practice (EBP) and guideline implementation (GI) in PHC.• To gain insight into quality of asthma care in Metro District Health System (MDHS).• To explore ways of improving implementation of national asthma guidelines in the MDHS.Methods:Triangulation of 4 phases:• Cross-sectional survey: EBP and GI. (n=354).• Qualitative Research: EBP and GI. (n=27).• QI cycles of asthma care in MDHS (n=494). • PAR using a CIG in PHC (n=15).ResultsKey findings of research include a conceptual framework of GI which shows that:evidence creation should be of high quality and relevant to the particular context of care; guideline development should be all inclusive and involve a wider spectrum of stakeholders including patients; universities and academics

should scrutinise evidence, giving input on guideline development and providing on-going education on aspects of guidelines to practitioners as part of their social responsibility; guideline dissemination should be carefully planned; guidelines should be locally contextualised, adapted and owned; PHC staff and managers are at different levels regarding readiness to change; HCO should prevent delays in guideline implementation and have awareness of barriers and enablers encountered throughout the entire process of implementation; ongoing monitoring and evaluation using QI cycles with feedback to PHC practitioners be ensured.ConclusionThis research contributed to the development of a conceptual framework of knowledge translation, specifically with regard to the improvement of GI in PHC in the MDHS.

ABSTRACT NUMBER / ABSTRAKNOMMER: 89

THE EFFECTS OF TUMOUR NECROSIS FACTOR-ALPHA ON THE VIABILITY AND DIFFERENTIATION POTENTIAL OF ADIPOSE-DERIVED STEM CELLS (ADSCs).

HANEL SADIE-VAN GIJSEN, WILLIAM F FERRIS

Background: The serum levels of the inflammatory cytokine tumour necrosis factor-alpha (TNF-α) are often elevated in visceral obesity. The stem/progenitor cells residing within adipose tissue (adipose-derived stromal cells: ADSCs) are a major source of circulating TNF-α, and this cytokine can potentially have intra-, auto/para- and endocrine effects on ADSCs and mature adipocytes within adipose tissue. The effects of exogenous TNF-α on the osteoblastic differentiation of MSCs are not clear, although both positive and negative effects have been reported in various progenitor cell types. For this study, we investigated the effects of endogenous and exogenous TNF-α on the viability and osteoblastic differentiation potential of rat ADSCs harvested from subcutaneous and visceral adipose tissue depots.Methods: Subcutaneous and perirenal visceral adipose tissue biopsies were harvested from adult male Wistar rats, and ADSCs (scADSCs and pvADSCs, respectively) were isolated by means of collagenase digestion. Cells were treated with increasing concentrations (0.1 – 10 ng/ml) of TNF-α before and/or during treatment with osteoblast differentiation media (OM: standard cell growth media supplemented with ascorbic acid, dexamethasone and beta-glycerophosphate). Osteoblastic differentiation after 3 weeks of OM treatment was measured by quantifying calcified extracellular matrix deposition by staining with Alizarin Red S, and subsequent image analysis. Results: Naïve (undifferentiated) pvADSCs were more sensitive to the cytotoxic effects of TNF-α than scADSCs, with 10 ng/ml TNF-α causing extensive cell death of pvADSCs, but not of scADSCs, within 96 hours. However, OM-treated ADSCs were resistant to TNF-α-induced cytotoxicity. Both exogenously added and endogenously expressed TNF-α inhibited osteoblastic differentiation of ADSCs. Conclusions: TNF-α inhibited both the viability and the osteoblastic differentiation of ADSCs. In addition, depot-specific and differentiation stage-specific effects were observed, suggesting differences in TNF-α receptor expression and signalling, which warrants further investigation.

ABSTRACT NUMBER / ABSTRAKNOMMER: 90

LUPUS MYOCARDITIS IN THE WESTERN CAPE, SOUTH AFRICA: ANALYSIS OF CLINICAL AND ECHOCARDIOGRAPHIC FEATURES

R DU TOIT, PG HERBST, A VAN RENSBURG, L DU PLESSIS, HR REUTER, AF DOUBELL

Background: Lupus myocarditis (LM) is a serious manifestation of systemic lupus erythematosus (SLE). In the Western Cape's mixed racial population, no data exists on the clinical and

echocardiographic features of LM. Methods: Clinical records (over 6 years) of adult SLE patients at Tygerberg Hospital were retrospectively screened for a clinical and echocardiographic diagnosis of LM. Clinical features, laboratory results, management and outcome were described. All echocardiographic images were reanalyzed and included a speckle tracking (ST) analysis assessing longitudinal strain. Results: 28 patients (6.1%) met inclusion criteria: 92.9% were female, 89% of mixed racial origin. 54% of patients presented with LM within 3 months after being diagnosed with SLE. Median SLE disease activity index was high (17.5) and 67.9% of patients had concomitant lupus nephritis. Laboratory results: low complement (92.3%); urinary protein >0.5g/day (83%); increased aRNP (62%). Echocardiographic results: median LV ejection fraction (LVEF) was 35% (IQR:26-46%); regional wall motion abnormalities (RWMAs) were present in 24/24 patients and impaired longitudinal strain in 13/13 patients. Treatment included corticosteroids (96%) and cyclophosphamide (75%); 67% of patients improved clinically. Echocardiographic follow-up (n=19) was available after 390 days (median). LVEF improved from 35 to 47% (p=0.023) without significant improvement in diastolic dysfunction and longitudinal strain. Overall mortality was high (12/28): 5/28 (17.9%) died due to LM v 2/24 (8.3%) in another case series. Mortality due to LM and/or treatment related complications were 35.7% (10/28). Conclusion: This is the largest reported case series on LM. The mixed racial population had a similar prevalence, but higher mortality compared to other ethnic groups (published literature). LM occurred early in the course of SLE and was frequently associated with lupus nephritis. ST (not previously described in acute LM) showed persistent LV dysfunction despite an improved LVEF, and could be utilized as a sensitive diagnostic tool in LM.

ABSTRACT NUMBER / ABSTRAKNOMMER: 91

TREATMENT OUTCOMES IN CML PATIENTS TREATED WITH TYROSINE KINASE INHIBITORS AT A TERTIARY TEACHING HOSPITAL IN SOUTH AFRICA

GERHARD SISSOLAK, JACQUES BADENHORST, JANAMI STEENKAMP, PASCALE WILLEM

To analyse response to tyrosine kinase inhibitors (TKIs) for chronic myeloid leukaemia (CML) in a resource-limited country.Records of 58 newly diagnosed CML patients in chronic phase (CML-CP) treated with TKIs at a tertiary teaching hospital in Cape Town, South Africa between 2003 and 2012 were reviewed and assessed by European LeukemiaNet (ELN) criteria. After median follow up of 60.5 months, Progression Free Survival (PFS) at 60 and 96 months was 79.98% and 68.4%, respectively. Overall survival (OS) at 60 and 96 months was 92.9% and 83.6%, respectively. Progression to blast phase at 60 months was associated with poorer survival (p = 0.0002) but progression to accelerated phase was not (p = 0.1456). Attainment of complete cytogenetic response (CCR) at 12 months (p = 0.28) or major molecular response (MMR) at 18 months (p = 0.268) did not have prognostic significance. Despite delays in achieving the target responses defined by ELN criteria, the use of Imatinib mesylate (IM) as first line treatment can still result in treatment outcomes comparable to developed countries. These data suggest opportunities for improvement and our success might be even greater if we had uninterrupted access to second generation or newer TKIs.

ABSTRACT NUMBER / ABSTRAKNOMMER: 92

THE PATHOLOGY OF THE VERTEBRAL COLUMN ASSOCIATED WITH OSTEOPOROSIS IN A SKELETAL COLLECTION SPECIFIC TO THE WESTERN CAPE

ANNELI MERLE DU PLESSIS

Osteoporosis is a skeletal disorder characterized by the architectural deterioration of bone. It results in decreased bone quality, leading to potential pathology. Osteoporosis is typically diagnosed using Bone Mineral Density (BMD) and is measured using dual energy X-Ray absorptiometry (DEXA) or Computerized Tomography (CT) scans. The aim of this study is to accurately quantify the average bone density (BD) of skeletal remains (n=150) using lumbar vertebra (LV), to diagnose osteoporosis. This will establish a baseline for confirming bone quality for subsequent investigation of vertebral pathology associated with osteoporosis. Relative BD of skeletal remains has been calculated by measuring the magnitude of mass and volume of LV, in a time and cost efficient manner. Results show consistency in this new diagnostic method. Proportional fluctuation in mass and volume between LV, from L1 to L5 was shown in the skeletal material. The intra-skeletal bone densities of all LV, however, remain consistent. The inter-skeletal densities vary among different skeletal remains, depending of the bone quality of the specimen. It can, therefore, be concluded that the average BD of an individual can be accurately quantified using lumbar vertebrae. Relative inter-skeletal BD can subsequently be used to diagnose osteoporosis of skeletal remains. From the preliminary data collected a statistical analysis will be conducted, constructing a bell curve. All specimens with BD more than 2.5 standards deviations below the mean of a population can be considered osteoporotic. This will provide a strong platform for further subsequent studies on osteoporosis to be conducted. Osteoporosis; Bone Density; Lumbar Vertebrae; Pathology; Skeletal Remains

ABSTRACT NUMBER / ABSTRAKNOMMER: 93

BETA-3 ADRENERGIC RECEPTOR MEDIATED CARDIOPROTECTION

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Beta-3 adrenergic receptors (B3-ARs) deliver a more sustained intracellular signal and are resistant desensitization which make this receptor an ideal target for therapeutic intervention. In this study, the cardioprotective properties of the B3-AR were investigated. Using the isolated working rat heart model, the B3-AR agonist (BRL 37344) (1 µM) or antagonist (SR59230A) (0.1 µM), was applied before 35 min regional ischaemia (RI) (Pretreatment, PT) followed by 60 min reperfusion; or during the last 10 min of RI (Pertreatment, PerT); or at reperfusion (Posttreatment, PostT). Functional recovery was assessed and infarct size (IS) was determined using TTC staining. In another group, the left ventricle of each heart were cut and snap-frozen for Western blot analysis of total and phosphorylated ERK p44/p42 MAPK, PKB/Akt, GSK-3beta, and eNOS. The application of BRL 37344 for 10 min before RI, significantly reduced IS when compared to the non-pretreatment (NPT) group (26.15±3.20 vs 38.97±2.30, $p < 0.05$) or the SR59230A group (38.75 ± 2.51, $p<0.05$). However, the application of BRL 37344 at the end of RI and SR59230A at reperfusion significantly increased IS (34.68±4.01), compared to hearts treated only with BRL 37344 (20.93±2021, $p< 0.05$). Phospho-PKB/Akt was significantly increased in the BRL37344 (PerT+PostT) group (14.2±3.70, $p<0.01$ vs NPT and $p<0.05$ vs PT). BRL 37344 (PerT+PostT) showed a similar activation profile with eNOS-S-1177. BRL37344 (PerT+PostT) significantly phosphorylated GSK-3beta (68.85±7.34 vs BRL37344 (PerT)+SR59230A (PosT) 25,56±5.42, $p<0.001$). B3-AR stimulation consistently reduced infarct size, phosphorylated PKB/Akt; ERK p44/p42; GSK-3B and eNOS pathways. Hence, B3-AR activation provides a convergence of protective pathways which enhances cardiomyocyte survival.

ABSTRACT NUMBER / ABSTRAKNOMMER: 94

EVALUATING POINT OF CARE TESTING FOR GLYCATED HAEMOGLOBIN IN PRIMARY CARE FACILITIES OF THE WESTERN CAPE

ROBERT MASH, ABI UGOAGWU, COBUS VOS, RAJIV ERASMUS, MEGAN RENSBURG

Background: Clinical decision making for patients with diabetes in primary care relies on assessment of control by measuring the HbA1c. Currently many patients do not receive an HbA1c test or do not benefit from having the result of the test available at the time they consult.Objective: To investigate the feasibility, cost, reliability, and effect on the quality of care of point of care testing for HbA1c in community health centres in Cape Town.Methods: A quasi-experimental study in health centres draining to Helderberg District Hospital. Two health centres implemented POC testing for a period of 1-year, while two matched health centres continued with care as usual. Data was collected from 150 randomly selected medical records at each site to compare the groups in terms of use of HbA1c, treatment intensification and glycaemic control. At the end of the 12-month period a focus group interview explored the health workers experience of POC testing. Data was also collected on technical quality of testing and incremental costs.Results: The frequency of testing and coverage of patients was unchanged, but the turn-around-time was significantly better allowing patients to receive immediate feedback on their control. There was no effect on treatment intensification or patient education and counselling. Glycaemic control was significantly better in the intervention group, but further follow up is required. Compliance with quality control was poor, but the observed quality of test results was good. The cost of POC testing was cheaper than laboratory testing.Conclusion: POC testing was feasible, reliable and the relative costs were favourable. There was little effect on quality of care apart from better feedback to patients and potentially better glycaemic control. Compliance with technical quality checks was poor. Follow up of the effect on glycaemic control is required.

ABSTRACT NUMBER / ABSTRAKNOMMER: 95

OBESE PATIENTS WITH HYPERTENSIVE HEART DISEASE HAVE FASTER ATRIO-VENTRICULAR CONDUCTION THAN NON-OBESE CONTROLS

WARREN STILWANEY

Introduction: Atrial fibrillation (AF), the commonest cardiac arrhythmia, associates with increased morbidity and mortality. Left atrial remodelling, an important AF-substrate, typically associates with longer PR-intervals. We hypothesised that the increased sympathetic tone seen amongst obese hypertensive patients would shorten the PR-interval and accelerate AV conduction.Methods As part of a prospective epidemiological study to assess AF-risk, we screened >3000 patients who visited a private cardiology practise for echo-cardiographic confirmed hypertensive heart disease (HTHD) over 6 years (2009-2015). Patients with AF, permanent pacemakers, significant valvular heart disease, chronic renal impairment and untreated thyroid disease were excluded. Heart rate and the PR-interval were calculated from standard 12 lead resting ECG's. The HTHD-cohort was dichotomized into obese (BMI≥30kg/m2) and non-obese (BMI<30kg/m2) subgroups. Heart rate and PR interval measurements were performed on Beta-blocker (BB) naïve patients only.ResultsHTHD-prevalence was estimated at 500/3000 (17%) and 246 of 500 (45%) included patients were BB-naïve. When compared to non-obese controls (N=89), obese patients (N=157) had faster resting heart rates (73.06±11.85bpm vs. 70.97±12.86bpm) and higher office blood pressure (123.26/75.7mmHg vs. 118.92/73.11mmHg), suggesting increased sympathetic tone. They also had heavier left ventricles (254.06±69.92grams vs. 240.33±52.25grams) and larger left atria (41.92±4.67mm vs. 39.37±4.58mm, p<0.00001). Obese patients had shorter PR-intervals than non-obese controls (166.19±27ms vs. 172.09±28.9ms).ConclusionObesity associates with larger left atria and shorter PR-intervals. Accelerated AV conduction may predispose to higher ventricular rates during AF-episodes.

ABSTRACT NUMBER / ABSTRAKNOMMER: 96

STEM CELL IMPAIRMENT IN OBESITY ASSOCIATED TYPE 2 DIABETES: DESENSITIZATION OF IL-6/STAT3 SIGNALLING.

MARI VAN DE VYVER, KATHRYN MYBURGH, WILLIAM FERRIS

Chronic wounds continue to be a major cause of morbidity for type 2 diabetic patients and therapeutic approaches to improve wound healing need to address cellular changes induced by the pathological micro-environment associated with this metabolic disorder. The multi-functional properties of progenitor/ mesenchymal stem cells (MSCs) play a key role in wound healing and tissue regeneration. However, the implications of long term overarching inflammation on the capacity of MSC to migrate towards injured areas that is required for healing is less well defined, especially in the context of type 2 diabetes.In-depth micro-array analysis of bone marrow aspirates containing MSCs derived from obese diabetic (ob/ob) and lean healthy (control) mice was performed to improve our understanding of the underlying molecular mechanisms involved in the diminished regenerative capacity of MSCs and impaired wound healing associated with type 2 diabetes mellitus. Molecular signalling pathways of particular interest were the Signal Transducer and Activator of Transcription (STAT3) signalling pathway and its counterpart the Suppressor of cytokine signalling (SOCS3) pathway. PCR Profiler micro-array analysis demonstrated that out of the 84 genes assessed, inflammatory genes were overexpressed MSCs derived from ob/ob compared to those drived from control animals. In vitro assessment of the rate of wound closure furthermore demonstrated impaired healing in ob/ob-derived MSCs. It is hypothesized that the chronic overexpression of specifically Interleukin-6 is responsible for desensitizing the IL-6/STAT3 signalling pathway suggesting that stem cell impairment is at least in part due to IL-6/STAT3 dysregulation during obesity.

ABSTRACT NUMBER / ABSTRAKNOMMER: 97

CHARACTERISATION OF THE PHENOTYPE AND GENOTYPE IN A FAMILY WITH SYMPTOMATIC HYPOKALAEMIA

PIETER DU TOIT VAN DER MERWE, MOGAMAT RAZEEN DAVIDS, MEGAN RENSBURG

Gitelman syndrome (GS) is an autosomal recessive disorder of the renal tubules characterised by hypokalaemia, hypomagnesaemia, metabolic alkalosis, hypocalciuria and usually normotension. The phenotype observed in GS is predominantly caused by mutations in the solute carrier family 12, member 3 gene (SLC12A3), which encodes synthesis of the sodium-chloride cotransporter (NCC), located in the apical membrane of the distal convoluted tubule (DCT) of the kidney. More than 200 distinct loss-of-function mutations have been described in this gene since it was first isolated in 1996. We encountered a South African family with documented longstanding symptomatic hypokalaemia in five individuals who displayed severe salt-craving with ingestion of large quantities of vinegar and salt, as well as significant fatigue and tetanic episodes. In this study we characterised the phenotype of the five affected family members along with two apparently unaffected first-degree relatives. Subsequent genetic analysis by direct sequencing of SLC12A3 in the proband revealed two novel mutations, i.e. an AGC>GGC transition in exon 13 resulting in a S546G substitution and an insertion of AGCCCC at c.1930 in exon 16. Both mutations were also found in the other four affected participants, but only one mutation each in the two unaffected participants, indicating the likely role of compound heterozygosity in the phenotype observed in this family.

ABSTRACT NUMBER / ABSTRAKNOMMER: 98

AUDIT OF STANDARD OF CARE MEASURES AND COMPLICATIONS IN A TERTIARY TYPE I DIABETIC (DM1) CLINIC.

JOCELYN HELLIG, KAREN BARNARD, BRYNN ASCOTT-EVANS

Background: Practice guidelines for the care of diabetics assist clinicians to deliver appropriate care. Regular clinic audits are recommended to review usage of preventive services and assess severity of complications. Aims: (1) Conduct an audit of the quality of care delivered to adult diabetics attending our DM1 clinic. (2) Characterize their burden of illness. Methods: Retrospective chart review of patients attending the DM1 clinic in 2014.Results: 174 patients (54% female), mean age 29.5 years attended the clinic during the 12 month period; totaling 455 patient visits. Of these, 131 (75%) had a lipogram, 74 (43%) a creatinine, and 47 (27%) a TSH performed. One patient was offered HIV testing. 159 (91%) patients received diabetic education. Three patients had dental health assessed. No patients were offered an influenza vaccine. Contraception was addressed at 107 (45%) visits and foot care was assessed at 261 (61%) visits. Home glucose monitoring differed significantly between the genders: 53% of females performed monitoring compared to 36.8% of males (p=0.001). Metabolic control indices revealed 67% of HbA1cs > 9% and only 7.8% of HbA1cs ≤ 7%. 92% of systolic blood pressures were ≤ 140mmHg, and 80% of diastolic blood pressures ≤ 80 mmHg. 86% of triglycerides were ≤1.7 mmol/, and 49% of LDLs were <2.5 mmol/l. 28 patients who were asked about smoking, admitted to this habit. Target organ damage was present as follows: 18 (5%) patients had proliferative retinopathy, 83 (20%) had renal impairment, 69 (28%) had peripheral neuropathy. Five patients had macrovascular disease. Conclusion: Compliance with routine quality indicators e.g. measuring creatinine, as well as addressing associated health issues e.g. dental health and contraception, needs improvement. Furthermore, the majority of patients have poor glycaemic control with less than 10% at A1C target. As a result of this audit, quality improvement interventions have been initiated.

ABSTRACT NUMBER / ABSTRAKNOMMER: 99

LIQUID BASED VS CONVENTIONAL CYTOLOGY FOR EVALUATION OF FINE NEEDLE ASPIRATION BIOPSIES PERFORMED BY PULMONARY PHYSICIANS.

AYANDA MFOKAZI, CA WRIGHT, M LOUW, F VON GROOTE-BIDLINGMAIER, PT SCHUBERT, CFN KOEGELENBERG, AH DIACON

Background: The diagnostic yield of liquid based cytology (LBC) of specimens, obtained by sonar-guided, percutaneous, transthoracic fine needle aspirations (TTNA) is largely unknown.Objective: To compare the diagnostic yield of BD CytoRich™ LBC to conventional smear cytology (CSC) in percutaneous, sonar-guided TTNA biopsies, and to investigate the utility of rapid on site evaluation (ROSE).Study design: Prospective study comprising of 64 TTNA samples from 63 patients with a high suspicion for lung cancer. Three needle aspirates, using a 22G spinal needle, were performed for both LBC and CSC in an alternating fashion using separate needles. After completion of this sequence, ROSE was performed followed by additional needle passes under ROSE guidance if necessary. Results: After three passes, CSC was diagnostic in 49/64 (76.6%) of cases while LBC yielded a diagnosis in 42/64 (65.6%) (p= 0.039). CSC and LBC were both positive in 41/64 (46.1%) cases, CSC being positive in an additional 9 (14.1%) cases, while LBC was positive in 1 additional case (1.6%) where the CSC was inadequate. On additional needle passes with ROSE, 58/64 (90.6%) of the cases could be diagnosed (p<0.001 compared to CSC without ROSE). Conclusion: Where resources for ROSE are available, a diagnostic yield of 90% can be expected in TTNA specimens. However in

resource constricted environments, performance of three needle passes for conventional cytology will give a yield of 77% while performing three needle passes for LBC will give a yield of 66%

ABSTRACT NUMBER / ABSTRAKNOMMER: 100

CHARACTERIZATION OF B-CELL NEOGENESIS IN THE PANCREAS OF STZ-INDUCED DIABETIC RAT FOLLOWING PDL TREATMENT: A PRELIMINARY STUDY

SHARNU HENDRI SNIJMAN, VENANT TCHOKONTE-NANA

The regeneration of β-cells to replace the cells lost in both type 1 and type 2 Diabetes is an attractive approach to therapy. Pancreatic duct ligation (PDL) has been postulated to induce the formation of new β-cells. There is, however controversy about the origin of these newly formed β-cells. Literature showed β-cell regeneration, either by replication of pre-existing β-cells or by neogenesis from endogenous progenitors. A significant problem with previous studies is the persistence of pre-existing β-cells which can confound the assessment of the origin and extent of β-cell neogenesis. To study β-cell neogenesis we have developed a model that combines PDL with quantitative elimination of pre-existing β-cells using Streptozotocin (STZ). In this model, virtually all β-cells that appear in the pancreas must either arise by neogenesis or replication, allowing for a quantitative assessment of the degree of β-cell regeneration. This study is aimed to characterize the origin of newly-formed β-cells in the PDL and STZ model. The expression of transcription factors MafA and MafB will provide an assessment of the origin of β-cells. MafB is expressed in developing β-cells, eventually being replaced by MafA during maturation. However, in the adult pancreas, all β-cells express MafA, with no MafB expression being detectable. Diabetes were induced in Male Wistar rats (n=40) via intraperitoneal injection of STZ. Experimental rats (n=15) received PDL treatment. Immunohistochemical techniques were implemented on harvested pancreatic tissue to perform a complete morphometric analysis for insulin, MafA and MafB.

POSTER PRESENTATIONS / PLAKKAATAANBIEDINGS

ABSTRACT NUMBER / ABSTRAKNOMMER: 101

QUALITY OF CARE FOR PATIENTS WITH NON-COMMUNICABLE DISEASES IN THE DEDZA DISTRICT, MALAWI

RACHEL WOOD, LISA VAN DER MERWE, VANESSA VILJOEN AND PROFESSOR MASH

IntroductionIn Malawi, non-communicable diseases (NCDs) are thought to be a significant cause of deaths in adults. The aim of this study was to establish the extent of primary care morbidity related to NCDs, as well as to audit the quality of care, in the primary care setting of Dedza District, central Malawi. MethodsThis study was a baseline audit using clinic registers and a questionnaire survey of senior health workers at 5 clinics focusing on care for hypertension, diabetes, asthma and epilepsy.ResultsA total of 82581 consultations were recorded of which 2489 (3.0%) were for the selected NCDs. Only 5/32 structural criteria were met at all 5 clinics and 9/29 process criteria were never performed at any clinic. The only process criteria performed at all 5 clinics was measurement of blood pressure. The staff's knowledge on NCDs was basic and the main barriers to providing quality care were lack of medication and essential equipment, inadequate knowledge and guidelines, fee-for-service at two clinics, geographic inaccessibility and lack of confidence in the primary healthcare system by patients. ConclusionPrimary care morbidity from NCDs is currently low although other

studies suggest a significant burden of disease. This most likely represents a lack of utilisation, recognition, diagnosis and ability to manage patients with NCDs. Quality of care is poor due to a lack of essential resources, guidelines, and training.

ABSTRACT NUMBER / ABSTRAKNOMMER: 102

RADIOLOGICAL ANALYSIS OF SKELETAL METASTASES FROM CERVICAL CANCER

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Cervical carcinoma is the second most common cancer found in women. Diagnosis of skeletal metastases is uncommon in cervical cancer patients. The aim of this study was to determine the prevalence of skeletal metastases in in a Western Cape skeletal population. Skeletal samples (n=14) from the Kirsten Skeletal Collection at Stellenbosch University, diagnosed pre-mortem with cervical cancer, were examined. Macroscopic analysis was done using low magnification to examine each skeletal element for signs of disease. Skeletons were also x-rayed using the Lodox® Statscan® Imaging system and the scans evaluated by a musculoskeletal radiologist. Three (21%) of the skeletons showed metastases, with the os coxae and lower vertebral column affected in all three cases. Furthermore, metastases occurred in the scapulae and ribs in two of the cases and in one case the skull, mandible, and long bones were affected. Additionally, three skeletons without evidence of skeletal metastases presented with a periosteal reaction on the os coxae in response to the diseased adjacent soft tissue. Previous studies observed that skeletal metastases are more common than what is diagnosed pre-mortem with the vertebral spine most commonly affected. The findings of this study agree with previous reports and illustrate the effectiveness of the Lodox® scanner in diagnoses of metastases in skeletal material.

ABSTRACT NUMBER / ABSTRAKNOMMER: 103

A CROSS SECTIONAL CARDIOVASCULAR HEALTH PROFILE OF A REPRESENTATIVE POPULATION FROM THE UITSIG COMMUNITY IN CAPE TOWN

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A scarcity of cardiovascular health profile data for the Western Cape province of South Africa has been observed. Therefore, in view of developing future research and intervention strategies, cardiovascular health profile data generation for the diverse populations of the Western Cape Province is invaluable. Our study aimed to address this paucity by assessing endothelial function in a cohort of coloured/mixed-ancestry South Africans in the Uitsig community of Cape Town. Endothelial dysfunction (ED) has been shown to be an early and reversible precursor of cardiovascular disease and most cardiovascular risk factors are associated with the development of ED. The cohort (n=64)

was assessed as follows: anthropometric measurements (body-mass-index, waist-hip-ratio); cardiometabolic measures (BP, fasting glucose, HbA1c, lipogram) and ultrasound flow-mediated vasodilation (FMD) of the brachial artery (a non-invasive assessment of endothelial function, where artery diameter is measured before and after 5 minutes of forearm occlusion, and % diameter change subsequently calculated). Results: Participant characteristics: 56.25% female; 80% smokers; Age: 35.2 ± 10.6; BMI: female 24.6 ± 6.7, male 21.3 ± 3.7. In the female cohort, triglycerides and diastolic blood pressure were predictors of baseline brachial artery diameter while, in the male cohort triglycerides and total cholesterol were predictors of baseline brachial artery diameter. After controlling for potential covariates, BMI was a significant indicator of % FMD in the total cohort, with a higher BMI correlating with a higher % FMD. However, when viewing the cohorts separately, there was a more marked correlation between BMI and % FMD for men. Conclusion: This is the first study of its kind in South Africa and the cohort provided interesting findings regarding a possible link between BMI, %FMD and therefore endothelial function.

ABSTRACT NUMBER / ABSTRAKNOMMER: 104

MYOCARDIAL FUNCTIONING AND RESPONSE TO ISCHEMIA/REPERFUSION INJURY FOLLOWING MANIPULATION OF THE ATM PROTEIN KINASE

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Background: Ataxia-telangiectasia (A-T) is an autosomal, recessive disorder that is caused by mutations in the ATM (ataxia-telangiectasia mutated) gene. The gene product, ATM, is a 350 kDa serine/threonine protein kinase displaying homologies to the large protein family of phosphatidylinositol-3 kinases and has a large number of substrates in various pathways. Patients suffering from A-T display a very high incidence of insulin resistance or type 2 diabetes mellitus and are more susceptible to ischemic heart disease. Although it is known that the ATM protein is expressed in the heart and that structural and functional changes are observed in the hearts of ATM knock-out mice, very little research has been done on ATM in the cardiovascular context.Methods and Results: The ATM protein was pharmaceutically activated and inhibited in ex vivo Langendorff perfused adult male Wistar rat hearts from control and high caloric diet fed animals. The hearts were subjected to a global ischemic period of 20 minutes after which they were reperfused for five or ten minutes and finally freeze-clamped for western blot analysis. Coronary output was noted at regular time points and a balloon, connected to a pressure transducer, was inserted into the left ventricle in order to continually monitor heart functioning. Significantly increased coronary flow rates were observed in response to ATM inhibition. Additionally, ATM inhibition significantly improved heart functioning during reperfusion in control hearts, whereas hearts from high caloric fed animals had significantly decreased functioning during reperfusion following ATM inhibition compared to untreated hearts.Conclusion: This is one of the first studies that aimed to elucidate the role of ATM in cardiac functioning and we found that ATM plays a significant role in the response to ischemia/reperfusion injury in hearts from both control and high caloric fed, insulin-resistant animals.

ABSTRACT NUMBER / ABSTRAKNOMMER: 105

THE EFFECTS OF ROOIBOS (ASPALATHUS LINEARIS) AND MELATONIN ON VASCULAR FUNCTION IN A RAT MODEL OF NICOTINE-INDUCED VASCULAR INJURY

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BackgroundCardiovascular diseases (CVD) are a global health burden, with the incidence of cardiovascular mortality in South Africa on the rise. Cigarette smoking is an important risk factor for CVD while nicotine, the addictive substance in tobacco, is implicated in the pathogenesis of atherosclerosis. Atherosclerosis is a chronic inflammatory disease and important pre-cursor of CVD. It is essential that possible treatment modalities, such as antioxidant therapies be identified. Rooibos (Aspalathus linearis), an indigenous South African herb, and the hormone melatonin have both been shown to possess biological properties and anti-oxidative actions. There is a lack of studies investigating the effects of rooibos and melatonin in the context of nicotine-induced vascular injury.MethodsAdult male Wistar rats were treated with 5mg/ml bw/day nicotine (subcutaneously) to induce vascular injury. Treatment groups included nicotine and fermented rooibos, nicotine and unfermented rooibos, as well as nicotine and melatonin. Appropriate controls were included. After a six week treatment period rats were euthanized and segments of thoracic aorta removed, cleaned, mounted on tension hooks in an organ bath and subjected to contraction (cumulative concentrations of Phenylephrine)/relaxation (cumulative concentrations of Acetylcholine) experiments as a means of determining vascular health.ResultsNicotine induced a significant pro-contractile and anti-relaxation response, while nicotine in combination with both fermented rooibos and melatonin induced significant pro-relaxation responses.ConclusionThe results indicate the relevance of fermented rooibos and melatonin as possible treatments for nicotine-induced vascular injury and should be further investigated.

ABSTRACT NUMBER / ABSTRAKNOMMER: 106

GA-68 DOTANOC PET/CT FOR NEUROENDOCRINE TUMOURS: EXPERIENCE AT WESTERN CAPE ACADEMIC PET/CT CENTRE

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Aim: In September 2013 the Western Cape Academic PET/CT Centre began performing Ga-68 DOTANOC PET/CT for neuroendocrine tumour patients. We report our clinical experience with these scans thus far, including referral patterns; scan results and relevant clinical outcomes. Materials and methods: Referral patterns, imaging results, and laboratory and clinical data were collated for patients referred for Ga-68 DOTANOC PET/CT since September 2013. Normal biodistribution of Ga-68 DOTANOC was compared to experience with SPECT agents. Clinical follow-up allowed us to identify any interpretative pitfalls in initial reporting.Results: Scans of 83 patients were reviewed. The majority of patients (48.2%) were referred for staging procedures. Several differences between the normal biodistribution of Ga-68 DOTANOC and SPECT agents were identified. Correlative clinical information was available in 67 of the patients, which allowed us to identify 18 false negative and 2 false positive studies. Four of the false negative studies were likely due to tumour dedifferentiation (high grade histology), while four of the false negative cases were of intermediate tumour grade. Remaining false negative cases were due to subcentimeter lesions (n=1); insulinoma (n=1); or unclear reasons (n=8). The two false positive studies were identified after clinical follow-up and subsequent literature review, which identified an important pitfall in interpretation, namely physiological DOTANOC uptake

in the uncinate process of the pancreas.Conclusion: Ga-68 DOTANOC PET/CT offers several advantages over traditional somatostatin receptor imaging methods, including improved sensitivity and shorter total scan duration. While both methods image predominantly SS2R, several notable differences exist in biodistribution. It is important that nuclear physicians be mindful of these differences as well as potential pitfalls in the interpretation of these studies. Interpreter knowledge of normal variants is important for accurate reporting. Ga-68 DOTANOC PET offers significant benefit in terms of directing clinical intervention and subsequent follow-up of neuroendocrine tumours.

ABSTRACT NUMBER / ABSTRAKNOMMER: 107

ESTABLISHING THE CALU-3 CELL LINE: A MODEL FOR THE INVESTIGATION OF THE DEPOSITION AND DRUG DELIVERY OF SURFACTANT BASED PRESSURIZED METERED-DOSE INHALER (PMDI)

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Background: The pulmonary route is very attractive for drug delivery as it offers an alternative mode of delivery to intravenous and oral systems. Mixing of pharmaceutically active agents with pulmonary surfactant may provide an attractive method of improving drug delivery. The Calu-3 cell line cultured in air-liquid interface (ALI) offers features of differentiated, functional human airway epithelial cells with increased ciliogenesis and mucus secretion resembling the native lung epithelium. Methods: The Calu-3 cell line was cultured as a polarized liquid-covered culture before subcultured in 12cm diameter transwell inserts. The cell layers were evaluated through light microscopy and transepithelial electrical resistance (TEER) measured using a EVOM2 chopstick electrode and EVOM2 Epithelial Voltohmeter (world Precision Instruments, USA). Alcian blue staining was employed for the detection of glycoproteins. Canisters were filled with at a 1:1 ratio of drug with Synsurf ® preparations (Stellenbosch University) and Linezolid (Sigma Aldrich). Hydrofluoroalkane (HFA) propellant (Mexichem-Fluor, Runcorn) was added and sealed. Scanning electron Microscopy (SEM) was used to evaluate the drug deposition of the pMDI using the JOEL SEM6480LV (University of Bath).Results: Cells grown at air-liquid interface for 6-9 days produced columnar epithelium with apical protrusions appearing to be cilia-like structures as well as enhanced mucogenesis. Cells were deemed to have a confluent monolayer once the TEER reached 700-1000 Ω/cm2. A distinct difference was witnessed between the drug only deposition and surfactant-drug combination deposition on the cell epithelial. Time dependent deposition of surfactant-based pMDI was also displayed.Conclusion: The ALI for the human Calu-3 proved to be a suitable model for the evaluation of drug deposition, permeability and particle- cell interaction due to its stratified structure and secretory characteristic mimicking that to the airway epithelium. This is an area worthy of further research to expand our knowledge of drug deposition.

ABSTRACT NUMBER / ABSTRAKNOMMER: 108

THE EFFECTS OF ANTIRETROVIRAL THERAPY ON CARDIOMETABOLIC PARAMETERS IN A HIGH FAT DIET RAT MODEL OF OBESITY.

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Introduction: An interaction exists between cardiovascular risk factors (e.g. obesity) and antiretroviral treatment (ART) in the pathogenesis of cardiovascular disease. While ART reverses HIV-related weight loss, studies investigating ART effects in terms of obesity are lacking. Objective: To investigate the effects of Odumine® (first-line fixed ART-drug combination) on several cardiometabolic parameters in a rat model of high fat diet (HFD)-induced obesity.Methods: Groups: Lean/-ART; HFD/-ART; Lean/+ART and HFD/+ART; (n=28-34/group; male Wistar rats). HFD = 16 weeks and ART = last 6 weeks of HFD. Endpoints: Biometric measurements (total body mass (TBM) and visceral fat mass (VFM)); liver mass (LM), serum analysis (total cholesterol (TC); triglycerides (TGs); TBARs), isolated heart perfusion (regional ischaemia and infarct sizes (IFS)). Results: HFD-induced obesity was confirmed by significant increases in TBM (Lean/-ART vs. HFD/-ART: 397.4±10.53g vs. 436.6±10.68), VFM (% of TBM) (Lean/-ART vs. HFD/-ART: 3.61±0.24% vs. 5.83±0.29%), and TGs (Lean/-ART vs. HFD/-ART: 0.37±0.06mmol/L vs. 0.2±0,04mmol/L). ART had no effect on TBM, VFM and TGs; however ART resulted in increased LM in the obese rats (% of TBM) (HFD/-ART vs. HFD/+ART: 2.93±0.06% vs. 3.25±0.09%). ART-treated obese rats had significantly reduced TC (HFD/+ART vs. Lean/+ART: 1.56±0.14mmol/L vs. 1.07±0.07mmol/L). TBARs were significantly increased by the HFD (Lean/-ART vs. HFD/-ART: 20.01±0.7µmol/L vs. 23.05±0.9µmol/L) and by ART in lean rats (Lean/-ART vs. Lean/+ART: 20.01±0.7µmol/L vs. 24.63±1.15µmol/L). ART significantly reduced IFS in hearts of obese rats (HFD/-ART vs. HFD/+ART: 35.4±4.95% vs. 19.95%±2.7%). Discussion and Conclusion: HFD-induced obesity was associated with increased TBM, VFM, TG, oxidative stress and IFS. ART increased LM in obese rats, and resulted in reduced TC and IFS. In lean rats, ART resulted in increased oxidative stress. Our data therefore suggest that ART in combination with HFD-induced obesity exhibited beneficial cardiometabolic effects in terms of the serum lipid profile and myocardial infarct-sparing properties after a regional ischaemia-reperfusion insult.

ABSTRACT NUMBER / ABSTRAKNOMMER: 109

CALCULATED GLOBULIN AS A TOOL FOR ANTIBODY DEFICIENCY SCREENING –IDEAS FOR IMPLEMENTATION IN AFRICA

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Background:Antibody deficiency accounts for nealry 50% of all Primary Immunodeficiency (PIDs); likely the largest group of unidentified PIDs in Africa. Due to lack of awareness and often expensive laboratory tests, patients are missed. The calculated globulin(CG) is a tool that can be used to identify those with possible antibody deficiency. It has been used with success in many countries. It utilizes the total protein and albumin in a calculation to obtain the globulin fraction. A low CG can then be flagged and alert clinicians.The overall aim of this research project will be to optimise the calculated globulin fraction as a screening tool for antibody deficiency within the National Health Laboratory Service. We have conducted an audit based at Tygerberg hospital (NHLS) looking at current practices in test ordering and utilization of the CG.Methodology:Our audit looked at serum total protein and albumin requests over a 5 year period patients at Tygerberg Hospital. Demographics of patients and test were obtained from the LIS.Descriptive statistics using Microsoft Excel spreadsheet and Analyse-It were performed.Results:Between 01/01/2009-31/12/2013 = 31233 samples identified. More than 50% of these tests had no diagnosis on request forms. 7614 test (medical, paediatrics , malignancies) remained after exclusion of others e.g. surgical ward/no

diagnosis. Expected screen positive rates calculated at different CG (g/L) cut-off levels (<16 = 0.7%, <18 = 1.3%, <20= 2.1%). Only 243 IgG measurements were matched for these samples taken over the 5 years and of these 36 had IgG <6g/L.Conclusion:Application of the CG can highlight those individuals with possible PIDs using a reflex comment on the laboratory information system enabling early diagnosis of these individuals. Further studies establishing a cut-off for the CG at low IgG levels in our local setting is underway.

ABSTRACT NUMBER / ABSTRAKNOMMER: 110

THE EFFECT OF CINNAMON EXTRACT ON FAT ACCUMULATION AND ADIPOCYTE GENE EXPRESSION IN 3T3-L1 CELLS

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Traditional medicine is commonly used to treat diabetes in the third world. Cinnamon is one of the most common traditional medicines used to treat patients with type2 diabetes, not only in the third world but also in developed world. Practitioners of traditional medicine as well as many clinicians claim that cinnamon is good to monitor glucose levels in patients with Type 2 diabetes. Thus many clinical studies have performed to examine the effect of cinnamon on patients with type2 diabetes. However, not much detail on the effect of cinnamon on cellular fat accumulation and gene expression are available. The aim of the current study is to examine the effect of cinnamon extracts on fat accumulation and adipocyte gene expression in 3T3-L1 cells. Cells were grown in 6 well plates until they got confluent, then they were treated with 0.5 µl, or 1µl cinnamon extract. Comparison was made with 1µl metformin which is also considered as positive control, while one well left as negative control. Data on fat accumulation, triglycerides level, and alkaline phosphatase activity were collected at day zero, day 3, day 8, and day 12. The results showed that both concentrations of cinnamon extract were significantly inhibited fat accumulation ($P<0.05$), Triglycerides level ($P<0.05$) and alkaline phosphatase activity ($P<0.005$). No significant differences were observed between metformin treatment and cinnamon extract treatments nor were there any significant differences between the cinnamon treatments. As a conclusion we found that cinnamon extracts has shown to have a comparable effect to metformin at cellular level.

ABSTRACT NUMBER / ABSTRAKNOMMER: 111

PDL –STIMULATED PANCREATIC DUCT CELLS GENERATE ISLETS AND EXOCRINE TISSUE IN VITRO

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In adult pancreas, pancreatic injury by partial duct ligation (PDL) has been suggested to induce β-cell regeneration from a transient Ngn3+ endocrine progenitor cell population located in the duct walls. Two studies challenged these findings. One study failed to observe β-cell neogenesis from Sox9+ducts-derived Ngn3+cells. Another study also failed to show the contribution of Hnf1b+ ductal or mucin-1+ ductal/acinar cells to endocrine compartment after birth. More evidence suggests that postnatal expansion of β-cell mass is entirely based on self-duplication of pre-existing β-cells. Although these studies suggest that PDL-activated Ngn3+ duct-derived cells do not complete the entire β-cell neogenesis program in vivo, we investigated to find out whether isolated PDL-induced duct cells generate islets in vitro. Ducts fragments were isolated with an adaptation of the method for isolating islets. Five (n=5) adult male Wistar rats were exposed to PDL. After 24-hrs, post-PDL pancreatic tissues were harvested and digested in collagenase P .and ducts fragments were separated by Ficoll density cushion. The floating tissue fraction was hand-picked using a pipette. Duct fragments were cultured for 14 days in RPMI1640 supplemented by 10% FBS and 1% Pen-streptomycin. Microscopic examination revealed thin strings of viable ducts after 24-hrs of culture. Ducts became highly branched in day 4 and 5. At day 6 and 7, proliferating cells began to migrate to form a sheet of cells on the sides of ducts that later aggregated to into spheroid bodies on days 12 and 13 in culture. These cell clusters were morphologically similar to endocrine islets. Continued culturing, resulted into spheroid bodies budding off from duct structures, perhaps indicating the completion of the differentiation program. In conclusion PDL-induced duct cells can proliferate in culture and generate exocrine and spheroid bodies morphologically similar to endocrine islets suggesting that in vitro, PDL induced- duct cells can generate islets.

ABSTRACT NUMBER / ABSTRAKNOMMER: 112

ANTHROPOMETRIC AND MICROSCOPIC ANALYSIS OF SPERMATOZOA AND REPRODUCTIVE ORGANS IN AGED OBESE RATS

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South Africa has one of the highest prevalences of obesity in sub-Saharan Africa, with ~30% of the population being overweight or obese. Obesity has been shown to reduce semen quality, sperm concentration and percentage of progressively motile sperm, while the association between age, obesity and reproductive function is not well researched.Modern adults are delaying parenthood. This is an impending problem as the aging of males affects spermatogenesis and sperm quality. Delayed parenthood by obese individuals may have an additive effect as the damaging effects of obesity are prolonged.Establishing the changes that occur in spermatozoa and reproductive organs at a microscopic level may provide the necessary information to elucidate the mechanisms through which age and obesity lead to these changes. The aim of this study was to ascertain the microscopic changes caused by the obese state and age, focussing on sperm morphology and histology of the testis and epididymis. 40 male Wistar rats weighing 200–220g were used. These were divided into two groups and fed a high caloric diet for 60 weeks (dietary induced obesity) or used as the age-matched controls receiving standard rat chow. Rats were subsequently anaesthetised and tissue samples (testes, epididymis) harvested and prepared for microscopic analysis.Preliminary data revealed a higher body weight and increased body fat percentage as well as a lower testicular weight and haematocrit in the aged obese rats. Histology of the testis showed blunting and degeneration of the pseudostratified epithelial layer (germinal epithelium), loosely associated cells and continuous spaces between spermatogenic series. The epididymis displayed retention of the germinal epithelia and hypertrophy of the lamina propria. Morphology analysis of spermatozoa is still underway. Obesity

has detrimental effects on germ cells and peritubular structures within the testis and epididymis, associated with disruption of normal seminiferous tubular structures and germ cell production.

ABSTRACT NUMBER / ABSTRAKNOMMER: 113

INVESTIGATING THE SUITABILITY OF STANDARDIZED EUROFLOW PANELS FOR THE CHARACTERISATION AND DIAGNOSIS OF CHRONIC LYMPHOCYTIC LEUKEMIA (CLL) IN THE TYGERBERG HOSPITAL (TAH), SOUTH AFRICA.

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Background. Inadequate/non-existent national cancer registries coupled with limited diagnostic capabilities adds to unreliable incidence statistics of haematological malignancies(HM) in African countries. It is crucial to collect malignant disease data that can be used for statistical research in an efficient and reproducible manner within the South African (SA) setting. Reproducibility can be facilitated by standardisation of diagnostic techniques. The aim of this study is to evaluate the use of an expanded immunophenotypic and molecular panel in improving the understanding of CLL incidence, pattern and prognosis in the TAH catchment areas of SA.Methodology. CLL patients will be recruited at TAH, Cape Town. Biospecimens will be prepared and analysed on the Beckman Coulter Navios flow cytometer using Euroflow standardised protocols. B-cell chronic lymphoproliferative disorders (B-CLPD) will be detected using Euroflow lymphoid screening tube (LST) immunophenotyping panel including CD20, CD4, CD45, CD8, smlgλ, CD56, smlgκ, CD5,CD19, TCR$y\sigma$, smCD3 and CD38). Tube 2 of Euroflow B-CLPD plus LST, will identify CLL from other B-CLPD and will include CD20, CD45, CD23, CD10, CD79b, CD19, CD200 and CD43. Immunophenotypic profiles from CLL positive patients will then be stored in a database using the compass tool of the Infinicyt™ FC software.Anticipated results. This exercise will establish a platform on which South African CLL immunophenotypic profiles will be stored in an easily accessible database using the compass tool of the Infinicyt™ FC software.. Discussion. The compass tool of the Infinicyt™ FC software allows for the creation of different disease group databases thus allowing for faster differential diagnoses of new case studies by comparison with the reference disease group database. Research studies for CLL require accurate and consistent laboratory techniques and strict standardisation to enhance the confidence in inter-laboratory studies.Currently, limited medical institutions use standardised multi-colour FC for HM diagnoses in SA despite its higher sensitivity and specificity.

ABSTRACT NUMBER / ABSTRAKNOMMER: 114

IN VITRO STUDY ON THE PROTECTIVE EFFECTS OF QUERCETIN ON NICOTINE METABOLITE-INDUCED TOXICITY ON HUMAN SPERMATOZOA

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Cotinine, a metabolite of nicotine found in smokers' seminal plasma has been shown to adversely affect sperm functionality while quercetin, a flavonoid with diverse properties is associated with several in vivo and in vitro health benefits. This study aimed to examine the in vitro effects of cotinine on the motility characteristics and acrosome reaction of human spermatozoa. Washed human spermatozoa from 8 normozoospermic donors were treated with nutrient medium (control), quercetin (30µM) and cotinine (190µg/ml, 300ng/ml) with or without quercetin for 60min and 180min incubation periods. Computer-aided sperm analysis was used to assess sperm motility properties while acrosome-reacted cells were identified under a fluorescent microscope using fluorescein-isothiocyanate- Pisum sativum agglutinin as a probe. Values were expressed as mean ± S.E.M. as compared by ANOVA. Preliminary results showed that the higher cotinine concentration reduced total motility, progressive motility, curvilinear velocity, amplitude of lateral head displacement, beat cross frequency and number of acrosome-intact cells after 180min of exposure when compared to the control. Total motility, progressive motility and number of acrosome-intact cells were increased in the cotinine aliquots supplemented with quercetin when compared with cotinine only treated aliquots after 180min of exposure. Low cotinine concentrations had no significant effects on spermatozoa after 60mins incubation. This study indicates that the ameliorating ability of quercetin on cotinine-induced decline in sperm function is associated with improved motility and prevention of premature induction of the acrosome reaction.

ABSTRACT NUMBER / ABSTRAKNOMMER: 115

PHENACETIN METHOD DEVELOPMENT AND VALIDATION, AND INHIBITION OF CYP1A2 BY THREE HERBAL SUPPLEMENTS

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Background: Buchu, African Ginger, and the Pepperbark tree, are common traditional herbal medicines for the treatment of several diseases. Due to their popularity, concomitant use with medications that are substrates for CYP1A2 could lead to herb-drug interactions. The aims of this study were to develop a high performance liquid chromatography - diode array detection method for phenacetin determination, to assess the kinetic parameters of CYP1A2 metabolism, and to assess the inhibition of CYP1A2 by three selected herbal supplements. Methods: A reversed-phase HPLC analytical method was developed using a Phenomonex Luna 150mm x 4.6mm, 5µ column. The mobile phase composition was 90% acetonitrile, 10% distilled water, with isocratic flow. The flow rate was set at 1ml/min, and all compounds were eluted within 3 minutes and detected at 229nm. Human liver microsomes were incubated with varying concentrations of phenacetin to determine the Km. The determined Km concentration of 100µM was used to estimate the inhibitory potential of the herbal products. Results: African ginger indicated strong inhibition (80%) at 6.25 µg/mL. Buchu and Pepperbark tree showed weak inhibition of CYP1A2 (<10%). In terms of precision of the analytical method, the variation never exceeded 9.33%, which is within the acceptable range. Conclusion: The preliminary screening has indicated the potential of African Ginger to alter pharmacokinetic of medications that are metabolised by CYP1A2 when administered concurrently.

ABSTRACT NUMBER / ABSTRAKNOMMER: 116

TRI-LEAFLET MITRAL VALVES – WHEN LIGHTING STRIKES THRICE

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A tri-leaflet mitral valve is a novel echocardiographic finding that has only been described in two case reports. We report on three patients recently found to have trileaflet mitral valves in the setting of atrioventricular concordance. The first patient is a 22-year-old male referred to our congenital heart disease clinic for follow-up of a restrictive VSD. Echocardiography, revealed a quadricuspid aortic valve and an unusual appearance of the mitral valve. There were three, evenly spaced commissures with central coaptation present as well as three papillary muscles – a medial, a small or rudimentary antero-lateral and a posteriorly positioned papillary muscle. Despite these morphological abnormalities, only trace regurgitation was detected. 3D echocardiography allowed for a more detailed morphological and functional assessment. The second patient is a 49-year-old male evaluated for chronic severe mitral regurgitation. Echocardiography confirmed a dilated left ventricle with severe mitral regurgitation with a tri-leaflet mitral valve also with three (medial, lateral and posterior) papillary muscles present. There were no other structural abnormalities present. The third patient is a 50-year-old male evaluated for chronic severe mitral regurgitation. Initially this was assessed as being due to prolapse, but more careful scrutiny confirmed a dilated left ventricle with severe mitral regurgitation with a trileaflet mitral valve with three papillary muscles present, a rudimentary basal medial PM, an anterolateral PM and a more apical posterior PM. 3D echocardiography clearly shows the 3 commissures. The mitral valves of both patients mimic the normal tricuspid valve morphology with three leaflets, three commisures, three papillary muscles (of which one is small/rudimentary) and cords from each papillary muscle (including from the rudimentary papillary muscle attaching to two separate leaflets.The tri-leaflet mitral valve is a rare congenital abnormality that is increasingly being recognized with advances in imaging techniques.

ABSTRACT NUMBER / ABSTRAKNOMMER: 117

AUDIT OF HYPERFERRITINAEMIA AND THE CAUSES THEREOF AT AN ACADEMIC HOSPITAL IN CAPE TOWN, SOUTH AFRICA

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BackgroundSerum ferritin is a sensitive indicator of body iron stores and correlates with stainable bone-marow iron. Hyperferritinaemia can occur in a number of conditions including iron overload, malignancy, liver/renal disease, chronic red cell transfusions and inflammation. Ferritin concentration cannot be used as a marker for body iron storage when any of the above conditions are present. The aim of this study is to audit the most frequent causes of hyperferritinaemia in adult patients attending Tygerberg Hospital.MethodsRetrospective audit conducted to determine the total number of ferritin tests requested by clinicians at Tygerberg Hospital over a six month period. Ferritin above the reference interval for adult male (>322μg/L) and adult female (>291μg/L) patients were explored to identify a possible cause. Patient files were randomly selected to assess the correlation between diagnosis at the time of the request and the final diagnosis. ResultsAfter exclusion of duplicates a total of 1295 patient results, 69% (n=893) female and 31% (n=402) were reviewed. Majority of the

results (54%) were within the normal range, 12% demonstrated low ferritin values. Hyperferritinaemia observed in 34% of the results. The most frequent diagnosis in patients with hyperferritinaemia was found to be chronic kidney disease (CKD) on dialysis (n=155; 35%). Haematological malignancy (n=45; 10%), auto-immune disease (n=37; 8%), sepsis (n=47; 11%) and HIV infection (n=50; 11%) were also commonly found. In 12% (n=54) the request form stated anaemia as the primary diagnosis.ConclusionsA total of 34% of ferritin results demonstrated hyperferritinaemia. CKD most frequent diagnosis in these subjects. A number of other inflammatory and infective causes were also identified. A significant proportion of patients investigated for anaemia in a hospital setting have normal or high ferritin levels. This could indicate that work-up of a patient for anaemia with ferritin in the acute setting is not ideal.

ABSTRACT NUMBER / ABSTRAKNOMMER: 118

STREPTOZOTOCIN-INDUCED EXPERIMENTAL DIABETES IS ASSOCIATED WITH DISRUPTION OF TOTAL ISLET COMPOSITION

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Streptozotocin (STZ) is a beta-cytotoxic chemical commonly used to induce experimental diabetes. STZ-induced beta-cell loss alters the islet of Langerhans microenvironment and could consequently cause disruption in the non-beta cell fractions of the islets. Therefore our study aims to evaluate changes in whole islet composition in STZ-induced diabetic rats.Wistar rats (n=33), obtained from the Central Animal Unit of the FMHS at Stellenbosch University, were randomly divided into 6 groups corresponding to the time periods of 0, 10, 13, 15, 20 and 40 days. Diabetes was induced by intraperitoneal injection of 45mg/kg STZ to the groups of day 10, 13, 15, 20 and 40 (diabetic groups). Animals in the 0 day group did not receive STZ injection (normal group). Pancreata were harvested at the time points according to the animal's study group. Individual pancreata were divided into a proximal (P1) portion and a distal (P2) portion. An immunohistochemical study of the four islet cell types was done using anti-insulin, anti-glucagon, anti-somatostatin and anti-pancreatic polypeptide antibodies and hormone fractions were morphometrically analysed.The results showed that the islet insulin positive fraction decreased dramatically from 67.42% (P1) and 73.91% (P2) in the normal group to only 14.90% (P1) and 24.15% (P2) in the 10 day diabetic group. Conversely, islet glucagon fraction increased from 27.61% (P1) and 23.83% (P2) in the normal group to 63.04% (P1) and 64.13% (P2) in the 10 day diabetic group. Insulin and glucagon fractions remained respectively decreased and increased in diabetic animals over the experimental period. Somatostatin fractions varied in the Diabetic animals at the different time points, but did not normalise. Pancreatic polypeptide fractions tended to be increased following diabetes induction. These results indicate that STZ-induced beta-cell destruction disrupts whole islet composition, which contributes to the diabetic phenotype.

ABSTRACT NUMBER / ABSTRAKNOMMER: 119

A DESCRIPTIVE STUDY OF THE PATTERNS OF ISLET MICROVASCULATURE IN THE HUMAN PANCREAS

BRYAN BERGSTEEDT, VENANT TCHOKONTE-NANA

The function of beta cell is aided by the beta cells unique way of detecting minute changes with glucose concentrations in the blood stream, promoting its uptake or initiating glucagon release upon appropriate stimulation. Drug delivery in the treatment of diabetes mellitus (DM) involves the islet cells communication via capillaries; therefore the paracrine interactions of islet cells are an important factor for beta cell response to high blood glucose levels, implicating the synergistic role that the islet as a whole plays in the paracrine signalling to maintain homeostasis within the pancreas. The aim of this study is to describe the patterns of islet microvasculature in the human pancreas. Cadaveric pancreata (n=6) are harvested from donated bodies in the Division of Anatomy and Histology. The pancreases were perfused with a resin to create a cast of the microvasculature. As the study is still ongoing, it is expected that the casts obtained will be analysed using the X-ray nano CT Scanner to observe the microscopic structure. A description of the microvasculature of the Human pancreas will therefore be of great value to pharmacological industries leading to major developments in drugs that will specifically target the islet cells and could help reverse the damaging effects of DM. Key Words: beta cells; diabetes mellitus; microvasculature; cast; pancreas.

ABSTRACT NUMBER / ABSTRAKNOMMER: 120

OMNIPAQUETM INTRAVENOUS CONTRAST INTERFERENCE IN CAPILLARY ZONE ELECTROPHORESIS

ESMÉ HITCHCOCK, MARIZA HOFFMANN, RAZAAN DAVIS, WESSEL MEYER

Background The clinical laboratory plays a critical role in the screening, diagnosis and follow-up of patients with monoclonal gammopathies. Capillary zone electrophoresis (CZE) is an important method utilised for analysis of serum in these cases. Recent reports have identified certain substances which interfere with the CZE method, most notably radio-opaque intravenous contrast media. These interferences complicate interpretation and can lead to unnecessary testing. The problem is further exacerbated by a lack of awareness amongst clinicians regarding these interferences. Aims and objectives 1. To determine if Omnipaque™, the radio-opaque contrast medium most commonly used by the radiology department, interferes with the CZE method 2. Characterise the observed inference with regards to the position of the peak 3. Provide guidelines regarding an appropriate time interval for obtaining follow-up specimens for electrophoresis once contrast medium has been cleared from the circulation Materials and methods A total of 5 patients scheduled to undergo radiological imaging with Omnipaque™ were recruited. Venous blood samples were collected prior to imaging (baseline) and 1 hour, 8 hours and 12 hours post contrast media administration. Capillary zone electrophoresis was performed on all samples. In addition agarose gel electrophoresis and immunosubtraction was performed on the 1 hour specimen. Results Omnipaque™ was shown to interfere with CZE and appears consistently as a peak in the late alpha-2 region on the electrophoretogram. The peak was virtually absent at 8 hours post contrast administration and completely absent at 12 hours. Conclusion Omnipaque™ radio-opaque contrast interferes with the capillary zone electrophoresis method, producing false peaks in the alpha 2 region. It is important that samples for serum protein electrophoresis are collected prior to radio-opaque contrast administration at least 8 hours after administration. Creating awareness amongst clinicians of the importance of interference in laboratory test results is important.

ABSTRACT NUMBER / ABSTRAKNOMMER: 121

INCORPORATING NON-COMMUNICABLE DISEASE SCREENING INTO COMMUNITY-BASED HIV COUNSELLING AND TESTING IN CAPE TOWN, SOUTH AFRICA

MARGARET VAN NIEKERK, HEATHER DRAPER, SUE-ANN MEEHAN

Non-communicable diseases (NCD`s) account for 80% of deaths in low and middle income countries. In South Africa hypertension, diabetes mellitus, obesity and hyperlipidaemia are increasing due to lifestyle transition as a consequence of economic development. Prevalence of NCD`s amongst the

HIV-infected has increased due to premature aging effects of HIV infection on the immune system. HIV counselling & testing (HCT) provides HIV prevention and care and is an entry point for NCD screening. This study used routine data to determine whether HIV status, age and gender are associated with NCDs in a population who self-initiate for community-based HCT. Five Community HCT sites were established in high disease burden areas around Cape Town. Clients access HCT services at stand-alone centres or mobile sites (tents/caravan). HIV testing was conducted according to national guidelines. NCD screenings include; BMI (≥24 vs <24), hypertension (high BP vs not high BP) and random blood glucose (≥11.0mmol vs <11.0mmol). Comparisons were made using either Chi-square or Fisher's Exact and multivariable logistic regression. 11,210 clients screened for HIV (October 2013 to June 2014). 443 clients were diagnosed with HIV (4%); of which 61% diagnosed at mobile services. A higher percentage of clients with a BMI≥24 attend the fixed sites (69% vs 62%; p=<0.001). A higher percentage of clients with a high BP (≤140/90 - ≤190/100) attend at the mobile site (73% vs 64%; p<0.001). Elevated glucose (>11.0mmol) was associated with HIV status (0.28 vs 1.86%; p<0.022). Female clients in comparison to male clients were more likely to have higher BMIs and lower BPs when controlling for age (OR: 5.6; 95% CI:(5.1 – 6.2), p<0.001 and OR:0.7; 95% CI:(0.6-0.8), p<0.001, respectively). Incorporating chronic health screening into a community HCT model is a novel approach which can potentially allow for multiple disease screening and early case-finding of NCD`s.

Theme 5 / Tema 5

Mental Health and Neurosciences / Geestesgesondheid en Neurowetenskappe

Oral Presentations/ Referate

ABSTRACT NUMBER / ABSTRAKNOMMER: 122

THE EFFECT OF OCCUPATIONAL THERAPY-LED DRUMMING GROUPS ON MENTAL WELL-BEING AMONG PSYCHIATRIC INPATIENTS WITH MOOD DISORDERS

Nicola Ann Plastow
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Background: Drumming is a creative activity used by occupational therapists to promote recovery for mental health inpatients admitted to private and state-run psychiatric inpatient facilities in the Western Cape. African drumming has the potential to be a culturally relevant and flexible form of therapeutic activity. However, its effectiveness for inpatients with acute mental health problems has not been investigated. Purpose: The aim of this study was to evaluate the immediate effect of an occupational therapy-led drumming group on mental well-being among inpatients in a private mental health clinic.Methods: We used a before-and-after study design. Fourteen (N = 14) inpatients with a diagnosis of a mood disorder participated in occupational therapy-led drumming sessions as part of their inpatient occupational therapy program. Each participant completed an evaluation of their mood immediately before and after one drumming session, using the Brunel Mood Scale (BRUMS) and Enjoyment of Interaction Scale. Data were primarily analysed using the Wilcoxon signed-rank test.Results: Using the GAD-7, almost all participants (n = 11) were moderately to severely depressed. Almost all were also severely anxious (n = 11) using the PHQ-9. Drumming had a large effect on participants experiences of anger (Mdn Before = 7, Mdn After = 1), $z = 2.59$, $p < .01$, $r = 0.51$. There were also large differences between participants' experiences of tension before (Mdn = 10) and after (Mdn = 3) the drumming group, $z = 3.09$, $p < .01$, $r = 0.61$. In addition, participants reported enjoying the interaction 'a great deal' (Mdn = 7).Conclusion: Drumming immediately improved clinical symptoms associated with mood disorders. Further research including control group comparison is needed.

ABSTRACT NUMBER / ABSTRAKNOMMER: 123

IDENTIFICATION OF SEQUENCE VARIANTS IN PARKINSON'S DISEASE-CAUSING GENES IN A GROUP OF SOUTH AFRICAN BLACK PARKINSON'S DISEASE PATIENTS USING A TARGETED RESEQUENCING APPROACH

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Studies on Parkinson's disease (PD) in Black Sub-Saharan African (SSA) populations have been scarce. The genetic etiology in these patients has been particularly understudied, with only a handful of pathogenic mutations being identified. High-throughput mutation screening approaches using next generation sequencing technology are needed to comprehensively screen SSA PD patients to effectively determine the underlying genetic causes. To this end, we used a customized target-capture panel encompassing 116 genes implicated in PD and related conditions as well as a further 53 genes in biologically relevant pathways to screen for pathogenic mutations in 21 Black South African PD patients. Approximately 100 missense variants were found, and of these 13 novel or low

frequency (≤ 0.003) variants that were found in patients and were absent in 144 ethnic-matched control individuals were prioritized for further study. These include p.P209R in DCTN1, p.E1740D in DNAJC13, p.G517R in GBA, p.I610T, p.H1758P, p.N2133S and p.T2423S in LRRK2, p.G430D and p.Q311K in PARK2, p.E476K in PINK1, p.I143M and p.V191A in PSEN1 as well as p.V139M in PSEN2. Further studies are warranted on the functional effects of these variants and their possible involvement with PD. The large number of missense variants found in this small group of patients is indicative of the extensive genetic diversity present in this population and the need for their inclusion in novel gene discovery studies.

ABSTRACT NUMBER / ABSTRAKNOMMER: 124

IRON DEFICIENCY IN TWO CHILDREN DIAGNOSED WITH MULTIPLE SCLEROSIS – REPORT ON WHOLE EXOME SEQUENCING

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Introduction:Genetic and environmental factors play an important role in the pathogenesis of Multiple sclerosis (MS). We identified an MS subset with non-anaemic, chronic iron deficiency responsive to lifelong iron supplementation. Mutations of iron regulating genes were investigated using Whole Exome Sequencing (WES) for two children diagnosed with MS applying two different reference sequences, to identify gene variants that could explain the severe iron deficiency experienced by both the children.Materials and Methods:The two unrelated children were diagnosed before the age of 5 years. Both were found to have non-anaemic iron deficiency. Once the iron had normalised by supplementation, both children experienced long-term remission. WES was performed using a Proton sequencer. The raw reads were mapped using Hg19 and a Major Allele Reference Sequence (MARS) for two SNVs previously associated with iron deficiency, Transferrin (TF) and Matriptase (TMPRSS6).Results:In Child 1, MARS identified heterozygous variants in TF (rs1130459 and rs1880669) as well as TMPRSS6 (rs2543519 and rs855791). Hg19 identified the same variants. In Child 2, MARS identified homozygous variants in TF (rs1130459 and rs1880669) and TMPRSS6 (rs2543519), while TMPRSS6 rs855791 was wild type. Hg19 registered wild type for both TF variants and homozygous SNVs for both TMPRSS6 tested. Validation using Sanger sequencing in the laboratory revealed that MARS gave the correct results in all cases. Conclusion: The discrepancy of results between the two reference sequences used for variant calling is a cause for serious concern and indicated that any results obtained using WES should be stringently verified by Sanger sequencing. Identification of individuals at risk of potentially developing MS is an important strategy to prevent future disabilities. In this study iron deficiency-causing variants could be identified and verified using WES together with the use of MARS for variant calling.

ABSTRACT NUMBER / ABSTRAKNOMMER: 125

ATPAF1 AND SEPT9 ARE NOVEL SUBSTRATES OF PARKIN: IMPLICATIONS FOR PARKINSON'S DISEASE

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Parkinson's disease (PD) is a progressive and debilitating neurodegenerative disorder. While the aetiology of PD is not fully understood, it is thought to involve a combination of different genetic, cellular and environmental factors that independently or concurrently contribute to neurodegeneration. To date, several PD-causing genes have been identified, and investigations of their function have provided new insights into the pathobiology of disease. Particularly interesting among the known PD genes is parkin, mutations in which are the most common genetic cause of early onset PD. Parkin is an E3 ligase that ubiquitinates protein substrates and targets such substrates for degradation via the ubiquitin proteasome system (UPS). Therefore, the loss of parkin may result in the deleterious accumulation of parkin substrates and neurodegeneration. Although many parkin-interacting proteins have been identified in the literature, it is anticipated that novel, pathologically-relevant parkin substrates remain to be discovered. Hence, this study used a yeast two-hybrid (Y2H) approach to identify novel parkin interactions. This yielded 29 putative parkin interactors, of which four, namely ATPAF1, SEPT9, actin and 14-3-3η, were verified as true parkin interactors by means of in vivo co-localisation and co-immunoprecipitation experiments. Furthermore, protein expression levels of the interactors were assessed in parkin-mutant fibroblast cell models via western blotting and densitometry. Interestingly, two of the parkin interactors (ATPAF1 and SEPT9) were found to accumulate in the absence of parkin, supporting their role as authentic parkin substrates. The identification of these two intriguing proteins implicates parkin in the regulation of mitochondrial ATP synthase assembly as well as septin filament dynamics, which may be of significant relevance to the elucidation of pathogenic processes underlying neurodegeneration. It is anticipated that a comprehensive understanding of parkin function and its role in PD will, ultimately, aid in the development of therapeutic strategies to treat this debilitating and poorly-understood disorder.

ABSTRACT NUMBER / ABSTRAKNOMMER: 126

OCULAR PENETRATION OF ANTI-RETROVIRAL DRUGS IN A RABBIT MODEL

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Ocular penetration of anti-retroviral drugs after a single oral administration in the New Zealand White rabbit model.Willem-Martin Gerber, David Meyer, Derrick P SmitPurpose: It has been proposed that the eye might serve as a sanctuary for HIV replication. Very little is known about ocular penetration of anti-retroviral drugs (ARV's). This study aimed to assess the ocular penetration of different anti-retroviral drugs and -drug classes in an animal model.Method: Prospective, laboratory based, in vivo, interventional, comparative study. Twenty five male New Zealand White rabbits were used. Each group of 5 rabbits received a single stat oral dose of a different ARV drug (lamivudine, tenofovir, efavirenz, lopinavir, raltegravir). These 5 drugs represent four different ARV drug classes (nucleoside reverse transcriptase inhibitors (NRTI), non-NRTI, protease-inhibitors and integrase-inhibitors). Serum, cerebrospinal fluid (CSF), aqueous and vitreous humor samples were collected at the time of theoretical maximum serum concentration of each respective drug. The drug concentration in each sample was determined by means of High Performance Liquid Chromatography (HPLC) and Mass Spectrometry.Results: After a single oral dose, measureable levels of all five ARV's administered could be detected in all four body compartments sampled i.e. serum, CSF, aqueous and vitreous humor. The IC50 (Inhibitory Concentration where 50% of viral replication is inhibited by a drug) was reached for all drugs in the serum and CSF. In the aqueous humor the IC50 was not reached with lopinavir and in the vitreous humor only efavirenz and lopinavir reached IC50 levels. Conclusions: After a single oral dose, measureable levels of all four classes of ARV's could be detected in all four

body compartments sampled. In the eye IC50 levels were lower in the vitreous humor than in aqeuous humor. Serum levels of IC50 was higher than in the cerebrospinal fluid.

ABSTRACT NUMBER / ABSTRAKNOMMER: 127

PROLONGED EXPOSURE TREATMENT FOR PTSD IN A THIRD WORLD, TASK SHIFTING, COMMUNITY-BASED ENVIRONMENT

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Background: South Africa is a country with high rates of trauma exposure. In a study conducted in South Africa and Kenya, Seedat et al. (2004) found that 14.5% of students met criteria for PTSD within South Africa. Given the extremely limited access to public health psychological services, it is crucial to address the gap between need and availability of psychological interventions by making them more readily available to a broader population. In the first step towards that goal, a pilot RCT study was initiated with registered nurses trained to provide adolescents with either Prolonged Exposure for Adolescents (PE-A) PTSD treatment or Supportive Counselling (SC). Research Aim and Objectives:1. To compare the effectiveness of two treatments, PE-A and SC, in reducing PTSD symptom severity over 10-14 weeks of treatment, as administered by counsellors2. To assess maintenance of PE-A treatment gains on PTSD symptom severity by conducting follow-up assessments at 12 month follow-up. Method: The pilot study in 11 adolescents with PTSD utilized a single-blind, randomized, permuted block design. Recruitment of participants and administration of the interventions were undertaken within school settings. Primary outcome measures were the Child PTSD Symptom Scale – Self Report (CPSS) and the Beck Depression Inventory (BDI).Results: Data were analyzed as intent-to-treat. During treatment, participants in both the PE-A and SC treatment arms experienced significant improvements, as determined on the CPSS and the BDI. At the 12-month post-treatment assessment, there was a significant group difference in the maintenance of effects, with the PE-A group retaining post-treatment PTSD and Depression scores indicative of subclinical symptoms ($p < 0.05$).Conclusion:These preliminary findings and the challenges and opportunities encountered with the training and delivery of trauma-focused interventions in third-world community-based settings will be discussed.

ABSTRACT NUMBER / ABSTRAKNOMMER: 128

THE PREVALENCE OF ANATOMICAL VARIATIONS OF THE CEREBELLAR ARTERIES AND ITS CLINICAL RELEVANCE IN A WESTERN CAPE POPULATION

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The cerebellum is supplied by three main arteries namely the superior cerebellar artery (SCA), the anterior inferior cerebellar artery (AICA) and the posterior inferior cerebellar artery (PICA). These arteries branch off the vertebral-basilar arterial system and anastomose freely on the surface of the cerebellar hemispheres. Multiple anatomical variations are known of the cerebellar arteries. The deviation or prominence of an artery may lead to posterior circulatory problems as shown in previous studies. This study aims to establish the prevalence of anatomical variations of the cerebellar arteries within the Western Cape population and to observe a correlation with circulatory diseases. The intact brains of 40 cadavers (n=40) were removed and diagrammatic sketches were made of the intact

cerebellar arteries. The length including the diameter of the origin, middle and end of each artery was then measured with a Digital Micrometer. The cerebellum was then separated and cut into serial sagittal sections starting 1 centimeter from the vermis on both sides. Digital images were taken of each section in order to document any sign of hemorrhage, lesions or infarcts within the tissue. Knowledge of the prevalence and structure of anatomical variations in the Western Cape may benefit surgical procedures of the posterior circulation. This could also predict the prevalence of various circulatory diseases.

ABSTRACT NUMBER / ABSTRAKNOMMER: 129

GENETIC INVESTIGATION OF APPETITIVE AGGRESSION IN SOUTH AFRICAN FORMER YOUNG OFFENDERS: THE INVOLVEMENT OF SEROTONIN TRANSPORTER

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Continuous stress and violence in South African townships can have adverse effects on psychological development and mental health. Childhood abuse has been found to promote the development of violent behaviour. Recent research has demonstrated that appetitive aggression (the perpetration of violence for the purpose of experiencing violence-related fascination) can prevent those who perpetrate violence from being traumatised by violence-related cues and facilitate adaptation to a cruel environment. Studies have indicated that aggression is heritable, and monoaminergic neurotransmitter systems have been found to form part of the molecular mechanisms underlying aggressive behaviour. The aim of this study was to investigate the role that two functional variants in the serotonin transporter gene (5-HTT) may play in the development of appetitive aggression. Two hundred and ninety-five former young offenders of Xhosa ethnicity were participating in this study. Standardised clinical questionnaires were administered to assess exposure to traumatic stress, trauma symptomatology, appetitive aggression (Appetitive Aggression Scale (AAS). Participants were categorised as having appetitive aggression if AAS >= 8 (n=200). 5-HTT genetic variants in the promoter region (5-HTTLPR) and in intron 2 (STin2) were genotyped and genetic association analysis was performed using logistic regression models, allowing for inclusion of covariates and interacting variables. All analyses were performed using R statistical software. No statistically significant association was observed between 5-HTTLPR and appetitive aggression. However, the STin2 variant was found to be associated with appetitive aggression when the recessive model of inheritance was considered ($p = 0.017$). The 10-repeat allele of STin2 was found to be present only in participants with appetitive aggression. No gene-environment interactions were observed for either of the polymorphisms.This represents one of the first studies investigating the genetic underpinnings of appetitive aggression in a unique South African sample of former young offenders. Further studies may show the molecular underpinning of appetitive aggression.

ABSTRACT NUMBER / ABSTRAKNOMMER: 130

PREFRONTAL CORTICAL THINNING IN HIV IS ASSOCIATED WITH IMPAIRED STRIATAL FUNCTIONING

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Objective: While both cortical atrophy and subcortical dysfunction have been described in HIV+ patients, the relationships between these two findings has yet to be explored. Here we investigate the relationship between subcortical dysfunction and cortical morphology in HIV+ patients.
Design: A cross-sectional, case control study.
Methods: Twenty-three largely treatment naïve, non-substance abusing HIV+ participants and 19 healthy controls matched for age, gender and educational status were included. Cortical reconstruction and volumetric segmentation were performed with the Freesurfer image analysis suite. Regions of interest included cortical volume, subcortical volume and frontal cortical thickness measures. Subcortical function was measured during an fMRI stop signal anticipation task known to enage the striatum. Regions found to show significant atrophy were included in a linear model which included subcortical function, age, CD4 count as well as a measure of global cognitive performance.
Results: While reduced global cortical volumes were observed in the HIV+ participants the only finding that remained significant after correction for multiple comparisons was reduced cortical thickness in the in the right superior frontal gyrus. Subcortical volume did not differ from controls. Subcortical activity was found to predict superior frontal gyral cortical thickness independently from age, CD4 as well as premorbid intelligence.
Conclusion: Subcortical dysfunction was independently associated with pre-frontal cortical thickness in HIV+ patients. Cortical atrophy in HIV infection is likely a multifactorial, related to viral induced sub-cortical dysfunction, immune de-regulation as well as other associated risk factors such as age and substance abuse.

Posters/ Plakkate

ABSTRACT NUMBER / ABSTRAKNOMMER: 131

MODIFICATION OF THE ASSOCIATION BETWEEN EARLY ADVERSITY AND OBSESSIVE-COMPULSIVE DISORDER BY POLYMORPHISMS IN THE MAOA, MAOB AND COMT GENES

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Serotonergic and dopaminergic pathways have been implicated in the pathophysiology of obsessive-compulsive disorder (OCD). The monoamine oxidases (MAOA/B) and catechol-O-methyltransferase (COMT) enzymes are responsible for breaking down key regulatory components within these pathways, and polymorphisms within genes may be considered candidates for OCD susceptibility. Childhood trauma has also been linked to the development of later psychopathology, including OCD. Little attention has been paid to the interactions that may exist between genes and environment in the aetiology of OCD. This study investigated gene-by-environment interactions between childhood trauma and polymorphisms in the MAOA, MAOB and COMT genes in OCD patients. Ten polymorphisms (MAOA: 3 variants, MAOB: 4 variants, COMT: 3 variants) were selected and genotyped in an adult Caucasian cohort of 52 OCD patients and 195 gender- and age-matched healthy controls, using TaqMan assays. Early-life trauma was assessed using the Childhood Trauma Questionnaire (CTQ). Gene-by-environment interactions (GxE) between the polymorphisms and childhood trauma were assessed using generalized linear models and the R Genetics package in RStudio.Our findings suggest that early adversity is a risk factor for increased susceptibility to OCD,

with emotional abuse and emotional neglect contributing the most weight. Two haplotypes in MAOB were identified to be significantly associated with OCD susceptibility. The Val158Met polymorphism in COMT was found to have a significant interaction with childhood trauma in general, with the Met allele being associated with a decreased susceptibility for OCD with increased childhood trauma. To our knowledge, this is the first study to investigate the relationship between childhood trauma and OCD, and the manner in which this relationship is modified by polymorphisms in MAOA, MAOB and COMT. Childhood trauma was found to interact with the Val158Met polymorphism within the COMT gene where Met allele carriers have reduced susceptibility risk for OCD with increased severity of childhood trauma.

ABSTRACT NUMBER / ABSTRAKNOMMER: 132

ADVOCACY IN ACTION: A CASE MODEL OF THE SOUTH AFRICAN DEPRESSION & ANXIETY GROUP

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Introduction: Mental health is largely neglected in South Africa, and stigma plays a major role in the discrimination associated with mental illness. To address this, advocacy is included as one of the key objectives of the National Mental Health Policy Framework and Strategic Plan. In order to strategize effective advocacy campaigns, it is necessary to evaluate what is presently being done. This study examined the current advocacy approach implemented by the South African Depression & Anxiety Group (SADAG), the country's largest and longest-running mental health support network advocacy group. Methods: Informed by 20 years of mental health care user-led experience and guided by a scientific advisory board of registered health professionals, SADAG has developed and is implementing a Mental Health Advocacy Model (MHAM) for undertaking relevant and appropriate advocacy activities in South Africa. Here we report on all activities undertaken between 2012 and 2013 to inform the conceptualisation of the model. Results: SADAG's MHAM entails three key action areas, i.e. 1) Mental health services, including emergency help-lines, free face-to-face counselling, and a programme to assist patients with adherence to treatment; 2) Public awareness campaigns, including school- and community-based activities, and media campaigns; and 3) Empowerment, i.e. addressing stigma and poor health literacy through the distribution of a appropriate psycho-educational tools and information across South Africa. Conclusion: Advocacy is an important means of ensuring the voices of mental health care users are heard by being independent from statutory mental health provision, and following a set of principles which encourage empowerment and user involvement. Although not comprehensive in its implementation, this model identifies key actions that can be implemented to promote advocacy in SA. Arguably, the challenge for future advocacy initiatives is to preserve its independence whilst at the same time securing long-term funding.

ABSTRACT NUMBER / ABSTRAKNOMMER: 133

COGNITIVE PERFORMANCE DURING THE FIRST YEAR OF TREATMENT IN FIRST-EPISODE SCHIZOPHRENIA: A CASE-CONTROL STUDY

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Background: Several questions remain unanswered regarding the magnitude and time course of cognitive improvement in response to antipsychotic treatment. The purpose of this study was to assess changes in cognitive performance in antipsychotic naïve or minimally medicated patients with first-episode schizophrenia during the first 12 months of treatment, in a case-control design. Patients were treated with flupenthixol decanoate depot injection, according to a standard algorithm. The primary outcome measure was change in MCCB composite score over 12 months. Method: The sample comprised 92 patients and 100 healthy controls matched for age, sex, ethnicity and educational status. Cognitive function was assessed by means of the MATRICS Cognitive Consensus Battery (MCCB).Results: A mixed effects model identified a significant group by time effect (p=<0.0001) for the MCCB composite score, with patients showing a greater degree of change than the controls. For the other MCCB domains there were significant group by time effects at adjusted significance level for attention and vigilance (p=<0.0001), visual learning (p=<0.0001), verbal learning (p=0.005), and working memory (p=<0.0001), but not for reasoning and problem solving (p=0.04), speed of processing (p=0.03), and social cognition (p=0.06). There were moderate correlations between change in MCCB composite score and change in symptomatology as assessed by PANSS factor-analysis derived domains.Conclusion: Substantial improvements in cognitive function were observed over and above a practice effect, and were significantly correlated with improvements in psychopathology and functionality.

ABSTRACT NUMBER / ABSTRAKNOMMER: 134

COGNITIVE CHANGES IN ALCOHOL-INDUCED PSYCHOTIC DISORDER.

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Aim: This study aimed to explore the neuro-cognitive deficits of AIPD (n=13) as compared to the cognitive deficits of uncomplicated alcohol dependence (n=16). Method: Participants were recruited from the acute psychiatric admission wards of the Department of Psychiatry, University of Stellenbosch and Stikland and Tygerberg Academic Hospitals in the Western-Cape, South Africa. Participants who met DSM IV TR criteria (American Psychiatric Association, 2000) for AD and for AIPD, respectively, were included. Participants who met criteria for another current DSM IV TR Axis I disorder were excluded. A structured interview was done prior to neuropsychological assessment to ascertain current mental state and to obtain relevant demographic detail and history. Neuropsychological assessments were performed and supervised by clinical psychologists at either Tygerberg or Stikland Hospital. Results: The groups were matched demographically with similar period of abstinence prior to assessment. The AIPD group experienced first psychotic symptoms at age thirty five. The results reflected statistically significant differences on tasks measuring immediate memory; recall upon delay; exaggeration of memory difficulty and abstract thinking.Conclusion: This study concurs with earlier literature that some cognitive deficits are greater in AIPD compared to uncomplicated AD.

ABSTRACT NUMBER / ABSTRAKNOMMER: 135

RESTING FUNCTIONAL CONNECTIVITY IN SOCIAL ANXIETY DISORDER AND THE EFFECT OF PHARMACOTHERAPY

Alexander Doruyter

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Background: Several previous studies have reported disruptions to resting-state functional connectivity (RFC) in social anxiety disorder (SAD) compared to healthy controls (HCs) but very few studies have examined the effect of pharmacotherapy on functional connectivity measures at rest in the disorder. Aim: The aim of the study was to detect differences in the connectivity of disrupted cortical network hubs in SAD and investigate the effect of pharmacotherapy. We hypothesized that functional connectivity between SAD and HCs would differ and that such differences would be impacted by pharmacotherapy.Methods: A retrospective analysis of Tc-99m HMPAO SPECT data (obtained in previous research) of patients meeting DSM-IV criteria for SAD, and HCs was performed. SAD participants were scanned at baseline and after an 8-week course of pharmacotherapy (either with citalopram or moclobemide). Image data were collated and reconstructed using optimal techniques (iterative algorithms including corrections for attenuation, scatter and collimator blurring). Scans were normalized, co-registered and converted to fit a standardized template using SPM-12. Functional connectivity analysis was performed on a cross-subject level using SPM-12. Results: Twenty-seven SAD patients and 18 age and gender-matched HCs were included in the study. Also analysed were the scans of twenty participants from the SAD group after pharmacotherapy with citalopram (n=12) or moclobemide (n=8). Differences in RFC in untreated SAD compared to HCs, as well as the effect of pharmacotherapy on RFC in SAD will be presented. Conclusion: The results will be discussed in the light of existing studies of RFC in SAD, and in the light of emerging hypotheses about the role of resting state networks in social cognition. In particular these data will be analysed in terms of the putative role of altered social cognitive function in the aetiology of SAD.

ABSTRACT NUMBER / ABSTRAKNOMMER: 136

SINGLE VOXEL PROTON MAGNETIC RESONANCE SPECTROSCOPY (1H-MRS) AND VOLUMETRY OF THE AMYGDALA IN SOCIAL ANXIETY DISORDER IN THE CONTEXT OF EARLY DEVELOPMENTAL TRAUMA

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Introduction: Early developmental trauma (EDT) has been hypothesized to play a significant role in the pathophysiology of social anxiety disorder (SAD), however there have been no published neurometabolite studies in SAD in the context of EDT. Methods: We used single voxel proton magnetic resonance imaging to elucidate the neurometabolite profiles and structural magnetic resonance imaging to aquire volume differences of the left amygdala in 26 individuals with SAD with EDT compared with 20 individuals with SAD without EDT and 22 healthy controls. Bayesian statistical testing was performed to compute between-group differences in probabilities of selected neurometabolites and amygdala volume. Results: Differences were found in PCr between the SAD with EDT and SAD without EDT groups, however there were no other neurometabolite differences between these groups. Differences were found in Inositol (Ins), Phosphocreatine (PCr), N-Acetylaspartate (NAA) and Glutamate/Glutamine (Glx) in the left amygdala in the SAD with EDT group compared with the control group. Differences were also found in NAA, Gln and Glx in the SAD without EDT compared to the control group. No volume differences were observed in the left amygdala

between the three groups. Discussion: A number of distinct neurometabolites that were dysregulated in SAD with EDT and not SAD without EDT, suggested differences in pathophysiology with the occurrence of EDT. The amygdala volume findings are consistent with recent studies investigating volume differences in the amygdala in SAD.

ABSTRACT NUMBER / ABSTRAKNOMMER: 137

THE HISTOPATHOLOGY OF THE BLOOD VESSELS OF THE CIRCLES OF WILLIS IN THE WESTERN CAPE REGION.

Rita-Liezl Dreyer
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The Histopathology of the blood vessels of the Circles of Willis in the Western Cape region.R.L. Dreyer1, B.J. Page11 Division of Anatomy and Histology, Department of Biomedical Sciences, Faculty of Medicine and Health Sciences, Stellenbosch UniversityNeurovascular diseases originate in the circle of Willis (CoW). The brain is extremely sensitive to oxygen consentration changes. Disturbances in the brains vascularization system may therefore lead to changes in the brain's neural function. These changes are presented as various clinical signs and symptoms to neurological disorders. The aim of this study is to determine the prevalence of vascular pathology in the CoW in the Western Cape region. The CoW's were removed from embalmed cadavers (n=60) that had died of natural causes.The cadavers age ranged between 22 and 73 years. Each artery of the circle of Willis was subsequently processed, embedded, section at 5µm and mounted for staining. Haematoxylin and eosin (H&E) staining and CD31 immunohistochemistry were used. The CD31 stain was used for better differentiation between plaques and the epithelium itself. It was also seen in this study that positively charge slides loses there poly-L-lysine coating if dipped in water more than five times and the method was adjusted accordingly. All the arteries of a CoW was then embedded into one block for CD31 staining. Hypoplasia was most commonly seen in the posterior communicating arteries. The middle cerebral artery and the basilar artery had the most cases plaque build-up. The anterior communicating artery was seen to have the most cases of accomping artiers which were not always notable in the macroscopic examination. The information regarding the prevalence of vascular pathology observed in the Western Cape region is moderate at this time in the study and further analysis is currenty underway.

ABSTRACT NUMBER / ABSTRAKNOMMER: 138

SYMPTOM AWARENESS AND PREFRONTAL CORTICAL THICKNESS IN FIRST EPISODE SCHIZOPHRENIA

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Introduction: Symptom unawareness may be linked to prefrontal cortical functioning in schizophrenia. Neuroimaging studies implicate the dorsolateral prefrontal gyrus, rectus gyrus, left anterior cingulate, right inferior frontal gyrus, right inferior gyrus, right precentral gyrus. Symptom unawareness may well be related to a thinner frontal cortex, but studies thus far are preliminaryMethod: Cross sectional baseline clinical and imaging assessments were performed on 92 first episode schizophrenia patients, 93 healthy controls. We acquired T1 weighted data on a 3T scannerand scans were processed using Freesurfer v5.1. We compared frontal cortical thickness between patients and controls using t-tests and examined for a correlation between symptom unawareness and frontal cortical thickness. We

adjusted for clinical variables (PANSS total score, duration of untreated psychosis) using multiple regression. All analyses were corrected for multiple comparisons.Results: Average cortical thickness in patients was correlated with poor symptom awareness for the following age and gender adjusted regions: left and right rostral middle frontal (left: r=.305, p=.003; right: r=0.305, p=.003), left caudal anterior cingulate (r=.243, p=0.051), left and right pars triangularis (left: r=.241, p=.021; right: r=.257, p=.013), left and right superior frontal (left: r=.221, p=.035; right: r=.240, p=.021). When adjusting for confounding effects of illness severity, thinning of the left rostral middle frontal region (β=1.48 95% CI 0.45 to 2.51, p=0.005) and left anterior cingulate (β=.034 95% CI 0.07 to 1.68, p=0.034) was associated with poor symptom awareness. Discussion: These findings suggest that symptom unawareness is associated with thinning of a number of prefrontal cortical regions in both hemispheres and thinning is present early in the disease process. A combination of structural, functional and clinical information gathered longitudinally will be required to understand the dynamic mechanisms by which the prefrontal lobe influences outcome.

ABSTRACT NUMBER / ABSTRAKNOMMER: 139

INVESTIGATING COMT VARIANTS IN ANXIETY SENSITIVITY IN SOUTH AFRICAN ADOLESCENTS

Lyndon Jacques Zass
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Anxiety disorders are a broad range of multifactorial disorders characterized by abnormal and inappropriate anxiety as the result of complex interactions between genetic and environmental factors. Anxiety sensitivity (AS) is a well-established anxiety disorder endophenotype that refers to an individual's fear of anxiety-related sensations and symptoms, based on the belief that it has harmful physical, psychological and/or social consequences, which has been reported to be under the influence of genetic and environmental factors as well. Increased AS levels have been linked to complex interactions between childhood maltreatment and multiple gene variants, including variants in the genes encoding BDNF, NPSR and the serotonin transporter. The catechol-O-methyltransferase (COMT) gene codes for a protein involved in the monaminergic systems, systems shown to influence and be influenced by AS. The aim of this study was to investigate whether COMT variants (rs4680, rs362204 and rs165599) play a role in susceptibility to increased levels of AS and to elucidate whether gene-environment interactions influences this increase in a sample of South African adolescents. Nine-hundred and fifty-one adolescents (Black= 634, Coloured= 317) completed multiple clinical questionnaires and were genotyped using manual (RFLP) (rs362204 and rs165599) and automated (KASP) (rs4680) genotyping methods. Association analysis indicated significant associations between multiple clinical variables, however no associations were observed between AS and the COMT variants. In addition, no significant gene-environment interactions were found either. These findings suggest that the COMT variants investigated in the present study are not implicated in the increased AS observed in Black and South African Coloured adolescents.

ABSTRACT NUMBER / ABSTRAKNOMMER: 140

A STUDY OF GENE AND PROTEIN EXPRESSION OF PARKIN IN DERMAL FIBROBLASTS FROM PARKINSON'S DISEASE PATIENTS WITH PARKIN MUTATIONS.

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Parkinson's disease (PD) is a neurodegenerative movement disorder associated with the degeneration of dopaminergic neurons in the substantia nigra. Parkin gene mutations leading to loss of functional parkin are the most common cause of autosomal recessive, early-onset PD. In this study using patient-derived tissue, parkin protein and parkin gene expression levels were compared in three patients harboring previously-identified parkin mutations (two with homozygous exon 4 deletions and one with homozygous exon 3-4 deletions) using reverse-transcription chain reaction (RT-PCR) and Western blot (WB) analysis. Furthermore, the use of dermal fibroblasts as a model system to study PD-related pathology resulting from parkin mutations was also assessed. RT-PCR results reflected sufficient parkin expression in the control fibroblasts and confirmed deletions in the patient fibroblasts, theoretically leading to loss of functional parkin, for two out of the three patients. However, WB analysis using two independent antibodies (binding to different parkin epitopes) produced conflicting results. Quantification of these parkin bands did not reveal significantly increased or decreased expression of parkin compared to the controls. A large number of parkin splice isoforms have previously been identified. The mutation of interest may not affect all splice isoforms and given that the tissue-specific expression of these isoforms have been shown to differ, it could mean that parkin isoforms expressed in the brain may differ from those expressed in fibroblasts. In conclusion, in order to establish cellular models to study genetic disorders it is important to determine whether the protein of interest is expressed at adequate levels using at least two different antibodies.

ABSTRACT NUMBER / ABSTRAKNOMMER: 141

CHANGES IN BODY MASS AND METABOLIC PROFILES OVER 12 MONTHS IN PATIENTS WITH FIRST-EPISODE SCHIZOPHRENIA WITH ASSURED ANTIPSYCHOTIC ADHERENCE

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Background: Patients with schizophrenia are at increased risk of weight gain and metabolic syndrome, and antipsychotic medications are a major contributor.MethodsWe investigated the changes in body mass, fasting blood glucose, lipids and prolactin in 107 antipsychotic naïve or minimally treated patients with first- episode schizophrenia who were treated according to a standard algorithm with long-acting injectable flupenthixol decanoate over 12 months. ResultsEighty-three (78%) participants completed the 12 months of treatment, and 104 (97%) received 100% of the prescribed injections during their participation. Linear mixed effect models for continuous repeated measures indicated statistically significant increases in BMI ($p < .0001$), waist circumference ($p=0.0006$) and triglycerides ($p=0.03$) and significant decrease in HDL ($p=0.005$), while systolic ($p=0.7$) and diastolic blood pressure ($p=0.8$), LDL ($p=0.1$), cholesterol ($p=0.3$), glucose ($p=0.9$) and prolactin ($p=0.3$) values did not change significantly over time. The triglyceride:HDL ratio increased by 91%. Baseline rates of metabolic syndrome were high (n=17, 16%), and increased at endpoint (n=26, 24%). Change in BMI was significantly correlated with change in triglycerides ($r=.34$, $p=.008$), but not with change in glucose ($r=.1$, $p=.3$), HDL ($r=-.1$, $p=.3$), LDL ($r=.2$, $p=.1$) or total cholesterol ($r=.2$, $p=.1$). BMI increase was not significantly related to endpoint flupenthixol dose ($p=0.1$). The only significant predictor of BMI increase was non-substance abuse ($p=.002$). ConclusionsThe risks of weight gain and metabolic syndrome associated with antipsychotic treatment in first- episode schizophrenia psychosis are not restricted to second generation antipsychotics and low-potency first-generation antipsychotics. This is a global problem, and developing communities may be particularly susceptible.

ABSTRACT NUMBER / ABSTRAKNOMMER: 142

THE RELATIONSHIP BETWEEN NUMBER OF TRAUMATIC EVENTS, SLEEP QUALITY AND THE DEVELOPMENT OF POSTTRAUMATIC STRESS SYMPTOMS IN A SAMPLE OF SOUTH AFRICAN ROAD TRAFFIC COLLISION SURVIVORS

Sharain Suliman
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Background: Posttraumatic stress disorder (PTSD) is one of the most common psychological consequences for road traffic collision (RTC) survivors and can have serious and long-lasting consequences . Previous traumatic life events (LE) and sleep disturbances are known to predict the development of PTSD. Aims: We aimed to determine whether number of previous LE was predictive of current and longer term PTSD symptoms in acute RTC survivors, and whether this relationship is mediated by sleep disturbances.Methods: We included 97 individuals who had experienced a RTC. The Clinician Administered PTSD Scale (CAPS) was used to assess for PTS symptoms 10.02 (±4.96) days, and at 3 months post RTC. The Life Events Checklist (LEC) was used to identify previous traumatic events and the Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality.Results: Participants endorsed an average of 4.00 (±3.28) negative LE. Number of LE was, however, not correlated with PTS symptoms at baseline (p=0.15) or 3 months (p=0.45) post RTC. Sleep quality was significantly correlated with current PTS symptoms (p=0.03) but not with 3 month (p=0.09) symptomatology. Further regression analyses supported this and indicated that sleep quality was not a mediator of the relationship between LE and PTS symptomatology.Conclusion: Although previous traumatic events are reported to be related to PTSD severity, we did not find this to be the case. Like other studies, however, we did find that sleep disturbances correlated with current PTS severity. Impaired sleep prior to or early after trauma may deplete emotional, cognitive, and physical resources required to manage after the experience. PTS may also be associated with elevated levels of physiological arousal that are incompatible with conditions necessary for sleep onset. Even so, sleep quality was not predictive of later PTSD. Further studies elucidating risk and resiliency factors, particularly in African samples, are needed.

ABSTRACT NUMBER / ABSTRAKNOMMER: 143

INFANT ATTACHMENT AND MATERNAL DEPRESSION AS PREDICTORS OF NEURODEVELOPMENTAL AND BEHAVIOURAL OUTCOMES AT FOLLOW-UP

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BACKGROUND: The prevalence of postpartum depression is high in low- and medium-income countries and is often associated with HIV status and poverty. Depression is also associated with impairment in mother-child interaction and can lead to poor attachment. Maternal depression and poor attachment can cause long-term disruption of social, emotional, behavioural and neurodevelopmental outcomes in children.RESEARCH AIM AND OBJECTIVES: The study aimed to determine if infant attachment at 10-12 months, and maternal depression at 10-12 months postpartum, were significant predictors of behavioural and neurodevelopmental outcomes at 42 months and 60 months in children.METHODS: The study followed a prospective, longitudinal design. Eighty mother-child dyads infected with HIV, participated in the study. Mothers were assessed for depression using the Centre for Epidemiologic Studies Depression scale (CES-D). The Alarm Distress Baby Scale (ADBB) was used to assess attachment style in children. Neurodevelopmental and behavioural outcomes were measured using the Griffiths Mental Development Scales and the Child Behaviour Checklist (CBCL). FINDINGS/RESULTS: Results of the regression models revealed that attachment style and maternal depression were not significant predictors of behavioural outcomes at 42 months and 60 months. However, attachment style and maternal depression were significant predictors of neurodevelopmental outcomes at 42 months. Maternal depression remained a significant predictor of neurodevelopmental outcomes at 60 months. There was no significant relationship

between the CD4 counts of children and their attachment style, behavioural outcomes, neurodevelopment and maternal depression. CONCLUSION: Our findings underscore the negative impact of poor attachment style, and particularly, maternal depression on long-term neurodevelopmental outcomes. In the context of HIV, screening for maternal depression and infant attachment are important, given the significant long-term effects of maternal depression and attachment on neurodevelopment in children.

ABSTRACT NUMBER / ABSTRAKNOMMER: 144

REVIEW OF THE ANATOMY OF THE MIDDLE CEREBRAL ARTERY AND ITS ANOMALIES

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The middle cerebral artery (MCA) is the most complex cerebral artery although few anomalies are found compared to the other cerebral arteries. The branches of the MCA cover a large part of each hemisphere, therefore it is exposed in various operations. Although the segments of the MCA are similarly described by most authors, there is some disagreement on the branching pattern of the MCA. The aim of this study was to review the available literature on the anatomy and variations of the MCA, and to compare this to a pilot study. For the pilot study, 20 hemispheres were perfused with coloured silicone and the MCA was dissected. According to the literature, the two most common branching configurations are the bifurcating and trifurcating patterns. In the pilot study, bifurcation was observed in 19 hemispheres, and in one hemisphere there was no branching (monofurcation). No trifurcation was observed. The most commonly duplicated branch was the anterior parietal artery in 30%, and most commonly absent was the common temporal artery in 65% and the temporal polar artery in 40%. Very few studies describe the origins of the branches of the MCA, therefore a detailed description is given. Middle cerebral artery variations that are occasionally reported in the literature include fenestration, and a duplicated or accessory MCA, although no variations were observed in the pilot study.Aneurysms can frequently be observed at the branching of cerebral vessels, therefore a thorough knowledge of the vascular anatomy is vital. Furthermore, knowledge of possible variations is important since variations can have serious clinical implications.

ABSTRACT NUMBER / ABSTRAKNOMMER: 145

HOW WELL ARE OUR FIRST YEAR STUDENTS? INTERNATIONAL STUDY ON STUDENT HEALTH AND WELLNESS: PRELIMINARY FINDINGS

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Background: During the university years, youth enter a key developmental period in which they experience increased risk for academic, behavioral, and emotional problems. Here we report on aspects of the health and mental health status of first year students at SU.Methods: We are conducting an international longitudinal study using an e-survey to assess lifetime history of risk

factors for negative outcomes, i.e. academic-, mental and physical health problems, of first year university students. Respondents will be followed up at the start of each subsequent year to assess past year life events such as suicidal behaviours, violence and alcohol or drug use. Results: 500 students (36.4% male, average age 18.8 years) completed the survey. 41.2% rated their physical health as “good” and 32.3% as ‘very good” while 32% reported their mental health status as “good” and 40% as “very good”. 16-17% reported lifetime diagnoses of depression or anxiety-related disorders. 29.4% reported that they had felt sad or depressed, or anxious or nervous for most or almost all of the time. 36.6% of students reported having an alcoholic drink on 1-2 days a week. On these days 37.9% have 1-2 drinks and 31.4% 3-4 drinks. 32.8% reported using illicit substances, medications such as methylphenidate, or benzodiazepines. Many students sought help for mental health problems in the past (28% received counselling and 13% received pharmacotherapy). 25.2% reported that they are still receiving treatment for mental health-related issues. Conclusion: These findings suggest that most participants reported being physically and mentally healthy. However, depression and anxiety rates, as well as problems related to alcohol and substance abuse are concerning. These problems may compromise academic performance and future career options, amongst other things. The data rendered by this longitudinal survey may be used to identify those individuals at risk and refer them to appropriate services.

ABSTRACT NUMBER / ABSTRAKNOMMER: 146

EFFECTS OF HIV AND CHILDHOOD TRAUMA ON BRAIN MORPHOMETRY AND NEUROCOGNITIVE FUNCTION

Georgina Spies
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Introduction: A wide spectrum of neurocognitive deficits characterise HIV infection in adults. HIV infection is additionally associated with morphological brain abnormalities affecting neural substrates that subserve neurocognitive function. Early life stress (ELS) also has a direct influence on brain morphology. However, the combined impact of ELS and HIV on brain structure and neurocognitive function has not been examined in an all-female sample with advanced HIV disease. Method: Structural data were acquired using a 3T Magnetom MRI scanner and a battery of neurocognitive tests was administered to 124 women; HIV positive with ELS (n = 32), HIV positive without ELS (n = 30), HIV negative with ELS (n = 31), HIV negative without ELS (n = 31). Results: Significant group volumetric differences for right anterior cingulate cortex (ACC), bilateral hippocampi, corpus callosum, left and right caudate, and left and right putamen were found. Mean regional volumes were lowest in HIV-positive women with ELS compared to all other groups. Although causality cannot be inferred, findings also suggest that alterations in the left frontal lobe, right ACC, left hippocampus, corpus callosum, left and right amygdala, and left caudate may be associated with poorer neurocognitive performance in the domains of processing speed, attention/working memory, abstraction/executive functions, motor skills, learning, and language/fluency with these effects more pronounced in women living with both HIV and childhood trauma. Conclusion: This study highlights the potential contributory role of childhood trauma to brain alterations and neurocognitive decline in HIV-infected individuals.

ABSTRACT NUMBER / ABSTRAKNOMMER: 147

COGNITIVE FUNCTION IN WOMEN WITH HIV INFECTION AND EARLY LIFE STRESS

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Introduction: HIV is frequently associated with deficits in higher order brain function, including deficits in memory, psychomotor speed, executive functions, and attention. Early life stress (ELS) has also been shown to have a direct influence on neurocognitive performance. However, the combined impact of ELS and HIV on neurocognitive function over time has not been examined in an all-female sample with advanced HIV disease. Method: A battery of neurocognitive tests was administered to 117 women at baseline and then a year later; HIV positive with ELS (n = 53), HIV positive without ELS (n = 14), HIV negative with ELS (n = 18), HIV negative without ELS (n = 32). Results: More women were on antiretroviral therapy (ART) at follow-up compared to baseline. Raw scores controlling for age and education at baseline and 12-month follow-up were analysed using a Restricted Maximum Likelihood (REML) approach. Results revealed a significant combined HIV and childhood trauma effect over time on the Wisconsin Card Sorting Test ($p = 0.003$) and a significant individual HIV effect over time on the WAIS-III Digit Symbol Test ($p = 0.03$). For both, mean scores revealed better performance at 12-month follow-up compared to baseline. Being on ART at follow-up was significantly correlated with scores on both tests. Conclusion: These findings suggest improved performance in abstraction/executive functioning and speed of information processing over time. This improved or preserved cognition may be attributed to increased use of ART by follow-up compared to baseline, although this direct relationship was not explored.

ABSTRACT NUMBER / ABSTRAKNOMMER: 148

SELECTIVE ATTENTION IN PRENATAL METHAMPHETAMINE EXPOSED CHILDREN AGED SEVEN TO EIGHT YEARS

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Background: The global prevalence of methamphetamine abuse and prenatal methamphetamine exposure (PME) has increased in recent years. Research regarding the cognitive deficits of PME in childhood remains limited, however, broad deficits in attention, visuo-motor and memory domains are indicated, although findings regarding attention are inconsistent. Selective attention ability is a prerequisite for many executive function tasks and it influences the capacity of a child to learn and pay attention in the classroom. The aim of this study was to investigate the unexplored PME effects on selective attention. Methods: This study used a cross-sectional quasi-experimental case-control design, with the sample (n=45) consisting of 24 children in the PME group and 21 healthy controls. A drug intake questionnaire assessed parent (or caregiver) reports of maternal methamphetamine, alcohol and nicotine use during pregnancy. All participants were 7 to 8 years old (mean=8.12 years, SD=0.45) and from similar low socioeconomic status backgrounds. Each child completed the Sky Search subtest from the Test of Everyday Attention for Children (TEA-Ch), to measure their selective attention abilities. A general linear model investigated group differences in selective attention, controlling for age, and maternal nicotine use, employment status and education level.Results: There were no significant differences between children with PME and unexposed controls on selective attention scores in this age group. However, the children with PME seemed to have more disorganised attentional search strategies. The mean time per target was slower for the exposed

children compared to controls, with fewer targets being found. In contrast, control participants quickly identified the targets, and found more targets in a shorter time. Conclusion: The lack of group differences in selective attention perhaps suggests that another attentional domain not measured here is affected. The sample size was also small, thus the attentional domains affected in PME should be investigated in larger samples.

ABSTRACT NUMBER / ABSTRAKNOMMER: 149

STRUCTURAL CONNECTIVITY IN SIX-YEAR OLD PRENATAL METHAMPHETAMINE EXPOSED CHILDREN

Annerine Roos
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Introduction: Emerging evidence suggests that prenatal methamphetamine (MA) exposure alters brain development. Yet, little is known about how MA alters brain connectivity. The aim of this study was to investigate cortical-subcortical structural connectivity in six-year old prenatal MA exposed children compared to healthy matched controls.Methods: Eighteen MA children and 17 controls underwent structural imaging. Global and regional brain network connectivity measures were determined by group using graph theory analysis. Correlational networks were created with cortical thickness and volumetric data after controlling for intracranial volume and gender. Nonparametric permutation tests were used to investigate group differences. Results: There was significantly higher global and regional influence of the left pericalcarine gyrus and right superior frontal gyrus in MA children compared to controls. The right middle temporal gyrus had significantly lower regional influence in MA children compared to controls. Conclusion: To our knowledge, this is the first evidence showing altered brain topology in global and regional networks of MA children. The findings implicate regions that connect frontal and temporal lobes that are functionally involved in motor control, executive function and memory that have previously been found to be impaired in MA children.

ABSTRACT NUMBER / ABSTRAKNOMMER: 150

RESILIENCE IN SOCIAL ANXIETY DISORDER AND POSTTRAUMATIC STRESS DISORDER IN THE CONTEXT OF CHILDHOOD TRAUMA

Susanne Bakelaar
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Much of the research on anxiety disorders has focused on associated risk factors with less attention paid to factors such as resilience that may mitigate risk or offer protection in the face of psychopathology. The aim of this study was to compare resilience in posttraumatic stress disorder (PTSD) and social anxiety disorder (SAD) relative to age-, gender- and education- matched individuals with no psychiatric disorder. Further we assessed the association of resilience with different types of childhood trauma.MethodsThe sample comprised of 121 participants, 68 with SAD (28 with no CHT and 40 with moderate/severe CHT), 22 with PTSD with moderate/severe CHT, and 31 with no psychiatric disorder (i.e. healthy matched controls). Participants were administered the Mini-International Neuropsychiatric Interview (MINI) Liebowitz Social Anxiety Scale (LSAS) Clinician-

Administered PTSD Scale (CAPS), and Childhood Trauma Questionnaire - Short Form (CTQ-SF), and the Connor-Davidson Resilience Scale (CD-RISC). The mean age of participants was 34.04 years (SD = 11). Most participants were female (54.4 %, n = 67) and Caucasian (63.6%, n = 77). Analysis of variance was used to assess for significant group differences in resilience scores. Non-parametric correlation analyses were conducted for resilience with different types of childhood abuse.ResultsThere were significant differences in resilience between SAD and PTSD groups with moderate/severe trauma, and controls. Both disorder groups had significantly lower levels of resilience than healthy controls. In the sample as a whole, childhood emotional abuse, emotional neglect, physical abuse, physical neglect, and total CHT were all significantly negatively correlated with resilience. DiscussionPatients who have PTSD and SAD with substantial CHT appear to be significantly less resilient than those with no disorder. Assessing and addressing resilience in these disorders, particularly when childhood trauma is present, may facilitate long-term recovery and warrants further investigation.

ABSTRACT NUMBER / ABSTRAKNOMMER: 151

SOCIAL ANXIETY DISORDER (SAD) AND CHILDHOOD TRAUMA: BEHAVIORAL INHIBITION, BEHAVIORAL ACTIVATION AND QUALITY OF LIFE

Susanne Bakelaar
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Background: Social Anxiety Disorder (SAD) is one of the most prevalent psychiatric disorders in South Africa. Previous studies have linked childhood trauma (CHT) to the development of SAD. The Behavioral Inhibition System (BIS: anxiety) and the Behavioral Activation System (BAS: impulsivity), two dimensions of personality, are said to influence the development of different psychopathologies, including SAD. Both SAD and CHT independently impact on quality of life (QoL). This study investigated the relationship between BIS, BAS, and QoL in SAD patients with and without exposure to CHT, compared to healthy controls.Method: Data were collected for 102 adults. Criteria for SAD were met by 76 participants, of which 51 participants were exposed to CHT and 25 were not. The remaining 26 participants were demographically matched healthy controls. Measures of anxiety, impulsivity, and QoL were obtained by administering Carver and White's BIS / BAS Scales and the Quality of Life Enjoyment and Satisfaction Questionnaire – Self Report (QLESQ-SR) respectively.Results: A positive relationship was found between the severity of SAD symptoms and CHT exposure. No significant differences in impulsivity were found across the three groups. Healthy controls reported significantly lower anxiety and higher QoL, while no differences were found between the groups with SAD. Conclusion: More CHT exposure appears to be associated with SAD severity. The lack of differences in BIS, BAS and QoL in SAD patients with or without CHT requires further investigation.

ABSTRACT NUMBER / ABSTRAKNOMMER: 152

FOOD ACTIVITIES AND THE MAINTENANCE OF IDENTITY IN LATER LIFE

Nicola Ann Plastow
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Background: Identity maintenance contributes to mental well-being in later life. Food activities such as cooking, shopping, and sharing meals are meaningful occupations that contribute to an occupational identity (Kielhofner, 2002). Surprisingly, there is only moderate research evidence of a relationship between food activities and identity maintenance. The aim of this study was to explore the relationship between food activities and identity maintenance among British older adults living in

London. Methods: Following University ethical approval, we conducted a concurrent mixed-methods study with 39 community-living British older adults, aged 62 to 89, in West London, United Kingdom. Qualitative data from semi-structured interviews were analysed using grounded theory methods. Findings: We found three processes of 'Participation and Maintenance', 'Threat and Compensation', and 'Loss of Meaning and Change'. The findings show that participation in food activities contributes to identity maintenance for older adults who 'love' food, view food activities as important, and who gain pleasure from their food activities. Older adults with a life-long disinterest, and those who have become 'not bothered', spend 'as little time as possible' on their food activities, and do not maintain their identities through these occupations.Conclusion: Only activities that are meaningful, important, and pleasurable contribute to maintenance of occupational identities. Occupational therapists should ask their service users what their most important activities are, why they love or enjoy them, and what they do to keep participation consistent with the way they view themselves. This conversation can be the starting point in maintaining important identities through meaningful activities, and making a difference to the mental well-being of older people.NOTE: This poster was presented at the College of Occupational Therapists 39th Annual Conference and Exhibition and COT Specialist Section - Work Annual Conference, Brighton, United Kingdom from 28th June to 2nd July 2015

ABSTRACT NUMBER / ABSTRAKNOMMER: 153

THE ROLE OF NON-CODING RNAS IN FEAR EXTINCTION

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Impairments in fear extinction contribute to the development of anxiety and stress-related disorders. D-cycloserine (DCS) is effective in facilitating fear extinction in animal and human studies of anxiety, however the precise mechanisms are unknown. This project aimed to identify non-coding RNAs (microRNAs [miRNAs] and long non-coding RNAs [lncRNAs]) that may be involved in DCS-induced fear extinction in a contextual fear conditioning animal model.MethodsThe PTSD model described by Siegmund and Wotjak (2007) was followed. Rats were grouped into 4 groups, Fear + saline (FS), Fear + DCS (FD), Control + Saline (CS) and Control + DCS (CD). Behavioural tests were conducted to evaluate anxiety-like behaviours. RNA-seq, microRNA (miRNA)-seq and bioinformatic analyses were performed on RNA extracted from left dorsal hippocampus to identify differentially expressed miRNAs and lncRNAS that might provide insight into how DCS facilitates fear extinction. Target enrichment analysis and functional luciferase analysis were performed to determine whether differentially expressed miRNAs targeted any of the differentially expressed genes. LncRNA:mRNA and lncRNA:miRNA interactions were predicted computationally.ResultsWe identified 32 differentially expressed miRNAs, of which 18 were predicted to target and regulate 42 differentially expressed genes. The upregulation of rno-mi31a-5p may have facilitated the downregulation of IL1RN and MT1A as detected in RNAseq. Twenty two lncRNAs were differentially expressed Several lncRNAs:mRNA and lncRNA:miRNA interactions were predicted; these miRNAs could regulate the expression of these lncRANs or the lncRNAs could act as miRNA sponges. ConclusionIntricate interconnectivity exists between non-coding RNA species. Non-coding RNAs represent an additional layer of gene regulation and may be one of the mechanisms that mediate DCS-induced fear extinction.

ABSTRACT NUMBER / ABSTRAKNOMMER: 154

THE DEVELOPMENT OF THE VISUAL SCREENING TOOL FOR DEPRESSION AND ANXIETY DISORDERS: ADDRESSING BARRIERS TO SCREENING FOR MENTAL ILLNESS IN DIABETES AND HYPERTENSION

Zimbini Ogle
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Previous research has reported a high prevalence of depression and anxiety disorders in people with diabetes and hypertension. Given the burden associated with depression and anxiety disorders in people with diabetes and hypertension; treatment guidelines have recommended the screening of depression and anxiety disorders in patients with diabetes and hypertension. However, there is a lack of screening instruments that can be appropriately applied to the diverse range of cultural, educational and language groupings. One set of tools that could possibly circumvent these challenges are visual screening tools (VST). However, available VST either do not screen for anxiety or neglect a broad focus on symptoms of depression. The aim of the study is therefore to develop a VST that adequately screens for both depression and anxiety disorders in a diverse group of patients with diabetes in a time and resource constrained environment. The study reports on the development phase of the VST. Using the Hospital Anxiety and Depression Scale (HADS), a VST with 13 items was developed and administered to 40 participants drawn from across the South African cultural, language and educational spectrum. They were asked to describe which emotions and thoughts are depicted in the drawings and analysis was done of these responses. Participants were able to clearly identify the associated depression and anxiety symptoms with no differences demonstrated between the varying levels of education or across the cultural spectrum. The newly developed VST will be validated against the Mini-International Neuropsychiatric Interview (M.I.N.I) in a primary care diabetes and hypertension population.

ABSTRACT NUMBER / ABSTRAKNOMMER: 155

COMORBIDITY IN GAMBLING DISORDER: PRELIMINARY DATA

Natascha Horak
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Background: Individuals with gambling disorder (GD) report persistent failure to resist the impulse to gamble despite disruption to personal, family and work life. GD has been conceptualized as one of a group of conditions characterized by impulsivity, compulsivity and addictive behaviours. Aims: We sought to investigate lifetime comorbidity patterns and rates of mood, anxiety, obsessive-compulsive spectrum (OCSDs) and substance use disorders in 17 GD patients and controls. Methods: Seventeen (N=17) patients with primary GD (41.2% male, 58.8% female; mean age: 47.7 ± 10.9) and 17 age- and gender-matched controls (41.2% male, 58.8% female; mean age: 42.8 ± 9.8) were included in this cross-sectional study. Clinical assessment measures included the Mini International Neuropsychiatric Interview (MINI) and the Structured Clinical Interview for OC-spectrum disorders (SCID-OCSD).Results: Prevalence of OCSDs was significantly higher in GD patients compared with controls (p=0.029). Of the 17 GD patients, almost half (47.1%) exhibited at least one comorbid OCSD each, such as obsessive-compulsive disorder, hair-pulling disorder, skin picking disorder, compulsive shopping, intermittent explosive disorder, kleptomania, anorexia nervosa or bulimia nervosa. The only OCSDs found in the control group were hair-pulling disorder and skin picking disorder (N=2; 11.8%). Regarding other non-OCSD-disorders, highest comorbidity rates were found in GD patients for major depressive disorder (MDD) (47.1%), substance use disorders (23.5%), posttraumatic stress disorder (PTSD) (11.8%) and panic disorder (PD) (5.9%). In controls, MDD (29.4%), PD (11.8%) and PTSD (5.9%) were most prevalent. Conclusion: In summary, our data suggest that psychiatric disorders, including OCD and many of the OC-related disorders, have a higher prevalence in GD than in controls. These preliminary data confirm the conceptualization of GD

as one of a group of conditions characterized by impulsivity, compulsivity and addictive behaviours. In practice, these findings suggest that comorbid disorders may also often need to be the focus of intervention in GD.

ABSTRACT NUMBER / ABSTRAKNOMMER: 156

CHILDHOOD ABUSE AND NEGLECT AS PREDICTORS OF DEFICITS IN VERBAL AUDITORY MEMORY IN NON-CLINICAL ADOLESCENTS WITH LOW ANXIETY PRONENESS

Lindi Martin
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Background: Childhood trauma (CT), i.e. abuse and neglect, has been shown to be associated with significant impairments in neuropsychological functioning, including deficits in memory, learning and executive functioning. Research aim and objectives: To determine whether CT influences verbal auditory memory in low anxiety prone adolescents with and without high levels of CT. Our objectives were to determine (1) whether differences in verbal auditory memory were evident between the two groups; (2) whether significant correlations were evident between abuse and neglect and aspects of verbal auditory memory and (2) whether abuse and neglect were predictive of deficits in verbal auditory memory. Methods: Adolescents (n=31; mean age: 16.8 years, SD: 0.97) completed the Childhood Trauma Questionnaire (CTQ), a tool for assessing histories of abuse and neglect. The Rey Auditory Verbal Learning Test (RAVLT) was used to assess verbal auditory memory (i.e. immediate recall, recall after interference, words learnt, delayed recall and recognition). The sample was predominantly Black (67.7%) and female (64.5%).Results: Adolescents with low levels of CT overall had significantly higher mean rank scores for delayed recall. Significant correlations were evident between (1) CT overall and delayed recall and (2) childhood neglect and immediate recall and delayed recall. Childhood abuse did not correlate significantly with any of the RAVLT items assessed. CT overall [$F(1,29)=5.831$, $p < 0.05$, with an R2 of 0.167] and childhood neglect [$F(1,29)=6.909$, $p < 0.05$, with an R2 of 0.192] were found to predict delayed recall. Childhood neglect did not predict immediate recall [$F(1,29)=3.837$, $p > 0.05$]. Conclusion: Our results suggest that adolescents with high levels of CT fare significantly poorer on delayed recall than those with low levels of CT. Neglect, in particular, has a significant influence on adolescent's verbal auditory memory, especially recall after delay.

ABSTRACT NUMBER / ABSTRAKNOMMER: 157

MATERNAL MENTAL HEALTH: A PROSPECTIVE NATURALISTIC STUDY OF THE OUTCOME OF PREGNANCY IN WOMEN WITH MAJOR PSYCHIATRIC DISORDERS IN AN AFRICAN COUNTRY

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Co-authors: E du Toit, L Koen, D Niehaus (Maternal Mental Health Study, Department of Psychiatry, University of Stellenbosch)

Background: Safety concerns exist regarding the use of psychotropic agents during pregnancy, more so when multiple medications are prescribed. Little is known about the combined effect of different categories of psychotropic and medical agents. The present descriptive study examined patterns of medication use across pregnancy in a low socioeconomic status population of women who have a serious mental illness as a primary diagnosis.
Methods: A tertiary specialist maternal mental health clinic has been established at Stikland psychiatric hospital, Cape Town. This clinic receives referrals from community health clinics, as well as

general practitioners and other specialist departments. Data on the first 105 referrals to this service were analysed as part of an ongoing prospective cohort study
Results: The majority of women were diagnosed with bipolar, depressive or psychotic disorders. Their mean age was 29,7 (SD: 6,3) years. 38 % of women had comorbid medical conditions, most commonly hypertension, diabetes and HIV. The mean gestational age was 16,8 (SD 9,1) weeks. The mean number of medications taken during pregnancy was 1,89 (SD: 1,3); but ranging between 0 – 8. The most frequently prescribed medications were from the antipsychotic, followed by antidepressant class of agents.
Conclusion: Multiple medications are frequently prescribed to pregnant women with serious mental illness because of comorbid diagnoses. However, the effects of taking multiple psychotropic and other medications during pregnancy on pregnancy outcome and fetal development are largely unknown. The management and optimal pharmacological treatment of psychiatric illness during pregnancy is complex. Further research is needed to examine the effects on birth and neonatal outcomes where multiple medications are prescribed. (Of dalk eerder: Further research regarding the safety and efficacy of polypharmacy during pregnancy)

DEMONSTRATIONS

ABSTRACT NUMBER / ABSTRAKNOMMER: 158

VIRTUAL REALITY EXPOSURE THERAPY IN A SOUTH AFRICAN CONTEXT

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Virtual reality exposure therapy (VRET) has shown some promise in recent years despite limitations in the technology. This includes efficacy that is comparable with cognitive behavioral interventions, stability over time as well as results that are generalizable to real life situations. With recent advances making virtual reality both more affordable and tolerable, VRET has the potential to serve as an adjunct to established psychotherapy in a developing setting. Few studies have explored the utilization of VRET in a developing setting, however. Here we propose a general VRET system we are currently developing for use in a local South African context.
We propose a general VRET system that provides an explicitly definable exposure level (i.e. threat level) that can be modulated by the attending therapist. This will make it possible for the system to be extended to utilize physiological measurements such as heart rate, breathing, galvanic skin response and pupilometry to adjust the threat level dynamically. This would avoid over or under exposure, tailoring the experience to the users' current anxiety state, with the possibility of therapeutic intervention. Furthermore, we intend to use goal setting, that is provide attainable therapeutic goals during the session that will act as a guide enabling participants to explore the virtual environment at their own pace. This could also serve as an objective outcome measurement in treatment trials.

Theme 6 / Tema 6

Perioperative Sciences / Perioperatiewe Wetenskappe

Oral Presentations/ Referate

ABSTRACT NUMBER / ABSTRAKNOMMER: 159

HEMATURIA AS SCREENING TEST FOR BLADDER INVASION BY CARCINOMA OF THE CERVIX CAN DECREASE THE USE OF STAGING CYSTOSCOPY

DR S WESSELS * (Division of Urology, Stellenbosch University)

Introduction: A recent study suggested that hematuria as screening test for bladder invasion in carcinoma of the cervix (CaCx) had sensitivity, specificity, positive and negative predictive value and overall accuracy of 100%, 60%, 7.4%, 100% and 62%, respectively. Aim: To evaluate hematuria as screening test for bladder invasion in CaCx. Methods: 241 women with CaCx were evaluated January 2012 through April 2013 using midstream urinalysis, cystoscopy and bladder biopsy. Results: The mean patient age was 49.7 years. The clinical stage of CaCx was T1 in 30%, T2 in 42% and T3 in 23%. HIV testing was positive in 27%. Bladder invasion (confirmed on histology) was found in 8.3%. Significant hematuria (erythrocyte count >100 000/ml) as screening test for bladder invasion had a sensitivity, specificity, positive and negative predictive value and overall accuracy of 35%, 80%, 14%, 93% and 76%, respectively, and could avoid doing cystoscopy in 78% of cases. Conclusion: Significant hematuria (erythrocyte count >105/ml) as a screening test for bladder invasion in CaCx can avoid 78% of staging cystoscopies while missing only 7% with bladder invasion. This may be an acceptable option for the management of women with T3 cervical cancer in resource constrained regions.

ABSTRACT NUMBER / ABSTRAKNOMMER: 160

DIFFERENTIAL RENAL FUNCTION CALCULATION USING CONTRAST ENHANCED COMPUTED TOMOGRAPHY

DR K DU TOIT * (Division of Urology, Stellenbosch University)

Study Population: All patients undergoing both contrast enhanced computed tomography (CECT) and radioisotope renography at Tygerberg Hospital. Study Design: A retrospective review and prospective cohort study. Primary Objective: to evaluate the correlation between calculated differential renal function using CECT data and radioisotope renogram results. Secondary Objective:to evaluate if the correlation between calculated differential renal function, using CECT data, and radioisotope renogram results, is affected by various renal pathology. To determine if substitution of isotope renography with CECT calculated differential renal function is reliable and safe.
Sample Size: 100; Study Duration: 4 years

ABSTRACT NUMBER / ABSTRAKNOMMER: 161

COMPARISON OF A LOW-COST HOME UROFLOW METER (UROWATCH) AND THE ELECTRONIC DANTEC URODYN 1000 UROFLOW METER

DR CM MEINTJES * (Division of Urology, Stellenbosch University)

Introduction: The Urowatch is a uroflowmeter developed by dr JC Esterhuyse, an engineer. It uses a paper test strip to measure flow, does not require electricity and is made of low-cost material. It offers the possibility for uroflowmetry at home or in remote clinics. Calibration using precision nozzles in a laboratory showed an excellent correlation in maximum urinary flow (Qmax) between the Urowatch and Dantec Urodyn 1000 uroflowmeters. Aim: To compare the Urowatch with the Dantec uroflowmeter in a patient population. Methods: Two study groups were used: 23 men with lower

urinary tract symptoms (LUTS) (mean age 64) and 7 healthy male volunteers (mean age 32) who provided a total of 46 and 122 uroflow measurements, respectively, on the Dantec and Urowatch, alternately. Results: There was a significant correlation between the Dantec Urodyn average flow rate (Qave) and the Urowatch Qmax in the healthy volunteers (Spearman's rank correlation r=0.423, p=0.002) but not the LUTS group (r=0.264, p=0.26). There was no significant correlation in Qmax measured by the two uroflowmeters (LUTS patients r=0.054, p=0.811; normal volunteers r=0.112, p=0.437). Conclusions: The results indicate that, in the clinical situation, the Urowatch measures the Qave rather than the Qmax.

ABSTRACT NUMBER / ABSTRAKNOMMER: 162

ASSESSMENT OF VARIATION IN UROFLOWMETRY PARAMETERS IN ASYMPTOMATIC YOUNG MALE VOLUNTEERS AND MIDDLE-AGED MEN WITH LOWER URINARY TRACT SYMPTOMS

DR CM MEINTJES * (Division of Urology, Stellenbosch University)

Introduction: The coefficient of variation (CV) is the ratio between the standard deviation (SD) and mean of a dataset. The CV places the SD in the context of the mean of the dataset, so the CV is ideally used to compare the distribution of values in datasets with widely different means. Aim: To compare variations in the maximum (Qmax) and average (Qave) urinary flow rates in normal young men, compared to older men with lower urinary tract symptoms (LUTS). Methods: A group of 23 men with LUTS (mean age 64) provided a total of 23 uroflow measurements, and 7 healthy male volunteers (A-F, mean age 32) provided a total of 122 measurements on the Dantec Urodyn 1000 uroflowmeter.
Results:

Study subject	Voided Volume (VV)	CV Qmax	Qave
A	32%	11%	12%
B	20%	8%	11%
C	22%	21%	7%
D	29%	17%	23%
E	6%	11%	17%
F	22%	18%	14%
G	29%	8%	16%
LUTS	53.2%	39.3%	54.5%

Conclusions: The CV in young, normal volunteers is substantially greater for VV than for Qmax or Qave. The CV in older men with LUTS is much greater for VV, Qmax as well as Qave, compared to the CV in young, healthy men.

ABSTRACT NUMBER / ABSTRAKNOMMER: 163

THE USE OF PROPOFOL FOR SEDATION IN MEDICAL THORACOSCOPY

DR MJ VORSTER * (Division of Pulmonology, Stellenbosch University)

Introduction: Propofol has been shown to be a safe for sedation during flexible bronchoscopy, but data for its use in medical thoracoscopy is limited.Aims and objectives: We initiated a multicentre randomized study, aiming to compare both the safety and adequacy of medical thoracoscopy performed with two different conscious sedation regimens (midazolam/fentanyl vs. propofol/fentanyl)

administered by a non-specialist anaesthetist. Methods: Either propofol or midazolam was given in boluses. Fentanyl was used in all. Procedure time, complications and patient discomfort were defined and documented. The adequacy of the sedation according to the endoscopist and recovery time were measured. Results: We enrolled 38 patients (67.5±11.9 years, 23 males), with 18 patients randomised to propofol and 20 to midazolam. We observed no differences in procedure time (37.6 vs. 36.2 min, p = 0.57), recovery time (20.1 vs. 20.8 min, p=0.86), adequacy of sedation as perceived by the endoscopist (p=0.73). There were, however, 10 adverse events observed in the propofol group compared to 4 in the midazolam group (p = 0.04). Adverse events in the propofol group included desaturation responsive to supplementary oxygen (n=6), desaturation requiring temporary bag valve ventilation (n = 1), hypotension requiring intravenous fluid resuscitation (n=2) and the need to abort the procedure (n=1); compared to the midazolam group which included desaturation responsive to supplementary oxygen (n=3) and hypotension not requiring intervention (n=1). Conclusion: Propofol is not the drug of choice for sedation during medical thoracoscopy, given the increased risk of complications.

ABSTRACT NUMBER / ABSTRAKNOMMER: 164

A CRITICAL REVIEW OF A NEUROTRAUMA SERVICE : THE EFFECTS OF TECHNOLOGICAL ADVANCEMENTS ON PATIENT MANAGEMENT.

MR IA WALKER * (Division of Neurosurgery, Stellenbosch University)
DR A VLOK (Division of Neurosurgery, Stellenbosch University)

The goal of the study is to identify shortcomings in the current management of neurotrauma patients by directly comparing neurotrauma patient management in 2007 (retrospectively) to a similar timeline prospectively in 2015. Western Cape population continues to grow annually reaching 6 016 900 citizens in November 2014 (5 278 585 in 2007). The Tygerberg Hospital trauma unit (THTU) saw 18 451 patients in 2014. 18 426 patients were seen in THTU in 2007 - 25 short of 2014. With this negligible difference the cause for increasing delayed emergency theatre is questioned.With the vast array of technological advancements having been implemented at Tygerberg Hospital and various improvements of the trauma unit (infrastructure and staff) clearly a problem exists at some stage of the management process. Delayed surgical intervention has devastating consequences for the neurotrauma patient.John et al published on 82 consecutive comatose neurotrauma patients. They concluded that swift surgical intervention resulted in a 60% decreased mortality rate. Once dura mater is compromised the natural barrier must be reconstructed as early as possible to prevent potentially fatal complications.Delayed transfer to THTU contributes to the increased time to intervention. The same volume saturates the radiological department with potential delayed diagnosis of neurotrauma. Several infrastructure upgrades (PACS,ECM,Trauma overhaul) have attempted to manage the patient load yet constantly overflowing trauma unit and theatre slates implies ineffectiveness. It is therefore important to review this system and attempt to identify areas to improve. Once having considered all of the data, certain inadequacies will be isolated and policy changes proposed.
The prospective arm only finishes on 31/7/15 but the results will be ready and presented at the ayd

ABSTRACT NUMBER / ABSTRAKNOMMER: 165

VARIATIONS IN TRANSVERSE FORAMINA OF CERVICAL VERTEBRAE: A PRELIMINARY STUDY

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MRS A ALBLAS (Department of Biomedical Sciences, Stellenbosch University)

MRS LM GREYLING (Department of Biomedical Sciences, Stellenbosch University)
PROF BJ PAGE (Department of Biomedical Sciences, Stellenbosch University)

Morphological variation of vertebrae can limit or enhance their function. When the dry bone cervical vertebrae are studied; potential areas for variation and adaptation are the transverse foramina (TF) found in the transverse processes.This pilot study aims to determine the degree of variation of the TF in the Kirsten skeletal collection.Transverse foramina of full sets of cervical vertebrae (n=50) were studied macroscopically to determine duplication, agenesis, intra-foramen sulcus formation, and hypoplasia of the foramina. In addition, incomplete foramen formation, causing an opening into the transverse processes and symmetry of size, shape, and variation of paired foramina was also considered during analysis. From the 700 TF studied 223 (31.85%) proved asymmetrical to their paired foramina. The most prominent variation was sulcus formation (11%), followed by duplication (9.71%) and hypoplasia (6%). No agenesis was present, while only nine foramina (1.29%) were incomplete.Regarding all TF, the greatest overall variation was seen in C7, with 65/196 (33.16%) TF variations accounted. An equal amount of 3/196 (1.53%) accounts regarding variation was observed for C2 and C3, showing the least amount of variations.In the normal anatomy the vertebral artery does not traverse the TF of T7, making them obsolete. In some cases, however, an accessory vertebral artery is found traversing the TF. Clinically this is relevant for procedures around the TF area, like vertebral fusions where entered screws may rupture this artery when placed incorrectly.

ABSTRACT NUMBER / ABSTRAKNOMMER: 166

TRANSCATHETER VALVE REPLACEMENTS OF ALL 4 HEART VALVES AT TYGERBERG HOSPITAL.

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DR A PECORARO (Division of Cardiology, Internal Medicine, SUN & Tygerberg Hospital)
DR. A ROCHER (Division of Anaesthesiology, SUN & Tygerberg Hospital)
Dr. J JANSON (Division of Cardio-thoracic Surgery, SUN & Tygerberg Hospital)
PROF. A DOUBELL (Division of Cardiology, Internal Medicine, SUN & Tygerberg hospital)

The transcatheter heart valve program at Tygerberg Hospital is one of very few internationally to have replaced all four heart valves percutaneously. The 10 aortic valve implants will be the main focus of the discussion.

Theme 7 / Tema 7

Maternal and Child Health / Moeder- en Kind Gesondheid

Oral Presentations/ Referate

ABSTRACT NUMBER / ABSTRAKNOMMER: 167

SURVEILLANCE OF CHILDHOOD TUBERCULOSIS DRUG RESISTANCE IN CAPE TOWN, SOUTH AFRICA: INCREASING RIFAMPICIN MONO-RESISTANCE

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Consecutive 2-year tuberculosis drug resistance surveys amongst children have been ongoing in Cape Town since March 2003 to evaluate trends of drug resistance and HIV co-infection amongst children with culture-confirmed TB. We found a decline in the prevalence of TB/HIV co-infection and multidrug-resistant TB (MDR-TB) in the recent reporting period (2011-2013) compared to previous peak occurrences. Methods:A prospective 2-year surveillance (March 2013-Feb 2015) of drug resistance in all confirmed child TB cases (<13 years) at Tygerberg Hospital, Cape Town. Initial drug susceptibility testing (DST) is done for isoniazid (INH) and rifampicin (RIF) on one specimen per child with culture-confirmed TB, and RIF DST if only the Xpert MTB/RIF is positive. HIV status was recorded.Results: 292 children, 144 (49.3%) males, median age of 34 months (IQR 14-84 months) with bacteriologically confirmed TB were recorded; 276 were culture-confirmed and 16 only by Xpert. Of culture-confirmed cases, 241 (87.3%) were pansusceptible, 20 (7.2%) were MDR, 8 (2.9%) RIF-resistant/INH-susceptible and 7 (2.5%) were INH-resistant/RIF-susceptible. Of the 16 Xpert-positive only cases, 14 were RIF-susceptible, 2 RIF-resistant and 2 indeterminate results. Of 290 (99.3%) children tested, 30 (10.3%) had any RIF-resistance. Of 280 (95.9%) children tested, 45 (16.1%) were HIV-infected. Compared to previous surveillance periods, RIF mono-resistance has increased steadily from 0 to 2.9%, now surpassing INH mono-resistance. The prevalence of MDR-TB has stabilised; HIV prevalence has decreased significantly from a peak of 29% in 2007-2009, now 16% during the last two surveillance periods.Conclusions: The increase in RIF-resistant/INH-susceptible cases is concerning. The prevalence of MDR-TB appears to be stabilising. These data indicate recent tranmission of DR-TB strains to children, and reflect ongoing transmission in the community. The increase in Rif-monoresistant TB has important implications for both treatment and preventive therapy in cases confirmed to be resistant by Xpert without further culture and DST.

ABSTRACT NUMBER / ABSTRAKNOMMER: 168

STOOL DNA EXTRACTION FOR IMPROVED MYCOBACTERIUM TUBERCULOSIS DETECTION IN CHILDREN

CORNE BOSCH (DESMOND TUTU TB CENTRE - PAEDIATRICS AND CHILD HEALTH)

Background: The confirmation of Mycobacterium tuberculosis (MTB) from children is challenging. Liquid culture, the diagnostic gold standard, has low sensitivity in paucibacillary paediatric tuberculosis (TB), and specimen collection is invasive and time-consuming. GeneXpert MTB/RIF (Cepheid, Sunnyvale, CA) gives rapid results but is less sensitive than culture. Stool is easy to collect and may contain MTB DNA from swallowed sputum. Stool culture has a high contamination rate, and GeneXpert on stool gives a high error rate due to particulate matter and inhibitors blocking filters. We tested DNA extraction prior to GeneXpert analysis as a method for reducing errors and improving assay sensitivity. MethodsDNA was extracted from lyophilised stool specimens using the QIAamp DNA Stool Mini kit (Qiagen, Germany) and inserted into the GeneXpert cartridge using a “tube-fill” protocol, bypassing initial washing and sonication steps. Clinical stool specimens were obtained from

children with suspected intrathoracic TB. The overall bacteriological reference standard was GeneXpert and culture of a minimum 2 respiratory specimens. Frozen stool specimens (-20°C) were thawed and heat inactivated (80°C for 30 min). The lyophilised method was compared to a study-specific GeneXpert protocol using fresh stool.ResultsA representative sample of 15 stool specimens from 6 culture confirmed cases (4 Rifampicin (RIF) susceptible, 2 RIF resistant) and 9 negative controls was selected. Seven were GeneXpert positive (4 (RIF) susceptible, 3 RIF resistant) and 8 were negative on the lyophilised DNA extraction method vs. 4 positive (2 (RIF) susceptible, 2 RIF resistant), 10 negative and 1 error on the study-specific protocol. ConclusionsThe diagnostic performance of GeneXpert on stool specimens can be improved by an initial DNA extraction step. Further research and validation is necessary to propose stool as an alternative specimen type (to respiratory specimens) for the diagnosis of TB in children.

ABSTRACT NUMBER / ABSTRAKNOMMER: 169

PRESENTATION AND OUTCOME OF CHILDREN WITH CULTURE-CONFIRMED ISONIAZID-RESISTANT RIFAMPICIN-SUSCEPTIBLE TUBERCULOSIS

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Background: Isoniazid (INH)-resistant/rifampicin (RIF)-susceptible (HRRS) tuberculosis (TB) is the most common form of drug-resistant TB. However, the clinical presentation, treatment and outcomes are poorly described in children despite a risk of poor outcomes given frequent use of a 3-drug intensive phase (INH, RIF, pyrazinamide [PZA]), which may be inadequate. Based on limited evidence, current guidelines suggest adding a fluoroquinolone in cases of severe disease.Design/Methods: A retrospective cohort study of children aged <14 years with culture-confirmed HRRS-TB was conducted at 3 Western Cape hospitals from 2006-2012. Baseline characteristics were extracted from medical records; treatment and outcomes were described where available.Results: 72 children were included (median age 4.1y; range 0.1-14.2); 42% were male. 12 (17%) were HIV-infected; 7 (10%) had unknown HIV-status. Only 44 (61%) had a documented TB source case; 21 source cases had drug susceptibility test results, 10 had HRRS–TB, 7 had multidrug-resistant TB, and the rest had other patterns. 15 children (21%) had previous TB episodes; outcomes from previous episodes included 4 treatment failures and 2 lost to follow-up (LTFU). 46 children had information on treatment regimen and outcome; 41 (89%) had successful outcome while 2 were LTFU, 1 died, 1 failed treatment and acquired RIF resistance, and 1 transferred care. The median treatment duration was 11.5 months (IQR 9.0-13.0); 13 received INH/RIF/PZA for >1 month including the child with acquired RIF resistance; 39 received a fluoroquinolone in their regimen.Conclusions: Few children with HRRS-TB had documented exposure to a confirmed HRRS-TB source case, highlighting the importance of bacteriological confirmation in children. Treatment outcomes were good despite a high proportion with severe disease, possibly related to prolonged treatment and frequent inclusion of a fluoroquinolone. The impact of HRRS-TB in children deserves

additional investigation, especially as the increasingly utilized Xpert MTB/RIF tests for RIF resistance only.

ABSTRACT NUMBER / ABSTRAKNOMMER: 170

BACTERIOLOGICAL RESPONSE TO TREATMENT IN CHILDREN WITH CONFIRMED INTRATHORACIC TUBERCULOSIS

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Background: Children with drug-susceptible (DS) intrathoracic tuberculosis (TB) typically respond well to 6 months' standard WHO-recommended therapy. Assessment of TB treatment response is largely based on clinical improvement; bacteriological treatment response in children with confirmed TB has not been characterized.Methods: We enrolled children <13 years of age presenting with suspected intrathoracic TB in Cape Town, South Africa, from April 2012 - April 2015. Eligibility included ≥1 of prolonged cough/wheeze, fever or poor growth, or any duration of cough with 1 of a) close contact with known TB index case, b) reactive Mantoux, or c) chest radiograph compatible with intrathoracic TB. Investigations included a minimum of 2 respiratory samples and one stool sample for smear microscopy, liquid mycobacterial culture and Xpert MTB/RIF. Susceptibility to INH and RIF was determined by Hain MTBDRplus on positive cultures. In children with confirmed TB (Xpert or culture-positive), respiratory sampling was repeated at 1, 2 and 6 months on treatment.Results391 children (median age 15 months), 52 (13%) HIV-infected and 200 (51%) male, were included. 172 (44%) children were started on TB treatment; 81/172 (47%) were confirmed by culture/Xpert: 68/172 (40%) were culture -positive for Mycobacterium tuberculosis; 60/172 (35%) Xpert positive and 12/172 (7%) smear positive. 11/81 (14%) had INH and/or RIF resistance. Xpert was positive in 18/81 (22%) and 13/81 (15%) of children at months 1 and 2 respectively, compared to 6/81 (7%) and 2/81 (2%) for culture. Conclusions: The proportion of children with positive bacteriology declined rapidly in the first month of treatment. Xpert remained positive for substantially longer, in both DS and drug-resistant cases. The clinical relevance of persistent positive Xpert in children receiving TB treatment requires further study. The evaluation of clinical and bacteriological markers of treatment response is important in view of planned paediatric TB treatment shortening trials.

ABSTRACT NUMBER / ABSTRAKNOMMER: 171

IMPLEMENTATION OF A MULTI-LEVEL INTERVENTION TO IMPROVE ISONIAZID PREVENTATIVE THERAPY TO CHILD TB CONTACTS IN SOUTH AFRICA

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Background: Isoniazid preventive therapy (IPT) is effective in preventing tuberculosis (TB) in children following TB exposure. Despite global recommendations, gaps persist at multiple levels of the IPT delivery cascade. We previously (2010) showed a screening rate of 46%, IPT initiation rate of 58% and completion rate of 13% in children < 5 years of age.Methods:We assessed the impact of a multi-level intervention to improve IPT delivery in 3 clinics in Khayelitsha, Cape Town, during 2013/4. The

intervention included 1) HCW training, 2) supported implementation of paper-based IPT registers, and 3) client focused health education. Audits for pre- and post-intervention periods (Quarter 1, 2013/4) were completed to measure the impact. Results:A total of 264 infectious adult TB cases (pre-audit) and 306 (post-audit) were identified from the ETR; 248 (94%) and 297 (97%) folders were available. During the pre-audit, 236/248 (95%) TB cases had documentation of child contacts; only 47/72 (65%) of eligible child contacts were screened; 39/47 (83%) of screened contacts started IPT/TB treatment. Following the intervention, names of child contacts were more likely to be recorded in the adult folder [OR 4.9 (95%CI 0.9-49.8),p=0.032], and contacts were more likely to be started on treatment after screening [OR 6.1 (95%CI 1.1-60.5),p=0.015]. During Q1 2014, 121 contacts were documented to start IPT in the IPT registers, an additional 63 (52%) to the 58 identified through the audit. Discussion:Our pre-intervention data already indicate remarkable improvement in IPT delivery since previous audits, likely due to emerging prioritization of IPT by routine services. A multi-level intervention resulted in substantial additional improvements in IPT delivery. A large remaining gap is the drop-out between contact identification and screening, requiring a better understanding of processes at this level. Insight into this key area at the community level could inform more targeted interventions in future.

ABSTRACT NUMBER / ABSTRAKNOMMER: 172

UTILIZATION OF PAEDIATRIC ISOLATION FACILITIES IN A TB-ENDEMIC SETTING

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Introduction: In hospital settings, patient isolation is used to limit transmission of certain pathogens (e.g. M. tuberculosis [TB], antibiotic-resistant bacteria and viruses causing respiratory and enteric infection). Data on utilization of paediatric isolation facilities in low-resource, TB-endemic settings is lacking.Methods: Prospective weekday observation of 18 paediatric isolation rooms at Tygerberg Children's Hospital, Cape Town, South Africa, was conducted between 1 May 2014 and 31 October 2014 documenting: occupancy rate; indication for isolation; duration of isolation; application of transmission-based precautions and infection prevention (IPC) behaviour of personnel. Potential under-utilization of isolation rooms was determined by cross-referencing isolation room occupancy with laboratory isolates of antibiotic-resistant bacteria, M. tuberculosis and selected viral pathogens. Results: Six percent (335/5906) of hospitalized children were isolated: 78% (260/335) for IPC purposes. Most IPC-isolated patients had community-acquired infections (213/260; 82%), including tuberculosis (130/260; 50%) and suspected viral infections (75/260; 29%). Children (median age 17 months [IQR 6-50]) spent 4 days (IQR 2-8) in isolation. Isolation occupancy was 66% (2172/3294 occupied bed days), but varied significantly by month. Laboratory data identified an additional 135 patients warranting isolation (an extra 2054 bed-days). Forty patients with 171 patient days of inappropriate isolation were identified. During 1223 weekday visits to IPC-isolated patient rooms: alcohol-based handrub was available (89%); transmission-based precautions were appropriately implemented (71%); and personal protective equipment was provided (74%). Of 358 observed interactions between paediatric staff and isolated patients, hand hygiene compliance was 65% and adherence to transmission-based precautions was 58%. Conclusion: Patients isolated for TB (under airborne precautions) accounted for more than half of all isolation episodes. Missed opportunities for patient isolation were common but could be reduced by implementation of syndromic isolation. Demand for isolation facilities was seasonal, with projected demand exceeding available isolation beds over the winter months.

ABSTRACT NUMBER / ABSTRAKNOMMER: 173

HEALTHCARE-ASSOCIATED INFECTIONS IN CHILDREN: KNOWLEDGE, ATTITUDES AND PRACTICE OF PAEDIATRIC HEALTHCARE PROVIDERS AT TYGERBERG HOSPITAL, CAPE TOWN

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Background: Healthcare (HC) providers' knowledge, attitudes and practices with regard to infection control (IC) may positively or adversely affect institutional rates of healthcare-associated infection (HAI).Objectives: To determine paediatric HC providers' knowledge, attitudes and practices regarding HAI and guide IC interventions in a resource-limited setting.Methods: Paediatric HC providers at Tygerberg Children's Hospital, Cape Town, South Africa completed an anonymous, self-administered, 37-item questionnaire.Results: Questionnaires (201, 66.6% participation rate) were completed by medical (90, 44.7%), allied health (16, 8%) and nursing providers (95, 47.3%). Median age was 34 years (IQR 27–43), and 84% were female. Knowledge scores were low [57% correct, mean (SD) 7.7 (1.7)/14 questions] but higher in the medical/allied category (P<0.001) and those qualified for >10 years (P=0.008). Providers lacked knowledge of the main routes of infection transmission and misunderstood hand hygiene and terminal cleaning recommendations. Nurses scored higher for attitude questions [63% desired responses, mean 5 (1.2)/8 questions] (P=0.02). Only 38% reported adequate undergraduate teaching on HAI and most (93%) wanted more in-service IC training. Providers agreed with punitive measures for colleagues ignoring IC recommendations (89%). Nurses scored higher for practice questions [53% desired responses, mean 3.2 (1.2)/6 questions] (P<0.001). Self-reported adherence to IC recommendations was high, 88% for hand hygiene and 74% for use of personal protective equipment. However, there was poor uptake of annual influenza vaccination (25%) and N95 respirator fit-testing (28%), and many felt obliged to report for work when sick (67%).Discussion: Expanded in-service and undergraduate training in IC should emphasize methods of hand hygiene and routes of infection transmission. Paediatric providers support mandatory reporting of HAIevents and stricter enforcement of IC recommendations.

ABSTRACT NUMBER / ABSTRAKNOMMER: 174

THE PREVALENCE OF MOTOR IMPAIRMENT IN GRADE R LEARNERS IN MAINSTREAM PUBLIC SCHOOLS IN THE WEST COAST DISTRICT OF SOUTH AFRICA

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Background: Motor impairment has been reported in children with HIV, FAS, CP, DCD, ADHD etc. and given that fine motor skills together with executive functioning are good predictors of academic performance, many children in grade R in in the West Coast district may present with potentially significant motor impairment and not be ready for mainstream academic activities. Aims: To determine the prevalence of motor impairment in grade R learners in mainstream West Coast District schoolsMethods: A cross-sectional descriptive study design using multistage cluster sampling was used to identify six participating schools. Using the Movement Assessment Battery for Children-2, 150 learners (5 – 6years) were tested. Prevalence estimates and 95% confidence intervals were reported overall, and demographic and other factors analysed descriptively. Pearson's chi square tests was used to explore associations.Results: These are still being analysed in consultation with a statistician. Preliminary data suggest that 8% of grade R learners scored a total score of below the 5th percentile (significant motor impairment) and a further 7% are at risk. 14% of the learners scored below the 5th percentile with fine motor skills, while a further 7% are at risk. Sub-group analysis to explore environmental and personal relationships will still be done.Conclusion: Preliminary analysis suggest that the prevalence of significant motor impairment among grade R learners in the West Coast district is high. Further investigation into and development of appropriate intervention programs is recommended.

ABSTRACT NUMBER / ABSTRAKNOMMER: 175

MISSED AND USED OPPORTUNITIES IN HEALTH STATUS ASSESSMENT OF CHILDREN

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Rationale: The Road-to-Health Booklet (RtHB), a standardized national tool for health status assessment of children, was introduced in February 2011. The aim of the study was to evaluate the implementation of the RtHB in the Western Cape Province, South Africa.Methods: A proportional stratified sample of Primary Health Care (PHC) facilities was surveyed. RtHBs of children (0-36 months) were assessed; caregivers (CG) interviewed and healthcare workers (HCWs) completed a self-administered questionnaire. Consultations were observed to identify missed opportunities. The latter refers to actions due but not performed.Results: Data was collected from 2481 infant-CG pairs and 270 HCWs from 143 facilities. The average age of the children was 6.96 ± 6.24 months (0.06–34.15). Actions involving administration of substances were performed sufficiently as vitamin A supplements (86.3%), deworming tablets (84.5%) and immunizations (95.6%) were administered as scheduled. All HCWs indicated the importance of health promotion messages (HPM), but only 50.8% communicated HPM during consultations. Screening for developmental milestones were only performed in a quarter (24.3%) of cases. The majority (94.7%) of children were weighed, but few heights (16.4%), mid-upper arm (19.7%) and head circumference (14%) measurements were performed. This could explain why, although 69% of HCW could correctly identify underweight, only 55% and 39% could do so for stunting and wasting respectively. Conclusions: Many implementation aspects of the RtHB need strengthening. Attention should be shifted from performing tasks only, to accurate, early identification and documentation of at risk children, as well as appropriate action. Ongoing training, motivation and monitoring of HCWs are imperative.

ABSTRACT NUMBER / ABSTRAKNOMMER: 176

AN INVESTIGATION OF THE FACTORS INFLUENCING FOOD CHOICES OF MOTHERS OF PRIMARY SCHOOL CHILDREN IN THE METRO-NORTH EDUCATION DISTRICT OF THE WESTERN CAPE PROVINCE, SOUTH AFRICA.

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The growing epidemic of childhood obesity is a major public health problem. Unhealthy food choices made by mothers can impact negatively on child health and may lead to establishing unhealthy eating behaviour contributing to childhood obesity that often persists into adulthood.The objectives of the study were to determine 1) factors that influence food choices of mothers with primary school children 2) knowledge, attitude and practices of mothers regarding healthy food 3) the impact of employment status and socio-economic background on these factors and 4) to investigate barriers towards healthy food purchases.A cross sectional, descriptive study was conducted. Mothers (n=476) from three randomly selected schools, each representing a different national quintile, participated in the study. Quantitative data was collected by means of self-administered questionnaires. Six focus

group discussions (n=39) were conducted with working and non-working mothers to investigate barriers to healthy eating.The mean nutrition knowledge score for the group was 68.6%. Nutrition knowledge was significantly lower ($p<0.05$) in the lowest quintile school. Mothers from the highest quintile school were more aware of their role in shaping a child's eating habits compared to mothers from the lowest quintile school ($p<0.05$). Mothers from the lowest quintile school practiced unhealthier food preparation methods more frequently ($p<0.05$). The most important factors influencing food purchases were cost (72%), nutritional value (50%) and taste (24%). Time constraints of working mothers resulted in purchasing convenience foods more frequently. Magazines and health professionals were identified as the most commonly used sources of nutrition information (62% and 44%). Barriers identified were employment status, family preference, school environment and mixed messages from the media.Nutrition education remains a priority, especially amongst mothers from lower socio-economic groups. Mothers require support with practical implementation of their existing nutrition knowledge.

ABSTRACT NUMBER / ABSTRAKNOMMER: 177

INFANT FEEDING CHOICES AND EFFECTS ON INFANT MORBIDITY IN PMTCT PROGRAMS TRANSITIONING TO "OPTION B+" IN WESTERN CAPE, SOUTH AFRICA. THE MOTHER INFANT HEALTH STUDY

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IntroductionSince the discovery of HIV transmission through breast milk more than 30 years ago, guidelines for feeding infants born to HIV-infected women have been changing. Despite the current recommendations for HIV-infected women to breastfeed with combination antiretroviral treatment, there are limited data on morbidity and growth of infants who are cared for in normal practice settings. The objective of this study was to determine the effect of infant feeding on morbidity and growth among predominantly breastfed and formula-fed HIV-exposed over a 12 months period. MethodsWe performed a longitudinal cohort study between July 2012 and December 2013 at Kraaifontein Midwife Obstetric Unit.ResultsOne hundred eighty three HIV-exposed uninfected infants were included in the analysis. Of these, 80 (44%) were in the breastfeeding group and 103 (56%) were in the formula feeding group at baseline. The follow-up rate was 28 of 80 (35%) in the breastfeeding group and 47 of 103 (46%) in the formula feeding group. The median (range) duration of breastfeeding was 1.93 (0.43 to 12.06) months and that of formula feeding was 8.94 (0.46 to 12.75) months. There were 37 infection related hospitalizations, twelve of these occurred among predominantly breastfed infants and 25 occurred among predominantly formula fed infants. The unadjusted and adjusted odd ratio of hospitalization due to major infectious morbidity among formula fed children compared to those who were breastfed was 1.53 (0.56 to 4.18) and 1.10 (95% CI: 0.38 to 3.20). We found no differences in weight-for-age, length-for-age and weight-for-length z -score between predominantly breastfed and predominantly formula fed infants.ConclusionWomen who chose to breastfeed quickly switched to formula feeding. Infection related hospitalizations tended to be fewer among predominantly breastfed infants. PMTCT programs need to adopt strategies that improve adherence to prolonged breastfeeding for the benefits to be realized at population level.

ABSTRACT NUMBER / ABSTRAKNOMMER: 178

UNIVERSAL INFANT MORBIDITY RISK FACTORS MAY NOT BE THE SOLE DRIVERS OF INFECTIOUS MORBIDITY IN HIV EXPOSED UNINFECTED INFANTS

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Background:Universal infant morbidity risk factors (poor birth outcomes, suboptimal breastfeeding, poverty) occur more frequently in HIV exposed uninfected (HEU) than HIV unexposed uninfected (HUU) infants. The primary objective was to determine whether HEU infants experience greater infectious morbidity than HUU infants through HIV exposure-specific pathways beyond universal infant risk factors.Methods: This prospective cohort study identified low risk HIV-infected and HIV-uninfected mothers and their term newborns from a single community midwife unit. The primary outcome, at least one infectious cause hospitalization or death before 6 months, was classified according to modified WHO case-definitions and compared between HEU and HUU infants. Adjusted odds ratios (aOR) were calculated by multivariable logistic regression and stratified analyses conditioned on breastfeeding were performed. Results: 176 (94 HEU, 82 HUU) mother-infant pairs were included. HIV-infected mothers were older (median 27.8 vs. 24.7 years, $p<0.01$) and HEU infants less often breastfed (35/94 (37%) vs. 81/82 (99%) $p<0.001$). The groups were similar on maternal education, antenatal course, household characteristics, birth weight, gestational age and immunizations. Incidence rate ratio of all-cause sick clinic visits in HEU compared to HUU infants was 0.82 (95% CI 0.58,1.16). The primary outcome occurred in 17 (18%) HEU and 10 (12%) HUU infants ($p=0.38$), giving an aOR of 1.45 (95% CI 0.44,4.55). In stratified analysis comparing only infants with any breastfeeding, HEU infants had an aOR for a very severe infectious cause hospitalization or death of 4.2 (95% CI 1.00,19.2). Seven of 17(41%) HEU and 1/10 (10%) HUU primary outcome events occurred after 90 days old ($p=0.07$).Conclusion: Amongst term infants with similar social circumstances, a higher probability of very severe infectious morbidity was observed in breastfed HEU compared to breastfed HUU infants. HEU infant risk may be driven through HIV exposure-specific pathways unrelated to universal infant morbidity risk factors.

ABSTRACT NUMBER / ABSTRAKNOMMER: 179

LOW BIRTH HIV INFECTION RATE IN INFANTS FROM HIGH-RISK-FOR-TRANSMISSION PREGNANCIES IN SOUTH AFRICA

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Background: Interventions to prevent mother-to-child transmission of HIV have reduced the infection rate in local 6 week old infants to 0.99%. It is well established that early diagnosis and treatment of HIV-infected infants improve health outcomes. As pregnancies at high risk for transmission may contribute disproportionately, targeted testing early after birth may expedite identifying infected infants. Here we report preliminary findings of a targeted early HIV diagnosis study for infants at high risk of intra-uterine infection.Methods: High-risk-for-transmission pregnancies are identified by reviewing labour ward records at a primary care midwife obstetric unit and at an academic referral hospital. Screening is performed by research nurses using predefined criteria, namely insufficient/interrupted exposure to antiretroviral therapy or prophylaxis, a maternal viral load of > 1000 HIV copies/ml (where available) or premature or low birth weight infants. Samples for molecular HIV testing are taken as early as possible after birth, with subsequent early therapy initiation in infected infants. Results: Of 286 birth PCRs from high risk pregnancies, 5 were positive (1.75%). Within this at-risk population, none of the predefined potential risk factors increased the relative risk

of transmission. Follow-up PCR tests on 233 (81%) infants found an additional 4 positive patients at weeks 7, 9, 19 and 27 of age respectively (total positivity rate 3.9%). No differences in risk factors were identified between positivity at birth and at follow-up. In only 131 (56%) of cases was follow-up testing performed between 5 and 8 weeks of age. Conclusions: A relatively low rate of HIV transmission was identified from presumed high-risk-for-transmission pregnancies. Despite guidelines recommending PCR testing at 6 weeks, repeat testing was delayed in 44% of patients. Late diagnosis motivates strongly for improved diagnostic algorithms with more frequent testing. Further research is required to delineate factors which would increase maternal compliance with programmatic recommendations.

ABSTRACT NUMBER / ABSTRAKNOMMER: 180

SYPHILIS IN HIV-INFECTED MOTHERS AND INFANTS: RESULTS FROM THE NICHD/ HPTN 040 STUDY

THE NICHD HPTN 040 STUDY TEAM, PRESENTING AUTHOR GERHARD THERON (UNIVERSITY OF STELLENBOSCH AND TYGERBERG HOSPITAL - DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY)

Background: Untreated syphilis during pregnancy is associated with spontaneous abortion, stillbirth, prematurity and infant mortality. Syphilis may facilitate HIV transmission, which is especially concerning in low and middle income countries where both diseases are common.Methods: We performed an analysis of data available from NICHD/HPTN 040 (P1043), a study focused on the prevention of intrapartum HIV transmission to 1684 infants born to 1664 untreated HIV-infected women. The present analysis evaluates risk factors and outcomes associated with a syphilis diagnosis in this cohort of HIV-infected women and their infants. Results: Approximately 10% (n=171) of women enrolled had serological evidence of syphilis without adequate treatment documented and 1.4% (n=24) infants were dually HIV and syphilis infected. Multivariate logistic analysis showed that compared to HIV-infected women, co-infected women were significantly associated with ethnicity (AOR 2.5, 95% CI 1.5-4.2), to consume alcohol during pregnancy (AOR 1.5, 95% CI 1.1-2.1) and to transmit HIV to their infants (AOR 2.1, 95% CI 1.3-3.4), with 88% of HIV infections being acquired in-utero. As compared to HIV infected or HIV exposed infants, co-infected infants were significantly more likely to be born to mothers with VDRL titers >1:16 (AOR 3, 95% CI 1.1-8.2) and higher viral loads (AOR 1.5 95% CI 1.1-1.9). Of 6 newborns with symptomatic syphilis, 2 died shortly after birth, and 2 were HIV-infected.Conclusion: Syphilis continues to be a common co-infection in HIV-infected women and can facilitate in utero transmission of HIV to infants. Most infants are asymptomatic at birth, but those with symptoms have high mortality rates.

ABSTRACT NUMBER / ABSTRAKNOMMER: 181

FIRST TRIMESTER MEDICAL TERMINATION OF PREGNANCY AT TYGERBERG HOSPITAL: AN AUDIT OF THE FIRST YEAR OF IMPLEMENTATION

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Background: Off-site medical termination of pregnancies (MTOP) of ≤ 63 days gestation was introduced in the Western Cape Provincial Policy on TOP in 2010 and implemented at Tygerberg Hospital in March 2011.MTOP using the combination of mifepristone plus misoprostol is known to be a highly effective method and offers women an alternative TOP method to manual vacuum aspiration (MVA).Objectives: To evaluate MTOP abortion care, efficacy and safety of MTOP at Tygeberg HospitalMethods: A retrospective folder review of all first trimester MTOP clients who attended Tygerberg Hospital from 29 March 2011 to 31 May 2012. Results:274 women underwent a first trimester MTOP of which 58.8% had at least one previous birth and 9.5% had at least one previous TOP. The mean gestation was 50.82 days (Range 28-65) and 46.4% were ≤ 49 days pregnant.

Eighty-eight (51.5%) had not used any form of contraception prior to the pregnancy, 34 (20%) used condoms, 19 (11%) used the oral pill and 30 (17.5%) used progesterone-only injectable contraceptionRegarding MTOP outcomes of 211 women: Treatment failure occurred in 31 women (14.7%) which was significant compared to a systematic review (P<0.001; OR 3.40; 95 % CI: 2.32 - 4.99). Ongoing pregnancy occurred in 4 women (1.9%) which was not significant. The majority of treatment failures was due to incomplete abortions. Manual vacuum aspiration (MVA) of the uterus was performed in 20 (9.5%). Ultrasound assessment appeared to be the main diagnostic method to assess completeness. Blood transfusion was required in 1(0.5%) and 6(2.8%) were considered to have uterine infection requiring antibiotics Conslusion: MTOP is an effective and safe method of TOP. Alternative diagnostic methods other than ultrasound should be considered to decrease the high incomplete abortion rate and the resulting intervention rate. Long acting reversible contraceptive provision can be improved at Tygerberg Hospital

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AFFORDABLE ART AND MILD STIMULATION STRATEGIES AT TYGERBERG HOSPITAL FERTILITY CLINIC: A RETROSPECTIVE ANALYSIS OF OUTCOMES.

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Introduction: ART (Assisted Reproductive Techniques) is an expensive option for couples suffering from infertility. The techniques are expensive due to stimulation medication costs, laboratory costs (equipment used) and clinic costs. Societyisinneed of lower cost ART initiatives to make it more accessiblefor everyone. Since ovarian stimulation is one of the most expensive components of ART, mild ovarian stimulation protocols can be a possible solution of lowering ART costs and minimizing risks for patients.Objective and Design: To determine whether a low cost; mild stimulation Assisted Reproductive Techniques (ART) program can be implemented effectively with acceptable clinical pregnancy rates [CPR] and live birth outcomes: a Retrospective Cohort Study.Material and methods: Retrospective data analysis on all In-Vitro Fertilization (IVF) and Intra-cytoplasmic Sperm Injection (ICSI) ART “mild stimulation” treatment cycle outcomes (2009 to 2014). Standard mild stimulation ART treatment [clomiphene citrate (Chlomid®)/Menupur®] was performed followed with standard, routine IVF and ICSI fertilization, embryo culture, embryo evaluation and uterine transfer methods. Laboratory changes during the timespan were also noted. Clinical pregnancy (CP) [fetal heart at 7 week sonography] per transfer was rendered a successful outcome. Results:Tubal Factor was the most common incidence of female diagnosis for patients undergoing IVF (59.89%) and idiopathic infertility for patients undergoing ICSI (55.70%). The overall CPR per Embryo Transfer [ET] was 23.55% (53/225). The CP for IVF patients was lower compared to ICSI patients in patient groups ≤35 years (17.02%[8/47] vs. 32.83%[21/67]) and >35 years (16.39%[10/61] vs. 22.00%[11/50]) respectively. The CPR per embryo transfer cycle where more than one embryo was transferred showed an overall increase (19.23% vs. 24.59%).Conclusion(s): Mild stimulation ART and lower laboratory costs can be implemented effectively with acceptable clinical pregnancy rates.

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POSTPARTUM LAPAROSCOPIC STERILISATION: A ROLE IN SOUTH AFRICAN HEALTHCARE?

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Introduction: The need for the introduction of Laparoscopic Postpartum Sterilisations in the public healthcare sector in South Africa has been identified through the weaknesses found in the current practice of performing all postpartum sterilizations (PPS) as open procedures. There is much international literature reporting the advantages of doing the procedure laparoscopically and the feasibility of the procedure, although once disputed, is widely accepted. There are many proven benefits to performing the procedure laparoscopically including less instances of minor operative morbidity, shorter duration of surgery and shorter hospital stay. Objectives: Assess the advantages and feasibility of performing postpartum sterilisations laparoscopically in a public healthcare facility in South Africa. Methods: Retrospective review of postpartum sterilisations between June 2012 and December 2013 at Worcester Hospital, Western Cape. 78 postpartum sterilisations were included in the study (open n=26, laparoscopic n=52) Data analysis was performed using mean and median with range and standard deviation, Two-sample Wilcoxon rank sum test, Two-sample t test and Chi-squared test. Results: It was possible to perform laparoscopic sterilisations on patients with a higher Body Mass Index (BMI) than the open procedure. Duration of surgery was shorter in the laparoscopic group, especially in patients with BMI >30 and more patients were discharged on the same day as surgery in the laparoscopic group. There were less overall complications in the laparoscopic group (OR 0.35, CI 0.08-1.43). Conclusion: It is feasible to perform postpartum sterilisations laparoscopically in a public healthcare facility in South Africa. Advantages of the procedure are clinically significant and in keeping with international literature. Future research should be performed on acceptability of the procedure in the study population, laparoscopic training and the improvement of provision of requested postpartum sterilisations in public hospitals.

Posters/ Plakkate

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ADOLESCENTS EXPEREINCES OF MULTIDRUG-RESISTANT TUBERCULOSIS AND OF PARTICIPATION IN CLINICAL RESEARCH

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BACKGROUND: Adolescents experience a large burden of tuberculosis (TB), including multidrug-resistant (MDR)-TB. There is limited knowledge of adolescents' experiences of MDR-TB, which may pose considerable emotional and physical burden. The experiences of adolescents participating in clinical research have been poorly described to date, particularly in resource-limited settings, but are important to improve involvement of this group.METHODS: We undertook a qualitative study using in-depth interviews. Nine adolescents aged 10-18 years routinely diagnosed and treated for MDR-TB in Cape Town, South Africa, and who participated in an observational pharmacokinetic study of secondline TB drugs were included. Interviews were followed by "body-mapping" sessions where participants identified how bodies were affected by MDR-TB. Interviews were conducted in Afrikaans, Xhosa or English and recorded, transcribed and translated. A thematic analysis was employed.RESULTS: During analysis several themes emerged. Participants had to deal with key challenges including (1) the burden of the medication (2) stigma; (3) dealing with social isolation; (4) fears in terms of health and mortality; and (5) emotional loss associated with MDR-TB, including the death of a relative. While facing all of these challenges, several patients displayed resilience and coping mechanisms. Participants found the experience of participation in clinical research empowering, as they were able to learn more about their disease. CONCLUSIONS: An improved understanding of the challenges adolescents diagnosed with MDR-TB face may help target supportive interventions. Adolescents had a positive view of participation in research, and were interested in sharing their experiences with others, which is key to planning research.

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AEROSOLISATION OF A SYNTHETIC PULMONARY SURFACTANT SYNSURF®: BIOPHYSICAL PROPERTIES AND EFFECTS OF CHOLESTROL ON PHOSPOLIPID PROTEIN MIXTURES

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Background or Introduction: Synthetic pulmonary surfactant generally consists of phospholipid mixtures, free fatty acids and/or sterols, as well as specific protein constructs that mimic the function of SP-B or SP-C. During surfactant-replacement therapy in neonates instillation into the airway is invasive by means of endotracheal intubation and hence a less invasive approach such as nebulisation would be beneficial in theses frail patients. However, ideal formulations of synthetic pulmonary surfactants, intended for aerosolisation, requires formulations to be defined with regards to optimal particles size generation and ultimate conservation of surface tension property during the process of nebulisation. The objective of the study was therefore to evaluate the suitability of different formulations of a new peptide-containing synthetic surfactant Synsurf®during aerosolisation. Material and methods: Synsurf®, was synthetised with alterations in key components which included cholesterol and palmitic acid. Surfactant was aerosolised with the use of Aeroneb®Pro nebuliser and particles were collected in a pooling container. Particles within nebulised and un-nebulised samples were compared by determining particle sizes with the use of a Zeta-Sizer. Surface tension was quantified with the use of a Drop Shape Analyser (DSA25) and density of each sample, an essential parameter, was measured with the use of a pycnometer. Results: During aerosolisation, particle size decreased from 5.6 d.µm to 1.5 d.µm, which falls within the desired distribution range for aerosolised surfactant, which is smaller than 3 d.µm and larger than 1 d.µm for inhaled particles. Moreover, the surface tension lowering of preparations remained intact before and after nebulisation.Conclusions: The present study indicated that surfactant-replacement therapy with Synsurf® could be delivered without intubation by non-invasive aerosolisation technology.

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ANTIRETROVIRAL TREATMENT IN THE FIRST MONTH OF LIFE: CHALLENGES AND OPPORTUNITIES.

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Background & Aims: Where maternal viral load is not suppressed infants are at higher risk for acquiring HIV. Earlier diagnosis of HIV facilitates earlier access to therapy, improving clinical outcomes. At Tygerberg Hospital, in South Africa, early testing of high-risk neonates was introduced to facilitate access to ART. Infected neonates pose unique therapeutic challenges. We describe the outcomes of this initiative.Methods: A retrospective review of HIV-infected neonates between January 2013 and March 2015 was performed. Patients were identified from a laboratory database and included if ART was started within the first month of life. Results: 997 HIV PCR tests were done. 26 neonates tested positive for HIV, 22 initiated therapy. The average age of first HIV PCR test was 7 days. Neonates were started within an average of 8.2 days after their first test was done. Therapy started at a mean age of 14 days of life.Infants had a mean gestation and birth weight of 34 weeks and 2.05 kilograms respectively; mean baseline viral loads of log 4.5 copies/ml, and CD4 percentages of 34.2%. The mean maternal CD4 count was just 269.41 cells/mm3 with only 7/22 mothers reported ever starting ART. All children initiated zidovudine and lamivudine, 12 started on lopinavir/ritonavir and 10 on nevirapine of whom 4 switched lopinavir/ritonavir later. All children in care are now on lopinavir/ritonavir. One child demised. 7 are known to be in care (mean age of 1.1 years), with 4 having a viral load < 50 copies. Conclusions: Early diagnosis and treatment initiation of neonates is feasible. However, follow up care of both neonates and their mother's needs additional resources.

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CYTOKINE RESPONSE IN HIV-EXPOSED INFANTS WITH SEVERE NECROTIZING ENTEROCOLITIS: EARLY RESULTS OF A PROSPECTIVE STUDY

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Abstract Upregulation of pro-inflammatory cytokines in the premature gut in response to bacterial ligands is implicated in necrotizing enterocolitis (NEC) pathophysiology, while an abnormal cytokine profile is also seen in HIV-infection. HIV-exposure is associated with a higher risk of NEC, and although the pathophysiology is poorly understood, an inflammatory pathway link is postulated. MethodsSerial serum cytokines were measured and correlated with clinical markers of disease severity (risk factors, clinical presentation, pathological extent of full-thickness necrosis, and mortality rates) in a prospective cohort study of infants referred for surgical evaluation with stage III NEC. Cytokine inflammatory response was evaluated by means of serial serum measurements using a luminex kit for Human High Sensitivity Cytokine / Chemokine panel [including IL1ß, IL-2, IL-4, IL-5, IL-6, IL-7, IL-8, IL-10, IL-12 (p70), IL-13, GM-CSF, IFN-y, TNF-α]Results21 serum samples taken serially from 8 patients (4 HIV-exposed) with stage III NEC were analyzed for a panel of different cytokines. Raised IL-6, IL-8, IL-10 and TNF-α were noted in all patients. IL-6 and IL-8 levels above 1500pg/ml were associated with intestinal necrosis requiring surgery. Rising TNF-α levels were associated with early (<48h) mortality, even despite associated declining IL-6 and 8 levels. Absolute TNF-α levels were not, however, predictive of necrosis or death. IL-10 levels were lower in HIV-exposed patients, but did not necessarily correlate with lower levels of TNF- α and IL-6, which it is known to block in macrophages. No other differences between HIV exposed and unexposed patients were found.ConclusionsThe complexity of cytokine interaction suggests more research into IL-6 and IL-8 as markers of gut necrosis is needed. Lower IL-10 in HIV-exposed infants may help explain their increased risk for NEC. More study into the cytokine response in early phases of the disease may improve understanding of this complex pathogenic pathway.

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DISCORDANT RIFAMPICIN RESISTANCE DETECTED BY XPERT MTB/RIF AND OTHER MOLECULAR AND PHENOTYPIC DRUG SUSCEPTIBILITY TESTS IN CHILDREN

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Background: Xpert MTB/RIF (Xpert) has been rolled out for the rapid detection of Mycobacterium tuberculosis (M.tb), including multidrug-resistant TB (MDR-TB), in South Africa. Xpert is routinely done on paediatric respiratory samples sent for mycobacterial culture at Tygerberg Hospital since 2013. In 2014, of 1860 paediatric respiratory samples tested with Xpert, 115 (6.2%) were positive: 18/115 (15.7%) were rifampicin (RIF) resistant, 94 (81.7%) RIF susceptible and 3 (2.6%) RIF

indeterminate. Xpert is increasingly used as a diagnostic test, and discrepancies between molecular and phenotypic RIF susceptibility tests are important. Methods: In an ongoing diagnostic study of pulmonary TB in children, multiple respiratory samples are collected at enrolment and follow-up. Discrepant results for RIF-resistance were reviewed. Xpert results were compared to Genotype® MTBDRplus line probe assay (LPA),phenotypic drug susceptibility testing (DST) and DNA sequencing. Results: Four selected cases illustrate causes for discordant RIF-resistant results. None of these children had MDR-TB contacts.Cases 1 and 2 had RIF resistance detected with Xpert, not confirmed by LPA. Case 1 had a phenotypically silent rpoB mutation on DNA sequencing, of uncertain clinical significance. Case 2 was re-investigated after completion of first-line TB treatment, when symptoms re-emerged, with a history of poor adherence. DNA sequencing showed the isolates from the initial and subsequent episode to be from the same family, but the follow-up isolate had acquired an rpoB gene mutation. In cases 3 and 4, samples collected after TB treatment was started were RIF resistant on Xpert with high cycle thresholds and delayed probe hybridization. Sequencing of rpoB gene on pre-treatment samples confirmed wildtype (RIF susceptible) rpoB. Conclusions: These cases highlight the importance of further investigation and clinical judgment in evaluating discrepant molecular and phenotypic DST results before initiating or changing TB treatment regimens in children.

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EVALUATION OF DIFFERENT MODELS OF TRAINING TO IMPROVE HEALTH CARE WORKER KNOWLEDGE OF CHILDHOOD TUBERCULOSIS AT PRIMARY HEALTHCARE LEVEL IN SOUTH AFRICA

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Background:There is limited evidence regarding appropriate childhood TB training strategies in high-burden low-resource settings. There is currently a shift in education models, moving away from didactic approaches, towards decentralized interactive self-study models. Design:As part of a paediatric TB health system strengthening project (Kid-care) implemented in Khayelitsha, Cape Town (2013/4), we conducted 15 four week training sessions on childhood TB at primary care level. Groups were randomized to 1 of 3 models of support (lectures, peer-groups or self-learning). Impact of the training on knowledge was measured with a 55-question test at three time points: pre-training, post-training and 10 weeks thereafter. Results:131 nurses (median age 41 years (SD 10.2), 122(95%) female) were enrolled from 9 clinics; 100 (76%) completed post-test and 79 (60%) retention testing, while 27(21%) had provided TB care during the preceding 2 years. The mean baseline knowledge was 66% (SD4.6), and was not age-associated. Overall pre-post knowledge gained was 11%, with the lecture model gaining 14.8% and peer-groups 8.4% compared to self-learning (Table 1). No significant difference between knowledge retention was observed between training models (Table 1). Externally facilitated lectures were better attended than participant facilitated sessions (attending >2/4 sessions: 94% lecture learners, 26% self-learners and 30% peer-group learners). Despite higher baseline knowledge among TB nurses [72% (95%CI 68-75] vs 64% (95%CI 62-67), p=0.001), there was a comparable increase in knowledge [8% (95%CI 1-16) vs 12% (95%CI 7-17), p=0.3210.Discussion:Focused training increased knowledge among all participants irrespective of work area, highlighting the need for training across departments. This is important as children access care at multiple entry points. Although the lecture model performed best, the results may reflect dedicated time spent on course content rather than the effects of a didactic model. Training initiatives need to consider multiple setting specific factors to ensure participant engagement.

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INDICATED PREVENTION IN SOUTH AFRICA: EFFICACY OF CASE MANAGEMENT

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Purpose The Western Cape has a subculture of binge drinking. Up to 40% of women of childbearing age drink 2-9 alcoholic beverages each Friday and Saturday. This largely contributes to the prevalence of FASD in the Western Cape being among the highest documented in the world (13.6 to 20.9 per 1,000 children). FASD prevention research activities in SA use the Comprehensive Prevention approach from the U.S. Institute of Medicine. This study supported heavy drinking pregnant women to stop or reduce their drinking.MethodSuccessful outcomes among drinking mothers were achieved by using Case Management (CM) as method of indicated prevention. Women with an Alcohol Use Disorders Identification Test (AUDIT) score of ≥ 8 were recruited from antenatal clinics and invited to participate in CM for 18 months. CM activities included life management and using Motivational Interviewing- and Community Reinforcement Approach techiques. Data on drinking characteristics of enrolled women were collected at baseline, 6, 12 and 18 months. ResultsComparing baseline data of women in CM to data 6 months after intake, results indicated a decline in the number of drinks consumed over weekends, significantly lower peak BAC's at 6 and 18 months , and a reduction in AUDIT scores from 19.8 at intake to 9.7 at 6 months. Answers of “4” to AUDIT questions 1, 3 and 6, measuring frequency, quantity of drinking and using an ‘eye opener, were used to indicate alcohol dependency. Results indicate that alcohol dependent women were less successful in stopping or reducing their drinking.Heavy drinkers who are not addicted to alcohol can stop or reduce drinking, and respond better to CM. ConclusionCM is most successful supporting pregnant women with high-risk drinking behaviour, is sufficiently helpful in supporting women to stop or drink les and reduce the risk of having a child with a FASD.

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NO EVIDENCE THAT ADVANCED MATERNAL HIV IS ASSOCIATED WITH INFECTIOUS MORBIDITY IN SOUTH AFRICAN HIV EXPOSED UNINFECTED INFANTS OF MOTHERS ON MATERNALLY INDICATED CART

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Background:Studies in the pre-antiretroviral therapy era observed an association between advanced maternal HIV and HIV exposed uninfected (HEU) infant morbidity. Do HEU infants of mothers on maternally-indicated combination antiretroviral therapy (cART) still experience greater infectious morbidity than those of mothers eligible only for vertical transmission prophylaxis (VTP)?Methods: A sub-group analysis of HEU infants in a prospective cohort study of HIV-infected and HIV-uninfected mothers and their infants from a single community. Maternally-indicated cART was received for CD4 <350 cells/µl or WHO stage 3/4 disease, otherwise VTP was received. Odds ratios (OR) for the primary outcome (at least one infectious cause hospitalization or death before 6 months of age) were calculated by multivariable logistic regression comparing infants of mothers on cART and VTP. Results: Of 89 HIV-infected mothers, 47 (53%) received maternally-indicated cART and 42 (47%) received VTP. An infectious cause hospitalization occurred in 8 (17%) cART infants and 7 (17%) VTP infants, there were no deaths. The unadjusted OR for the primary outcome was 1.03 (95%CI 0.33,3.20) for cART relative to VTP infants. After controlling for maternal age, timing of HIV diagnosis, HIV viral load or breastfeeding the ORs remained near 1. The median CD4 count increased from antenatal to delivery in cART mothers by 17 cells/ µl (IQR -115,143) compared to a median decrease in VTP mothers of 109 cells/ µl (IQR -238,30) ($p<0.01$). Change in CD4 count and HIV viral

load were not associated with the outcome. Infant gestational age, birth weight, immunizations and co-trimoxazole prophylaxis did not differ between cART and VTP infants or between outcome groups. Conclusion: There is no evidence that HEU infants of mothers on maternally-indicated cART experience greater infectious morbidity to infants of mothers on VTP. Maternal CD4 and HIV viral load were not associated with infant infectious morbidity.

ABSTRACT NUMBER / ABSTRAKNOMMER: 192

PHARMACOKINETICS OF RIFAMPICIN, ISONIAZID, PYRAZINAMIDE AND ETHAMBUTOL IN SOUTH AFRICAN INFANTS AT REVISED WHO-RECOMMENDED TUBERCULOSIS DOSING GUIDELINES

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BackgroundLimited pharmacokinetic (PK) data are available for first-line tuberculosis (TB) drugs in infants (< 12 months). The study aim was to determine infant PK parameters of rifampicin (RMP), isoniazid (INH), pyrazinamide (PZA) +/- ethambutol (EMB) at 2009 higher World Health Organization (WHO) dosing recommendations, of 10 (10-15), 15 (10-20), 35 (30-40), and 20 (15-25) mg/kg/day, respectively.MethodsIntensive PK sampling was conducted in infants on first-line TB therapy in Cape Town, March 2014 - March 2015. Assays were performed using validated liquid chromatography mass spectrometry methods, and PK parameters calculated using non-compartmental analysis. On day of PK sampling, regulatory approved single TB drug formulations were used, including two RMP formulations.ResultsThirty-nine infants (26 male; 29 black) were included; 14 (36%) with culture-confirmed TB. Fifteen (38%) infants were premature (< 37 weeks); 5 (13%) were HIV-infected. The mean corrected age was 6.6 months, and mean weight 6.45 kilograms. The mean maximum drug concentration in serum (Cmax) for RMP, INH, PZA and EMB were 2.9, 7.92, 41.9 and 1.26 µg/ml; concentration-time curve (AUC0-8) 12.12, 24.68, 239.4 and 5.09 µg.h/ml; and half-life (t½) 2.05, 2, 8.01 and 3.59 hours, respectively. Cmax and AUC0-8 differed for two RMP formulations used. No significant differences due to age, weight, prematurity, ethnicity, gender or TB treatment outcome were observed for INH, PZA or EMB. Alanine aminotransferase (ALT) values were abnormal in 3 infants (one 7 x and the other 2 x elevated) at PK sampling, which normalized without intervention.ConclusionsINH and PZA concentrations compared well to proposed adult target concentrations, with EMB somewhat lower, but equivalent to other paediatric studies. The low RMP concentrations in infants require further investigation, especially with consideration of future treatment shortening trials in children.

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POISONING EXPOSURES IN INFANTS: DATA FROM THE TYGERBERG POISON INFORMATION CENTRE, CAPE TOWN, SOUTH AFRICA.

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Objective: To describe the characteristics of acute poisoning exposures in infants (0-1 year) presenting to the Tygerberg Poison Information Centre (TPIC).Methods: A 3-year retrospective study (2011-2013) was conducted based on TPIC consultations. Data about the infant's demographics and causes of poisoning were collected and analysed. Results:The TPIC processed 17 434 consultations during the 3-year study period. Infants were involved in 1101 cases (6.3%), of which 46 (4.2%) related to neonates. Most infant related exposures involved non-drug chemicals (n=824, 74.8%). Irritants and corrosives were responsible for most non-drug chemical exposures (n=255, 30.9%).The majority of infants (n=987, 90%) presented with no or only minor symptoms. Seventeen neonates (37%) presented with symptoms of moderate to severe toxicity. Complementary and alternative medicines (CAM) were involved in six of these neonates (35.3%).Conclusion: Complementary and alternative medicines can be potentially toxic and parents often believe these medicines are safe. The pharmacokinetic differences in the neonate and their small size put them at risk. It is important to monitor the safe use of CAM in neonates. It was cumbersome that we detected cases of intentional poisoning as this is a rare phenomenon . Socioeconomic factors might play a role and require further investigation.

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THE PHARMACOKINETICS AND SAFETY OF OFLOXACIN IN CHILDREN WITH DRUG-RESISTANT TUBERCULOSIS

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Background: Ofloxacin is widely used for the treatment of multidrug-resistant tuberculosis (MDR-TB). Data on its pharmacokinetics and safety in children are limited. It is not known whether the current internationally recommended pediatric dosage of 15-20 mg/kg achieves exposures reached in adults with tuberculosis after a standard 800mg dose (adult median area under the concentration-time curve [AUC0-24]: 103 µg*h/mL).Methods: We assessed the pharmacokinetics and safety of ofloxacin in children <15 years routinely receiving ofloxacin for MDR-TB treatment or preventive therapy. Plasma samples were collected pre-dose and at 1, 2, 4, 8 and either 6 or 11 hours after a 20mg/kg dose. Pharmacokinetic parameters were calculated using non-compartmental analysis. Children with MDR-TB disease underwent long-term safety monitoring.Results: Of eighty-five children [median age 3.4y], 11 (13%) were HIV-infected; 14 (18%) were underweight. The ofloxacin mean (range) maximum concentration (Cmax), AUC0-8, and half-life were 8.97 µg/mL (2.47-14.4), 44.2 µg*h/mL (12.1-75.8), and 3.49h (1.89-6.95), respectively. The mean AUC0-24, estimated in 72 participants was 66.7µg*h/mL (range 18.8-120.7). In multivariable analysis, AUC0-24 was increased by 1.46 µg*h/mL for each one kg increase in body weight (95% CI 0.44-2.47, p=0.006); no other assessed variable contributed to the model. No Grade 3 or 4 events at least possibly attributed to ofloxacin were

observed.Conclusions: Ofloxacin was safe and well tolerated in children with MDR-TB, but exposures were well below reported adult values, suggesting that dosage modification may be required to optimize MDR-TB treatment regimens in children.

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TRAJECTORY OF FASD ACROSS THE LIFESPAN

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The prevalence of fetal alcohol spectrum disorders (FASD) in the Western Cape Province is among the world's highest. A decades-long collaboration between researchers in the USA and in the Western Cape has found risk factors associated with FASD, including heavy episodic drinking, low maternal weight, poor nutritional intake, among others. Despite such advances, prevalence has remained unperturbed. Thus, the goals of the present research are fourfold. First, because questionnaire data on drinking patterns are unreliable for a number of reasons, we aim to correlate quantifiable biomarkers of alcohol consumption in pregnant mothers and their partners, found in dried blood spots and fingernail samples, to presence and severity of the child on the spectrum. Second, whole blood analysis is being performed on pregnant women to determine the nutritional status, as defined by adequate blood levels of nutrients such as choline, folic acid, and iron, among others. Third, because alcohol is a known epigenetic disrupter, saliva samples are being taken from pregnant women to analyze their genetic and epigenetic patterns. Lastly, heavy, chronic alcohol consumption and poor nutritional intake are two factors shown to disrupt the balance of microbiota in the human gut, and such an imbalance has been implicated as a contributing factor in the alcohol and nutritional microenvironments of the fetus in utero. Stool samples are being taken from pregnant mothers to elucidate the gut's floral composition of pregnant women in our population. Although we are still collecting data, we expect the results to show correlations that can identify the individuals with the highest risk of giving birth to a child with FASD. We expect to intervene with the most at-risk expectant mothers to reduce the rate of FASD in the Western Cape and throughout the world.

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THE EFFECT OF INCUBATION TIME AND TEMPERATURE ON SPERM MOTILITY, HUMAN SPERM DNA AND ASSISTED REPRODUCTIVE TECHNOLOGIES (ART) OUTCOME

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In Assisted Reproductive Technologies procedures, semen samples are handled, processed, prepared and manipulated before use in the fertilization process. During these incubation times, the sperm cells are exposed to factors that may inflict damage to the sperm structure and DNA integrity, impair its functional abilities and lead to fertilization failure and poor ART outcome. Two of the basic, but important factors that may have an impact on the sperm quality are time and temperature exposure. The primary objective of this study was to prospectively determine the effect of different incubation times and temperatures on motility and the DNA profile of the spermatozoa. Non-processed and processed semen samples were incubated for different time intervals and at different temperatures. After incubation, sperm parameters were assessed and CMA3 and TUNEL assays were applied to assess the level of DNA fragmentation. The results showed that in the non-processed group, incubation led to a time-dependent decline in motility. Incubation time and temperature did not affect CMA3 and TUNEL values. Incubation of the processed sample led to a time-dependent decrease in the motility. The CMA3 and TUNEL values between the different incubation groups did not differ. The secondary objective was to retrospectively investigate the effect of sperm incubation time after preparation on ART outcome. A total of 901 patient ART cycles were included. Fertilization rates, embryo quality and pregnancy rates were examined. The results showed that the sperm incubation time before insemination between in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI) differed and the incubation time had a negative effect on the fertilization rates in IVF. Longer

incubation times led to an improvement in the quality of day 2 embryos and were associated with pregnancy failure in IVF and ICSI.

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DIFFERENT ABSTINENCE PERIODS ALTER SPERM KINEMATICS

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According to the World Health Organization (WHO) guidelines, subjects must remain abstinent for a minimum period of 48 hours, but not longer than 7 days before collecting a semen sample for standard analysis. [1] However, the basis for this recommendation remains uncertain and contradictory. [2, 3, 4] This study aimed to investigate the effect of short and long abstinence periods on sperm kinematics in healthy individuals. Semen samples were collected from 20 healthy fertile males (20 to 30 years). Donors abstained for 4 days and then 4 hours respectively prior to collecting the first and second semen sample. Sperm concentration and motility were quantified by Computer-aided Sperm Analysis. Motility and kinematics parameters included total motility, progressive motility, curvilinear velocity (VCL), straight-line velocity (VSL), linearity (LIN) and amplitude of lateral head displacement (ALH). Reactive oxygen species (ROS) levels were assessed by flow cytometry. Data are presented as Mean±S.E.M. Appropriate statistical analysis (Paired Student's t-tests, Graph Pad Prism™) was performed and significance was set at $p < 0.05$. Results showed a significant increase in the total motility (62.29±1.53 vs. 58.86±1.51, $p<0.0027$), progressive motility (49.58%±1.47 vs. 44.98%±1.37, $p<0.0001$), VCL (81.99µm/s± 1.68 vs. 76.24µm/s±1.08, $p<0.0001$), VSL (32.90µm/s±0.61 vs. 29.81µm/s± 0.50, $p<0.0001$) and LIN (40.89%±0.79 vs. 39.42%±0.59, $p=0.0110$) in the second sample (4hr abstinence) compared to the first sample (4 days abstinence). ALH and ROS were not significantly different between the first and second ejaculates. This study suggests that (i) semen collected after both short and long abstinence periods still satisfied the WHO reference criteria (total motility >40%; Progressive motility >32%), and (ii) longer abstinence periods are associated with decreased sperm kinematics that seems to be independent of ROS levels. The clinical implication is that men diagnosed with cancer can donate two samples in quick succession for fertility presentation before the onset of their treatment.

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A COMPARISON OF THE EFFECT OF POLYVINYLPYRROLIDONE (PVP) AND SPERMSLOWTM ON HUMAN SPERMATOZOA

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ICSI and other micromanipulation assisted reproductive technology methods, such as PICSI and IMSI, are routinely used in many fertility laboratories. It is common practice to place prepared spermatozoa in a viscous holding medium to facilitate the handling during the immobilization and injection processes of ICSI. The possible effect of these holding mediums on spermatozoa, is of importance. Hamilton Thorne IVOS® developed an automated software solution for live sperm morphology evaluation under high magnification, called IMSI StrictTM. For good optics and spermatozoon evaluation in IMSI StrictTM, spermatozoa need to be moving very slowly or be immotile, but still be viable. This can be achieved by placing spermatozoa in a viscous holding medium, either polyvinylpyrrolidone or SpermSlowTM, sometimes for a substantial time period. Before marketing the clinical use of IMSI StrictTM, the possible toxicity or deleterious effect of PVP and SpermSlowTM on spermatozoa needs to be excluded. The primary objective of this study was to evaluate the effect of PVP and SpermSlowTM on human spermatozoa after different exposure times using a viability stain, CASA motility parameters, chromatin packaging and DNA fragmentation analysis. This prospective analytical study was conducted at Drs Aevitas Fertility Clinic and the Fertility Unit at Tygerberg Hospital between July 2013 and October 2014. A total of 90 separate semen samples were analysed

for the quantitative analysis. Results showed that although PVP and SpermSlowTM treated sperm outcomes often differed significantly after typical statistical analysis, clinically these two mediums were shown to be equivalent for the tested outcomes. PVP and SpermSlowTM had no detrimental effect clinically on sperm viability, motility parameters, chromatin packaging and DNA fragmentation rate. Based on this study's results, either PVP or SpermSlowTM can be used for IMSI StrictTM purposes. However, the study did not include the technical aspects of the usage of PVP and SpermSlowTM.

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GAMETE AND EMBRYO TRANSPORT USING A TRANSPORT INCUBATOR: THE MAINTENANCE OF THE CORRECT PH AND TEMPERATURE.

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Introduction: Fertility treatment is expensive due to laboratory equipment used during the procedures, one procedure being Intra-cytoplasmic Injection [ICSI]. Tygerberg Fertility Clinic offers an affordable, low cost ART program, making it accessible to a wider scope of patients and expensive ICSI equipment was not available during the study period.Since many patients need ICSI, another clinic was outsourced to perform ICSI at an affordable cost.Ova/ embryos needed to be transported safely between clinics and a portable incubator [The Labotect ThermoCell® Transporter 3018] was used for the transport.It is very important that optimal culture conditions should be maintained during such transport.Objective: To investigate whether culture media pH and temperature remained optimal during transportation between two Fertility Clinics in a travel incubator.Material and methods:Temperature was measured in sterile water using a wire thermometer threaded through the lid of a transport tube and placed into the heated [37°C] water in the tube in the heated incubator. Measurements were noted at 0, 15 and 30 minutes. pH(cleavage medium) was measured with a blood gas machine using a gas tight syringe. Medium in transfer tubes was pH equilibrated in a CO2 incubator. The tubes (3) were capped and placed in the transport incubator for 0, 15, and 30 minutes each. The medium was transferred to an air tight syringe and the pH measured. All measurements were repeated 25 times.Results: An acceptable temperature (± 37.6°C – min. 37.4°C, max. 37.7°C) and pH [range of 7.13 to 7.23] within the recommended [7.2 ± 0.1] pH range for cleavage medium was maintained during the 30 minute travel period.Conclusion(s): The transport incubator used when transporting oocytes/embryos between the two clinics was very efficient in keeping both the temperature and pH constant and optimal.

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ESTABLISHING A STANDARD ASSAY PROTOCOL FOR THE QUANTITATIVE DETERMINATION OF SOLUBLE HUMAN LEUKOCYTE ANTIGEN-G (SHLA-G) CONCENTRATION AS A BIOMARKER FOR EMBRYO SELECTION IN ART

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Introduction: Widespread research in the field of reproductive medicine exists to demonstrate the crucial nature of embryo selection in the treatment of patients wishing to conceive by assisted reproductive technologies. Embryologists employ various embryo selection strategies at different developmental stages, from oocyte to blastocyst stage, with the aim of identifying the most implantation competent embryo(s), with the highest potential to result in an ongoing singleton pregnancy, for transfer. The expression of sHLA-G in embryo culture supernatants has been identified as a possible biochemical marker of embryo competence in recent years.

Methods: The study aimed to establish a standard assay protocol for its quantification so that it may be used routinely in addition to existing selection strategies employed in ART treatment programs to improve successful implantation and ongoing pregnancy rates while reducing the frequency of multiple pregnancies by enabling single embryo transfer. All elements of the assay including; i) reagents, ii) ELISA micro-plate, iii) incubation conditions and duration, iv) antibodies and v) controls, were evaluated in the hope of producing a significant magnitude of separation between the data point populations of negative and positive controls.
Results: The data produced by was not suitable for the generation of a standard curve against which test samples could be plotted to determine specific sHLA-G concentrations. The results illustrate the current barriers to the implementation of sHLA-G concentration determination as an additional non-invasive embryo selection technique in assisted reproduction clinics.
Conclusions: There is an absolute need for ongoing investigation and optimization of sHLA-G determination in culture supernatants as literature supports its potential to outperform other selection techniques currently employed in routine embryo selection in ART clinics worldwide.