HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE

UFS·UV

FACULTY RESEARCH FORUM

Thursday 25 and Friday 26 August 2016

FAKULTEITSNAVORSINGSFORUM

Donderdag 25 en Vrydag 26 Augustus 2016

The Faculty of Health Sciences has a recognised research record and is globally competitive in terms of research; the Faculty Research Forum thus being an annual highlight on the calender.

The 2016 Faculty Research Forum will, as in the past, be characterised by high quality submissions for presentations, showcasing the significant recent progress in research development.

With this, the 49th Faculty Research Forum, it is the Faculty's vision that emerging trends in research processes will come to fulfilment.

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Die Fakulteit Geneeskunde het 'n erkende navorsingsrekord en kompeteer wêreldwyd op navorsingsgebied, met die Fakulteitsnavorsingsforum as 'n jaarlikse hoogtepunt op die kalender.

Die 2016 Fakulteitsnavorsingsforum word, soos die voriges, gekenmerk deur hoë-gehalte voorleggings vir aanbiedings wat die betekenisvolle vordering ten opsigte van onlangse navorsingontwikkeling ten toonstel .

Die visie van hierdie gebeurtenis, die 49ste Fakulteitsnavorsingforum, is dat ontluikende tendense in navorsingsprosesse 'n werklikheid sal word.

August 2016 Augustus

Message from Professor GJ van Zyl Dean
Faculty of Health Sciences

Professor GJ van Zyl's messages for the Faculty Research Forum 2016

A sincere welcome to the 49th Faculty Research Forum of 2016. We are on the verge of our 50th Forum – we have to celebrate this achievement in 2017! But coming back to 2016 - In my address last year I remarked that the research work is not over, however that we are still gathering momentum. I hope that this year's Forum will again contribute significantly towards reaching the target set for us – if we only have publications from our Forum outputs. Thank you to each researcher who invested the time and effort to participate in this prestigious event.

This year we have the wonderful privilege of welcoming Prof Brenda Morrow as the speaker at our FP Retief Lecture. We also have three outstanding External evaluators attending: Prof David Meyer, Prof Adri Beylefeld and Prof Annabel Fossey. We are also privileged this year to have our Faculty Forum linked to a workshop on Saturday – this will be a first and I hope supported by all.

The annual Faculty Research Forum is one of the highlights on the calendar of the Faculty of Health Sciences at the University of the Free State. It is my pleasure to thank each of you for presenting your research, contributing to the programme or attending presentations. May I request you to attend the session that deals with the student winners of 2016 – each year this is a very rewarding session that deserves the attention of all Faculty members. By attending you also give our students the recognition they deserve. I will also have an opportunity with the opening to say a few words. I will say a few words about "In simplicity" you get control of your life. As Rich Mullins puts it so clear *"If your life is motivated by your ambition to leave a legacy, what you'll probably leave is a legacy of ambition."* Life is not all about doing but by being and becoming (Martin Kuscus, 2016). More about this at the opening.

A special thank you to Prof Witthuhn who again sponsored part of the Faculty Forum, and to the Organising Committee for all their hard work behind the scenes. Finally I would like to invite everyone to attend the FP Retief Lecture, as well as the presentations by our external evaluators. – may this be a rewarding experience again in 2016! Welcome to all of you and enjoy the Forum!

Prof GJ van Zyl
DEAN

HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE
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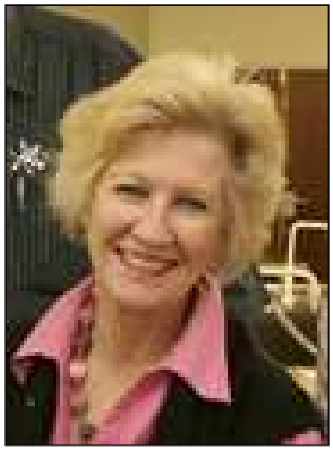
EXTERNAL ADJUDICATORS / EKSTERNE BEOORDELAARS

Professor A Fossey

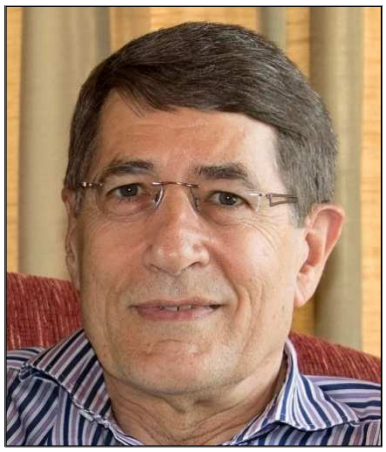


Professor Annabel Fossey matriculated from the Hoër Meisieskool, Bloemhof in Stellenbosch, after which she completed a BSc degree majoring in Genetics, Physiology and Biochemistry at the University of Pretoria. She was then appointed as a lecturer in Genetics at the University of Pretoria, during which time she completed her honours, masters and DSc degrees. Because of her passion for teaching, she continued to pursue an academic career in Genetics; firstly at the University of Pretoria and later at the Universities of Natal and KwaZulu-Natal. From 2006 till 2010 she was a fulltime principal researcher at the CSIR in Pietermaritzburg in tree breeding. In March 2010 she joined the Central University of Technology, Free State, in Bloemfontein, as a research professor in Biotechnology. She has published many scholarly articles, books and made numerous conference contributions. Her books include books on Forensic Genetics and Research Methodology and more than 30 books for Adult Based Education and Training in community health and mathematics. Many students have completed postgraduate studies under her guidance. In 1988 she was chosen to join People to People's delegation of the Dwight Eisenhower foundation to the United States of America. In 1996 she became the first South African fellow of the United Nations in mutation induction research. She is currently focusing her research on infection prevention and control in dental environments and water quality.

Professor A Beylefeld

Adriana Beylefeld is Associate Professor and Teaching and Learning Manager in the University of the Free State, Faculty of Education. She has almost 30 years of experience in the support and development of students and staff, 15 of which were devoted to the Faculty of Health Sciences. Her current work in curriculum development, quality assurance and post-graduate study guidance is infused by a keen interest in qualitative inquiry to enhance both staff's and pre-service education students' understanding of complex social phenomena in education, thus assisting them to leap from understanding to action, and the Faculty to realize its stated mission more fully.

Professor D Meyer



Prof David Meyer graduated MB ChB from the University of Stellenbosch in 1976. After completing his Internship at the Tygerberg Hospital in 1977, he worked as a General Practitioner in Ficksburg in the Free State before joining the SA Defence Force during 1979 - 1981. From June 1981 till December 1986 he worked as a General Practitioner in Kroonstad. During this time, he obtained the MFGP (SA) as well as the Honns BSc degree in Pharmacology from the Potchefstroom University. He completed his training as a Registrar in Ophthalmology at the University of Stellenbosch in 1990 under the late Professor Basson van Rooyen. He then did a Fellowship for one year in Cataract and Refractive surgery with Dr Howard Gimbel at the Gimbel Eye Centre in Calgary, Alberta, Canada and at the Loma Linda University in California in the United States of America. He became Head of the Department of Ophthalmology at the University of Stellenbosch in September 1994. Prof Meyer obtained the FCOphth (SA) by Peer Review in April 2000. In 2001 he obtained the PhD degree in Pharmacology from the Faculty of Health Sciences, University of Stellenbosch. Prof Meyer has been responsible for the Oculoplastics, Orbital and Lacrimal service at the Tygerberg Academic Hospital for 15 years. He was elected a Fellow of the International Society for Orbital Disorders (I.S.O.D.) in 1998. Repeated clinical attachment visits to Mr Richard Collin, Mr Geoff Rose and Mr Richard Downs enhanced his experience in this subspecialty. Prof Meyer has also recently spent several extensive periods at the King Khaled Eye Specialist Hospital and King Saud University, Riyadh, Kingdom of Saudi Arabia, as Professor of Ophthalmology in the Oculoplastic Division, where he was responsible for the training of Fellows and Residents in Oculoplastic, Orbit and Lacrimal surgery. This experience enabled him to enhance his research, clinical and surgical expertise significantly in International Oculoplastics during these visits. He has authored/co-authored 74 papers. He has published 23 chapters in Ophthalmology textbooks and he was the Co-editor of 3 textbooks in Ophthalmology. He delivered 146 lectures/papers/posters at National and International meetings. Prof Meyer was the promoter for 23 Masters Dissertations and one completed PhD dissertations, with currently 3 PhD students in the process of completing their research. He is also a reviewer for 27 national and international peer reviewed journals, and associate editor of one international journal.

23rd Lecture – F.P. RETIEF – 23ste Lesing

INVITED SPEAKER / GENOOIDE SPREKER

Professor B Morrow

Brenda Morrow is an Associate Professor in the Department of Paediatrics, University of Cape Town (UCT), South Africa. A physiotherapist by training, Brenda worked clinically from 1995 to 2006 at Red Cross War Memorial Children's Hospital in Cape Town. She developed a special interest in paediatric respiratory diseases, particularly in the context of critical care and the management of children with Cystic Fibrosis, and embarked on a Master's Degree in 2001, which was upgraded to PhD in 2003. In 2005 Brenda was awarded a PhD for her dissertation, "*An investigation into nonbronchoscopic bronchoalveolar lavage and endotracheal suctioning in critically ill infants and children*". In 2008 she completed a two-year postdoctoral fellowship funded by the Medical Research Council of Southern Africa (MRC). In 2009 she was awarded an MRC Career Development Award to develop clinical research using electrical impedance tomography – an emerging, noninvasive imaging tool which allows real-time quantitative analysis of ventilation distribution. In 2012 she was promoted *Ad Hominem* to Associate Professor. Since 1998, Brenda has been engaged in teaching and supervision of undergraduate and postgraduate students. Her current job description includes expanding the African Paediatric Fellowship Program to train paediatric allied health and rehabilitation therapists throughout Africa and to facilitate the concept of a multidisciplinary, holistic approach to child health practice and research. In 2014, she completed a Postgraduate Diploma in Health Research Ethics (with Distinction) through Stellenbosch University. Brenda is Chair of the Department of Paediatrics' Research Committee; a member of the Faculty of Health Sciences Research and Human Research Ethics Committees; and a member of many special interest, editorial and advisory boards. She has published and presented her research findings widely, with over 60 peer reviewed publications, and has won several awards. She is deputy editor of the *Southern African Journal of Critical Care* and a regular reviewer for many international medical journals.

Faculty of Health Sciences Faculty Research Forum 2016
Fakulteit Gesondheidswetenskappe Fakulteitsnavorsingsforum 2016

ORGANIZING COMMITTEE / REËLINGSKOMITEE

Prof FJ Burt (Chairperson / Voorsitter)
Dr D van Jaarsveldt (Vice Chair / Ondervoorsitter)
Prof GJ van Zyl (Dean / Dekaan)
Mrs / Mev S Gouws
Mrs / Mev M Viljoen
Mrs / Mev L de Reuck
Miss / Mej C Brandt
Dr A de Kock
Dr M Labuschagne
Mrs / Mev T Rauch-van der Merwe
Prof A Joubert
Miss / Mej A Venter
Miss / Mej C Scott

EVALUATION COMMITTEES / EVALUERINGSKOMITEES

CLINICAL / KLINIES

Internal Evaluation Committee / Interne Evalueringskomitee:	Dr M Labuschagne (Chair / Voorsitter) Dr A van Aswegen Dr L Solomon
External adjudicator / Eksterne evalueerder:	**Prof D Meyer** University of Stellenbosch / Universiteit van Stellenbosch
Adjudicators of research articles / Beoordeellaars van navorsingsartikels:	**Prof D Meyer** University of Stellenbosch / Universiteit van Stellenbosch **Prof G Fieggen** University of Cape Town / Universiteit van Kaapstad **Prof S Kling** University of Stellenbosch / Universiteit van Stellenbosch

LABORATORY / LABORATORIUM

Internal Evaluation Committee / Interne Evalueringskomitee:	Dr A de Kock (Chair / Voorsitter) Dr J Goedhals Ms A van der Spoel van Dijk
External adjudicator / Eksterne evalueerder:	**Prof A Fossey** Central University of Technology Free State / Sentrale Universiteit van Tegnologie Vrystaat
Adjudicators of research articles / Evalueerders van navorsingsartikels:	**Prof A Fossey** Central University of Technology Free State / Sentrale Universiteit van Tegnologie Vrystaat **Prof J Albertyn** University of the Free State / Universiteit van die Vrystaat **Prof AM Pretorius** Central University of Technology Free State / Sentrale Universiteit van Tegnologie Vrystaat

EDUCATIONAL / ONDERWYSKUNDIG

Internal Evaluation Committee / Interne Evalueringskomitee:	Ms T Rauch-van der Merwe (Chair / Voorsitter) Dr C Spies Mr GJ van Zyl
External adjudicator / Eksterne evalueerder:	**Prof A Beylefeld** University of the Free State / Universiteit van die Vrystaat
Adjudicators of research articles / Evalueerders van navorsingsartikels:	**Prof A Beylefeld** University of the Free State / Universiteit van die Vrystaat **Dr C Janse van Vuuren** University of the Free State / Universiteit van die Vrystaat **Mr M Serekoane** University of the Free State / Universiteit van die Vrystaat

Faculty of Health Sciences Faculty Research Forum 2016
Fakulteit Gesondheidswetenskappe Fakulteitsnavorsingsforum 2016

EVALUATION OF RESEARCH ARTICLES / BEOORDELING VAN NAVORSINGSARTIKELS

PRYSWENNERS / PRIZE WINNERS

John van der Riet medal / -medalje	
Winner / Wenner:	P.M. van Zyl & G. Joubert Department of Pharmacology, School of Medicine/ Departement Farmakologie, Skool vir Geneeskunde
Acetaldehyde production capacity of salivary microflora in alcoholics during early recovery	
Alcohol 49 (2015)	
Muller Potgieter medal / -medalje	
Winner / Wenner:	D Goedhals, PA Bester, JT Paweska, R Swanepoel & FJ Burt Department of Medical Microbiology and Virology, School of Medicine / Departement van Mikrobiologie en Virologie, Skool vir Geneeskunde
Comparative Analysis of the L, M, and S RNA Segments of Crimean–Congo Haemorrhagic Fever Virus Isolates From Southern Africa	
Journal of Medical Virology 87 (2015)	
Kerneels Nel medal / -medalje	
Winner / Wenner:	DE van Jaarsveldt & A Joubert School of Nursing / Skool vir Verpleegkunde
Navigating diversity with nursing students through difficult dialogues: A qualitative study	
International Journal of Africa Nursing Sciences 2 (2015)	

We express our sincere gratitude to the evaluation committees.
Ons opregte dank gaan die beoordelingskomitees.

ACKNOWLEDGEMENTS / BEDANKINGS

PARTICIPATING COMPANIES / DEELNEMENDE INSTANSIES

We express our sincere thanks to the companies mentioned below for their financial support and valued participation in the 2016 Faculty of Health Sciences Faculty Research Forum of the University of the Free State.

Ons spreek ons opregte dank uit vir finansiële steun ontvang van die ondervermelde instansies asook hul gewaardeerde deelname aan die 2016 Fakulteit Gesondheidswetenskappe Fakulteitsnavorsingsforum van die Universiteit van die Vrystaat.

DONORS / DONATEURS

BRONZE / BRONS
Hobix Frames (Willem Landman)
Whitehead Scientific
School of Medicine UFS

SILVER / SILWER
School of Nursing UFS
Prof G Joubert

GOLD / GOUD
None

PLATINUM / PLATINUM
Faculty Management Committee, Faculty of Health Sciences
Prof C Witthuhn, Vice-Rector: Research, University of the Free State

EXHIBITORS / UITSTALLERS

- Ampath
- Cure Day Clinic
- Discovery
- Duxah
- Marcus Medical
- MPS
- Nestlé
- Novagen
- Partner 4 Life
- South African Medical Association
- SANBS
- SSEM Mthembu Medical
- 3F Scientic
- The Scientific Group
- Welch Allyn/Nostics
- Whitehead Scientific

Program/ Programme

DONDERDAG, 25 AUGUSTUS 2016 / THURSDAY, 25 AUGUST 2016

	KINE 1		
SESSION 1 **08h00-08h15**	Chairperson: Prof FJ Burt **Opening Lecture**: Prof GJ van Zyl (Dean: Faculty of Health Sciences)		
SESSION 2 **08h20-10h05**	**KINE 1**	**KINE 2**	**KINE 3**
	Chairperson: Ms Corlia Brandt **Clinical Papers**: KR 1 to 7	Chairperson: Prof Chris Viljoen **Laboratory Papers**: LR 1 to 7	Chairperson: Dr Lily van Rhyn **Educational Papers**: OR 1 to 7
08h20-08h35	KR1: Charmaine Hassan	LR1: Yuri Munsamy	OR1: Dirk Hagemeister
08h35-08h50	KR2: Willem Blaauw	LR2: Wattie Janse van Rensburg	OR2: Mathys Labuschagne
08h50-09h05	KR3: Willie Boonzaier	LR3: Tumelo Sekee	OR3: Mia Vermaak
09h05-09h20	KR4: Willem Hiddenma	LR4: Sussan Acho	OR4: Magteld Smith
09h20-09h35	KR5: Louise van den Berg	LR5: Sne Myeni	OR5: Alwyn Hugo
09h35-09h50	KR6: Ronette Lategan-Potgieter	LR6: Pakiso Moeti	OR6: Maretha le Roux
09h50-10h05	KR7: Reinette Ebersohn	LR7: Oluwaseyi Oderinde	OR7: Riaan Schoeman
TEA/TEE (10h05 – 10h15)			
	KINE 1		
SESSION 3 **10h15-10h45**	Chairperson: Ms T Rauch-van der Merwe **Invitation Lecture**: Prof A Beylefeld *"A mist makes things beautiful": Quality markers of qualitative research*		
SESSION 4 **10h50-13h05**	**KINE 1**	**KINE 2**	**KINE 3**
	Chairperson: Dr Esme le Grange **Clinical Papers**: KR 8 to 16	Chairperson: Prof Magda Theron **Laboratory Papers**: LR 8 to 16	Chairperson: Ms Michelle Butler **Educational Papers**: OR 8 to 13
10h50-11h05	KR8: Marius Swart	LR8: Anneke van der Spoel van Dijk	OR8: Gina Joubert
11h05-11h20	KR9: Nantes Combrinck	LR9: Mpoi Makhetha	OR9: Gina Joubert
11h20-11h35	KR10: Kevin Daffue	LR10: Muriel Meiring	OR10: Elize Janse van Rensburg
11h35-11h50	KR11: Jaco Pieterse	LR11: Jaco Oosthuizen	OR11: Elize Janse van Rensburg
11h50-12h05	KR12: Gerhard van der Westhuizen	LR12: Jaco Joubert	OR12: Chantel van Wyk
12h05-12h20	KR13: Ferdinand Mampuya	LR13: Jaco Joubert	
12h20-12h35	KR14: Etienne Henn	LR14: Johnathan Adams	
12h35-12h50	KR15: Etienne Henn	LR15: Michael Combrink	
12h50-13h05	KR16: Corlia Brandt	LR16: Gert Terblanche	
LUNCH/MIDDAGETE (13H05-13H30)			

SESSION 5 **13h30-14h00**	**KINE 1**	
	Chairperson: Dr M Labuschagne **Invitation Lecture**: Prof D Meyer *"Intralesion Bleomycin in Ophthalmic tumors – the Stellenbosch Experience".*	
	Chairperson: Prof G Joubert	
14h05-14h20	Best Student Paper	School of Allied Health Professions
14h20-14h35	Best Student Paper	School of Nursing
14h35-14h50	Best Student Paper	School of Medicine
TEA/TEE (14h50-15h05)		
SESSION 6 **15h05-16h30**	**KINE 1**	
	Chairperson: Dr Nicholas Pearce **Clinical Posters**: KPV 1 to 6	
15h05-15h10	KPV1: Lucia Meko	
15h10-15h15	KPV2: Nico Bernard	
15h15-15h20	KPV3: Annelize Vorster	
15h20-15h25	KPV4: Anke van der Merwe	
15h25-15h30	KPV5: Melanie Pienaar	
	Chairperson: Dr Nerina van der Merwe **Laboratory Posters**: LPV 1 to 2	
15h30-15h35	LPV1: Moleboheng Binyane	
15h40-15h45	LPV2: Beynon Abrahams	
	Chairperson: Ms Anna-Marie Welman **Educational Posters**: OPV 1 to 8	
15h45-15h50	OPV1: Santie van Vuuren	
15h55-16h00	OPV2: Riaan van Wyk	
16h00-16h05	OPV3: Daleen Raubenheimer	
16h05-16h10	OPV4: Monique de Milander	
16h10-16h15	OPV5: Chantel van Wyk	
16h15-16h20	OPV6: Chantel van Wyk	
16h20-16h25	OPV7: Tonie Gerber	
16h25-16h30	OPV8: Eduard Nell	

Program/ Programme
VRYDAG, 26 AUGUSTUS 2016 / FRIDAY, 26 AUGUST 2016

	KINE 1	
SESSIE 7 **08h00-08h45**	Sessievoorsitter: Prof GJ van Zyl **FP Retieflesing:** Prof B Morrow – University of Cape Town *"Bridging the gap: Integrating research and clinical care in South Africa".*	
SESSIE 8 **08h50-10h35**	**KINE 1**	**KINE 2**
	Sessievoorsitter: Prof Willem Kruger **Kliniese Referate:** KR 17 tot 23	Sessievoorsitter: Prof William Rae **Laboratorium Referate:** LR 17 tot 21
08h50-09h05	KR17: Marizeth Jordaan	LR17: Deborah Damane
09h05-09h20	KR18: Paulina van Zyl	LR18: Daniella Violante
09h20-09h35	KR19: Elmine du Toit	LR19: Demare Potgieter
09h35-09h50	KR20: Danie Luyt	LR20: Maxwell Sokhela
09h50-10h05	KR21: Corinna Walsh	LR21: Chantel Booysen
10h05-10h20	KR22: Chris van Zyl	
10h20-10h35	KR23: Chun-yen Wu	
TEA/TEE (10h35-11h05)		
SESSIE 9 **11h05-12h20**	**KINE 1**	**KINE 2**
	Sessievoorsitter: Prof Andre Venter **Kliniese Referate:** KR24 tot	Sessievoorsitter: Dr Jacques Raubenheimer **Laboratorium Referate:** LR22 tot 25
11h05-11h20	KR24: Asha Malan	LR22: Barend Koortzen
11h20-11h35	KR25: Arno Celliers	LR23: Bhavini Dajee
11h35-11h50	KR26: Jan Arndt	LR24: Anneke van Marle
11h50-12h05	KR27: Je'nine Horn-Lodewyk	LR25: Makgotso Maotoana
12h05-12h20	KR28: Marcel de Kock	LR26: Michaella Morphis

SESSIE 10 **12h20-12h50**	**KINE 1**	
	Sessievoorsitter: Dr A de Kock **Uitnodiginglesing:** Prof A Fossey *"The essence of life and the number game"*	
LUNCH/MIDDAGETE (12h50-13h20)		
SESSIE 11 **13h30 – 14h15**	**KINE 1**	
	Sessievoorsitter: Dr Santie van Vuuren **Replieke**: Eksterne Evalueerders	
13h30-13h45	Repliek	Prof A Beylefeld
13h45-14h00	Repliek	Prof D Meyer
14h00-14h15	Repliek	Prof A Fossey
AFSLUITING		
	FOYER	
16H00	**AANKONDIGING VAN DIE WENNERS** **BELANGRIKE KENNISGEWING** ***Alle persone*** wat voordragte tydens die Forum lewer moet na afloop van Vrydag se verrigtinge in die Foyer aanmeld vir die aankondiging van die pryswenners en oorhandiging van pryse tydens 'n skemerkelkonthaal. **IMPORTANT NOTICE:** ***All persons*** who present papers during the Forum must assemble in the Foyer directly after the conclusion of Friday's programme for the announcement of the winners and handing over of prizes during a cocktail function.	

Programme / Program
THURSDAY, 25 AUGUST 2016 / DONDERDAG, 25 AUGUSTUS 2016

SESSION 2	**KINE 1**	KR1 08h20	**KNOWLEDGE, ATTITUDE AND PRACTICES [KAP] OF HEALTHCARE WORKERS IN THE FREE STATE, SOUTH AFRICA REGARDING TYPE 2 DIABETES MELLITUS** C. Hassan Social Sciences
		KR2 08h35	**MAXIMUM TRANSFUSION RATE OF RED CELL CONCENTRATE (RCC) IN ADULTS WITH REGARDS TO THE POTASSIUM CONTENT OF RED CELL CONCENTRATE** WS Blaauw Anaesthesiology
		KR3 08h50	**DOSIMETRIC DATA FOR DIAGNOSTIC DIGITAL MAMMOGRAPHY EMPLOYING FULLY AUTOMATED SELF ADJUSTING TILT COMPRESSION** WPE Boonzaier Medical Physics
		KR4 09h05	**THE TRANSVERSE ACETABULAR LIGAMENT AS AN INTRA-OPERATIVE GUIDE TO CUP ABDUCTION** WB Hiddema Orthopaedic surgery
		KR5 09h20	**TYPE 2 DIABETES OUT-PATIENT CARE IN MASERU: A REVOLVING DOOR?** VL van den Berg Nutrition and Dietetics
		KR6 09h35	**HYDRATION PRACTICES OF LONG DISTANCE RUNNERS IN THE SOUTH AFRICAN NATIONAL DEFENCE FORCE** R Lategan-Potgieter Nutrition and Dietetics
		KR7 09h50	**ANATOMICAL VARIATIONS IN CELIAC TRUNK BRANCHING PATTERNS** R Ebersohn Basic Medical Sciences
SESSION 2	**KINE 2**	LR1 08h20	**CHARACTERISATION OF HPV31 COMPLETE GENOME ASSOCIATED WITH HEAD AND NECK CANCER** Y Munsamy Medical Microbiology and Virology
		LR2 08h35	**CAN DRINKING ROOIBOS TEA PREVENT STROKE?** WJ Janse van Rensburg Haematology & Cell Biology
		LR3 08h50	**PREPARATION OF TRANSCRIBED RNA FOR USE AS A POSITIVE CONTROL FOR DETECTION OF TRANSCRIPTIONALLY ACTIVE HUMAN PAPILLOMAVIRUSES** TR Sekee Medical Microbiology and Virology
		LR4 09h05	**INTERACTIVE BREAST MASS SEGMENTATION USING CONVEX ACTIVE CONTOUR MODEL WITH OPTIMAL THRESHOLD VALUES** SN Acho Medical Physics
		LR5 09h20	**PERFORMANCE OF A COST-EFFECTIVE ADAMTS13 ANTIGEN ASSAY** S Myeni Haematology and Cell Biology
		LR6 09h35	**VALIDATION OF AND SCREENING OF SOUTH AFRICAN FAMILIAL BREAST CANCER PATIENTS FOR LARGE GENOMIC REARRANGEMENTS USING MULTIPLEX LIGATION DEPENDANT PROBE AMPLIFICATION (MLPA)** PJ Moeti Human Genetics

Programme / Program
THURSDAY, 25 AUGUST 2016 / DONDERDAG, 25 AUGUSTUS 2016

SESSION 2	**KINE 2**	LR7 09h50	**MONTE CARLO SIMULATION BENCHMARKED AGAINST MEASUREMENT FOR AN ELEKTA SYNERGY LINAC EQUIPPED WITH AN AGILITY 160-LEAF MLC** OM Oderinde Medical Physics
SESSION 2	**KINE 3**	OR 1 08h20	**SPECIALISATION PREFERENCES OF UFS UNDERGRADUATE MEDICAL STUDENTS** DT Hagemeister School of Medicine
		OR 2 08h35	**REPORT BACK ON ASSESSMENT RUBRIC TO EVALUATE INTERPROFESSIONAL STUDENT COLLABORATION** MJ Labuschagne Clinical Simulation and Skills Unit
		OR3 08h50	**FROM PAPER TO PRACTICE – ACADEMICS AND PRACTITIONERS WORKING TOGETHER IN ENHANCING THE USE OF OCCUPATIONAL THERAPY CONCEPTUAL MODELS** ME Vermaak Occupational Therapy
		OR4 09h05	**COCHLEAR IMPLANTATION AND DEAF EDUCATION ARE COST EFFECTIVE IN SUB-SAHARAN AFRICA** M Smith Otorhinolaryngology
		OR5 09h20	**DO ACADEMIC INDICATORS INCLUDING NBT SCORES PREDICT SUCCESS IN THE FIRST SEMESTER OF AN MBCHB PROGRAMME?** AP Hugo Undergraduate Programme Management
		OR6 09h35	**DIABETES-RELATED KNOWLEDGE, ATTITUDES AND PRACTICES OF ADULT PATIENTS WITH TYPE 2 DIABETES IN THE FREE STATE, SOUTH AFRICA** M le Roux Nutrition and Dietetics
		OR7 09h50	**DIFFERENCES IN MATCH ACTIVITIES BETWEEN THE SUPER RUGBY AND CURRIE CUP COMPETITION DURING THE 2014 SEASON** R Schoeman
SESSION 4	**KINE 1**	KR8 10h50	**MINIMAL EXTRACORPOREAL CIRCULATION: A CLINICAL APPRAISAL** MJ Swart Health Sciences Education
		KR9 11h05	**THE ROLE OF POST MORTEM COMPUTED TOMOGRAPHY IN ASSAULT VICTIMS WITH HEAD TRAUMA IN SOUTH AFRICA** N Combrinck Clinical Imaging Sciences
		KR10 11h20	**CT STROKE FINDINGS AND POPULATION DEMOGRAPHICS AT PELONOMI HOSPITAL, BLOEMFONTEIN** K Daffue Clinical Imaging Sciences
		KR11 11h35	**INVESTIGATION OF THE GROWTH PATTERNS OF NON-FUNCTIONING PITUITARY MACROADENOMAS USING VOLUMETRIC ASSESSMENTS ON SERIAL MRI INVESTIGATIONS** J Pieterse Clinical Imaging Sciences
		KR12 11h50	**THE YIELD OF PATHOLOGICAL FINDINGS FROM ROUTINE SCREENING CHEST X-RAYS IN A MILITARY POPULATION** G van der Westhuizen Clinical Imaging Sciences

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SESSION 4	**KINE 1**	KR13 12h05	**PREVALENCE OF RISK FACTORS AND HUMAN IMMUNO DEFICIENCY VIRUS AMONG THE PATIENTS WITH DOPPLER PROVEN DEEP VEIN THROMBOSIS IN KIMBERLEY HOSPITAL** FK Mampuya Family Medicine
		KR14 12h20	**NATIVE TISSUE PELVIC FLOOR RECONSTRUCTIVE SURGERY IN THE HIV-POSITIVE WOMAN: RESULTS FROM A PROSPECTIVE COHORT** EW Henn Obstetrics & Gynaecology
		KR15 12h35	**CAN WE SAFELY USE MESH FOR PELVIC FLOOR RECONSTRUCTIVE SURGERY IN HIV POSITIVE WOMEN? AN AFRICAN PERSPECTIVE** EW Henn Obstetrics & Gynaecology
		KR16 12h50	**WOMEN SCHEDULED FOR PELVIC FLOOR RECONSTRUCTIVE SURGERY: A NEURO-MUSCULOSKELETAL PERSPECTIVE** C Brandt Physiotherapy
SESSION 4	**KINE 2**	LR8 10h50	**SEQUENCING THE TARGET (ATPE) OF BEDAQUILINE IN MYCOBACTERIUM TUBERCULOSIS ISOLATES** A van der Spoel van Dijk Medical Microbiology
		LR9 11h05	**PALB2 MUTATIONS IN BRCA NEGATIVE SA WOMEN WITH A POSITIVE FAMILY HISTORY** MF Makhetha Human Genetics
		LR10 11h20	**HIV-ASSOCIATED TTP – WHAT WE KNOW SO FAR** M Meiring Haematology and Cell Biology
		LR11 11h35	**LARGE CONTRIBUTION OF ANCESTRAL FOUNDER MUTATIONS TOWARDS FAMILIAL BREAST CANCER RISK IN THE COLOURED POPULATION FROM THE WESTERN CAPE** J Oosthuizen Human Genetics
		LR12 11h50	**PERFORMANCE EVALUATION OF THE COAG-SENSE® POINT-OF-CARE INR-TESTING SYSTEM** J Joubert Haematology & Cell Biology
		LR13 12h05	**PERFORMANCE EVALUATION OF THE MICROINR® POINT-OF-CARE INR-TESTING SYSTEM** J Joubert
		LR14 12h20	**DO MUTATIONS IN BLOOM'S SYNDROME ACT AS A MODIFIER OF FAMILIAL BREAST CANCER RISK IN SOUTH AFRICANS?** J Adams Human Genetics
		LR15 12h35	**THE SOUTH AFRICAN INDIAN POPULATION: WHY IS FAMILIAL BREAST CANCER COMPLICATED FOR THIS UNIQUE POPULATION?** HMVE Combrink Human Genetics
		LR16 12h50	**OPTIMIZATION OF RNA EXTRACTION AND ENRICHMENT TECHNIQUES FOR APPLICATION IN VIRUS DISCOVERY** GIDUP Terblanche Medical Microbiology and Virology

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SESSION 4	**KINE 3**	OR8 10h50	**FACULTY OF HEALTH SCIENCES RESEARCH FORUM: 2001-2005 AND 2011-2015 COMPARED** G Joubert Biostatistics
		OR9 11h05	**THE POSTGRADUATE RESEARCH METHODOLOGY MODULE IN THE SCHOOL OF MEDICINE, UFS: INVESTIGATING AN ONLINE APPROACH** G Joubert Biostatistics
		OR10 11h20	**A FRAMEWORK FOR OCCUPATIONAL ENABLEMENT THROUGH SERVICE LEARNING IN OCCUPATIONAL THERAPY** E Janse van Rensburg Occupational Therapy
		OR11 11h35	**COMMUNITY OUTCOMES OF OCCUPATIONAL THERAPY SERVICE LEARNING ENGAGEMENTS: PERCEPTIONS OF COMMUNITY REPRESENTATIVES** E Janse van Rensburg Occupational Therapy
		OR12 11h50	**A FRAMEWORK TO SUPPORT THE NEWLY APPOINTED ACADEMIC IN THEIR ROLE AS HEALTH PROFESSIONS EDUCATOR** C van Wyk Health Sciences Education
SESSION 6	**KINE 1**	KPV1 15h05	**BREAKFAST EATING HABITS AND ANTHROPOMETRICAL MEASUREMENTS OF GRADE 8 AND 9 LEARNERS IN BLOEMFONTEIN, SOUTH AFRICA** NML Meko Nutrition and Dietetics
		KPV2 15h10	**THE USE OF ULTRASONOGRAPHIC LUNG SLIDING SIGN IN CONFIRMING CORRECT PLACEMENT OF DOUBLE-LUMEN TUBE INTUBATION** NJ Bernard Anaesthesiology
		KPV3 15h15	**ALCOHOL AND SUBSTANCE USE AMONG NURSING STUDENTS AT THE UNIVERSITY OF THE FREE STATE** A Vorster
		KPV4 15h20	**THE DEVELOPMENT OF A PHYSIOTHERAPY INTERVENTION PROGRAM FOR MANDIBULAR CONDYLE FRACTURE PATIENTS** A van der Merwe Physiotherapy
		KPV5 15h25	**COMMUNICATION STRATEGIES TO ACCOMPLISH EFFECTIVE HEALTH DIALOGUE IN ADULTS WITH CHRONIC DISEASES IN LOW AND MIDDLE INCOME COUNTRIES: A SYSTEMATIC REVIEW** MA Pienaar
SESSION 6	**KINE 1**	LPV1 15h30	**THE EFFECT OF PHELA ON P-GLYCOPROTEIN AND MULTIDRUG RESISTANCE-ASSOCIATED PROTEIN 2 TRANSPORTERS IN THE GASTROINTESTINAL TRACT OF A RAT MODEL** ME Binyane Pharmacology
		LPV2 15h40	**THE EFFECTS OF VARIOUS COMBINATIONS OF DIFFERENT CLASSES OF ANTICANCER DRUGS AND TYROSINE KINASE INHIBITORS ON THE HUMAN MCF-7 BREAST CARCINOMA CELL LINE** B Abrahams Basic Medical Sciences

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SESSION 6 **KINE 1**

OPV1 15h45 **WELLNESS AMONG STUDENTS IN ALLIED HEALTH PROFESSIONS IN BLOEMFONTEIN, SOUTH AFRICA**
S van Vuuren
School for Allied Health Professions

OPV2 15h55 **SIMULATION AS EDUCATIONAL STRATEGY TO DELIVER INTERPROFESSIONAL EDUCATION**
R van Wyk
Clinical Simulation & Skills Unit

OPV3 16h00 **THE BARE BONES: WHAT STUDENTS REALLY NEED FOR LEARNING OSTEOLOGY**
D Raubenheimer
Basic Medical Sciences

OPV4 16h05 **SPORT STACKING MOTOR INTERVENTION PROGRAMME FOR CHILDREN WITH DEVELOPMENTAL COORDINATION DISORDER**
M de Milander
Exercise and Sport Sciences

OPV5 16h10 **CONTINUOUS PROFESSIONAL DEVELOPMENT: WHAT ARE THE NEEDS OF EMERGENCY MEDICAL CARE PRACTITIONERS?**
C van Wyk
Health Sciences Education

OPV6 16h15 **PEOPLE LIVING WITH HIV AND AIDS IN LESOTHO: WHAT ARE THE RISK FACTORS?**
C van Wyk
Health Sciences Education

OPV7 16h20 **AN INFERENTIAL COMPARISON BETWEEN THE CAPABILITIES AND ACHIEVEMENTS OF FIRST YEAR MEDICAL AND NURSING STUDENTS AT THE UNIVERSITY OF THE FREE STATE**
AM Gerber
Basic Medical Sciences

OPV8 16h25 **EFFECTS OF THE INCORPORATION OF THE FREE STATE COLLEGE OF EMERGENCY CARE UNDER A HIGHER EDUCATION INSTITUTION**
EN Nell
Health Sciences Education

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SESSION 8	**KINE 1**	KR17 08h50	**ANAEMIA PREVALENCE AND DIETARY DIVERSITY AMONG WOMEN IN THE RURAL FREE STATE, SOUTH AFRICA** EM Jordaan Nutrition & Dietetics
		KR18 09h05	**DEPRESSION, ANXIETY, STRESS AND SUBSTANCE USE IN MEDICAL STUDENTS AT THE UFS** PM van Zyl Pharmacology
		KR19 09h20	**DO THE THINGS THAT MEN DO INFLUENCE SEMEN PARAMETERS?** E du Toit Nutrition & Dietetics
		KR20 09h35	**THE RELATIONSHIP BETWEEN COMPUTED TOMOGRAPHY MEASUREMENT OF THE OPTIC NERVE SHEATH DIAMETER AND ELEVATED INTRACRANIAL PRESSURE IN NON-TRAUMA PATIENTS** DF Luyt Clinical Imaging Sciences
		KR21 09h50	**BODY MASS INDEX CUT-POINTS TO IDENTIFY CARDIOMETABOLIC RISK IN BLACK SOUTH AFRICANS** CM Walsh Nutrition & Dietetics
		KR22 10h05	**ROLE OF CRANIAL COMPUTED TOMOGRAPHY IN HUMAN IMMUNODEFICIENCY VIRUS-POSITIVE PATIENTS WITH GENERALISED SEIZURES** C van Zyl Clinical Imaging Sciences
		KR23 10h20	**ASSESSMENT OF THE MICROBIOLOGICAL PROFILE OF BREAST ABSCESSES TREATED AT A TERTIARY HOSPITAL IN BLOEMFONTEIN, SOUTH AFRICA** C Wu Surgry
SESSION 8	**KINE 2**	LR17 08h50	**PREPARATION OF RECOMBINANT ANTIGEN FOR SEROLOGICAL DETECTION OF AFRICAN HANTAVIRUSES** D Damane Medical Microbiology & Virology
		LR18 09h05	**THE EFFECT OF COLLIMATOR CHOICE ON QUANTITATIVE ASSESSMENT OF IODINE-123 ON THE GROUNDS OF CONTRAST ACCURACY AND HEART-MEDIASTINUM RATIO** D Violante Medical Physics
		LR19 09h20	**COMPARISON OF THYROID IMAGE QUALITY FOR PINHOLE AND PARALLEL HOLE COLLIMATORS: A PHANTOM STUDY** D Potgieter
		LR20 09h05	**DEVELOPMENT AND VALIDATION OF A MOLECULAR ASSAY AND EVALUATION OF THE GENEXPERT MTB/RIF ASSAY FOR THE RAPID DETECTION OF GENITAL TUBERCULOSIS** CM Sokhela Medical Microbiology and Virology
		LR21 09h50	**SCREENING FOR CALRETICULIN MUTATIONS IN A FREE STATE COHORT SUSPECTED OF HAVING A MYELOPROLIFERATIVE NEOPLASM** C Booysen Haematology & Cell Biology

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SESSION 9	**KINE 1**	KR24 11h05	**STRESS ULCER PROPHYLAXIS IN THE ICU - FRIEND OR FOE?** AF Malan Surgery
		KR25 11h20	**CLINICALLY RELEVANT MRI FINDINGS IN ELITE SWIMMERS SHOULDERS** A Celliers Clinical Imaging Sciences
		KR26 11h35	**THE EFFECT OF POPLITEUS TENDON DIVISION ON TOTAL KNEE ARTHROPLASTY** JD Arndt Orthopaedic Surgery
		KR27 11h50	**COMPARATIVE EVALUATION OF IN-HOUSE PREPARED ^{99m}Tc-EC-DG AND ^{18}F-FDG IN PRIMARY BREAST CANCER: CLINICAL RELEVANCE AND PRACTICABILITY** J Horn-Lodewyk Nuclear Medicine
		KR28 12h05	**PREDICTING THE FOREST GRADE IN PEPTIC ULCER DISEASE IN PATIENTS PRESENTING WITH UPPER GASTRO-INTESTINAL HAEMORRHAGE. WHAT INFORMATION ARE WE NOT OPTIMISING** M de Kock Surgery
SESSION 9	**KINE 2**	LR22 11h05	**PRESENCE OF GLYPHOSATE IN FOOD PRODUCTS IN SOUTH AFRICA OF WHICH MAIZE OR SOYBEAN IS THE PRIMARY CONSTITUENT** BJ Koortzen Haematology and Cell Biology
		LR23 11h20	**INFLUENCE OF SMALLER MUTATIONS ON THE MULTIPLEX LIGATION DEPENDANT PROBE AMPLIFICATION TECHNIQUE (MLPA)** BK Dajee Human Genetics
		LR24 11h35	**COMPARISON OF THE DIFFERENT BLOOD PRODUCTS CURRENTLY AVAILABLE IN SA FOR THE TREATMENT OF THROMBOTIC THROMBOCYTOPENIC PURPURA** AC van Marle Haematology and Cell Biology
		LR25 11h50	**SCREENING OF INFREQUENT RIFAMPICIN MUTATIONS IN MYCOBACTERIUM TUBERCULOSIS** M Maotoana Medical Microbiology
		LR26 12h05	**TECHNETIUM-99M AND GOLD-198 ACTIVITY QUANTIFICATION USING SPECT/CT MONTE CARLO SIMULATIONS** M Morphis Medical Physics

in Deo Sapientiae Lux

INSTRUCTIONS TO PRESENTERS

1. The author whose name is underlined in the abstract delivers the presentation.

2. A paper lasts 15 minutes (including 5 minutes for questions), and a poster session lasts 4 minutes (including 2 minutes for questions). In order to give everyone a fair opportunity, we kindly request presenters to adhere strictly to the set times.

3. Facilities for electronic data projection are available. In view of time constraints, we kindly request presenters to load their presentations onto the computer network well in advance.

4. The poster exhibition is on display in the marble foyer of the F.P. Retief Building for viewing from Wednesday to Friday.

5. A friendly reminder: All winners will be announced at the last session of the Forum, Friday afternoon at 16h00.

Prof FJ Burt
Chairperson: Organising Committee

INSTRUKSIES VIR AANBIEDERS

1. Die outeur wie se naam onderstreep is in die abstrak, lewer die voordrag.

2. ‘n Referaat duur 15 minute (insluitend 5 minute vir vrae), en ‘n plakkaatvoordrag duur 4 minute (insluitend 2 minute vraetyd). Hoflik versoek ons dat aanbieders streng by die toegekende tyd hou ten einde elkeen ‘n billike kans te gee.

3. Fasiliteite vir elektroniese dataprojeksie is beskikbaar. In die lig van die beperkte tyd, versoek ons aanbieders vriendelik om hul aanbiedings betyds op die rekenaarnetwerk te laai.

4. Die plakkaatuitstalling kan besigtig word in die marmervoorportaal van die F.P. Retief-gebou vanaf Woensdag tot Vrydag.

5. ‘n Vriendelike herinnering: Die wenners word aangekondig by die laaste sessie van die Forum om 16h00.

Prof FJ Burt
Voorsitter: Reëlingskomitee

CLINICAL PAPERS / KLINIESE REFERATE

KR -1

Title: **KNOWLEDGE, ATTITUDE AND PRACTICES [KAP] OF HEALTHCARE WORKERS IN THE FREE STATE, SOUTH AFRICA REGARDING TYPE 2 DIABETES MELLITUS**

Authors: C. Hassan, M Reid, JE Raubenheimer
Departments: Social Sciences
Presenter: Charmaine Hassan

Introduction: Public sector health care workers (HCWs), consisting of nurse managers (NMs), professional nurses (PNs) and community health care workers (CHCWs) are employed at the the Primary Health Clinics (PHC) and Community Health Clinics (CHC) in South Africa (SA). The quality of care and the implementation strategies used by these health care workers (HCWs) in diabetes care is imperative. The implementation strategies used are determined by the knowledge, attitude and practice (KAP) of the HCW's which have an impact on quality of care for adult diabetes patients.

Aim: This study aims to assess diabetes related [KAP] of HCWs working with adult patients with Type 2 Diabetes Mellitus(T2DM) in the public health sector in the Free State, SA.
Method: A descriptive, cross-sectional quantitative design was used. The population consisted of HCWs providing care to T2DM patients in the 5 districts working in 10 CHC's and 42 PHC's in the Manguang district in the Free State. Convenient selection of the three categories of HCWs was performed. Two slightly different versions of a KAP questionnaire were used, one for NMs (N=6) and PNs (N=54), and the other for CHCWs (N=46).

Results: NM median for knowledge questions answered correctly was 26 and PN median 23 (from possible maximum score of 36). CHCWs median for knowledge questions answered correctly was 14 (from a possible maximum score of 22).
NM, PN and CHCWs displayed varied attitudes towards patients with T2DM.
NM median for practice questions answered correctly was 11.5 and PN median 12 (from possible maximum score of 16). CHCWs median for practice questions answered correctly was 16 (from a possible maximum score of 38).
Conclusion: Knowledge, attitude and practice of the identified HCWs towards patients diagnosed with T2DM need to be addressed. An interactive training platform has been created to address these issues

KR -2

Title: **MAXIMUM TRANSFUSION RATE OF RED CELL CONCENTRATE (RCC) IN ADULTS WITH REGARDS TO THE POTASSIUM CONTENT OF RED CELL CONCENTRATE**

Authors: WS Blaauw, N Wessels
Departments: Anesthesiology
Presenter: Willem Blaauw

*Introduction***:** Intra operative blood loss can be extremely rapid, necessitating a high rate of transfusion. A unit of RCC contain an unknown amount of potassium extra cellular and there is a wide variability between every unit of RCC. Intra venous administration of potassium ions carries a risk of interference with cardiac conduction. The risk of eliciting hyperkalemic associated dysrhythmias is directly proportionate between the concentration and rate, at which it is administered.

Measurement: The potassium concentration for each unit RCC was measured and the fraction of supernatant was calculated. From this the total potassium content in a liter of RCC could be estimated and a maximum safe rate of transfusion could be calculated.

Results: A total of 26 distinct units of RCC were analysed. RCC potassium concentration was measured and ranged between 7.6 and 40.8 mmol/L (median, 19.55mmol/L). Supernatant Fraction was calculated for each of the 26 units RCCs and ranged between 0.31 and 0.61(median, 0.42). The Potassium content was estimated from the supernatant fraction and it ranged between 3,2 and 17.2 mmol (median, 8.5mmol). From this we calculated the maximum safe transfusion rate and it ranged from 324 to 1720 mL/min (median, 656 mL/min)

*Discussion***:** Although the potassium concentration in the RCC supernatant is extremely high in relation to normal plasma concentrations that range between 3.4 to 5.1 mmol/L, due to the relatively high hematocrit, the supernatant fraction remains low. Thus the potassium content also remains relatively low.

Conclusion: Despite extremely high concentrations of potassium in the supernatant of RCC, it does not pose any risk of eliciting hyperkalemic associated dysrhythmias. It would be safe to conclude that from this study transfusion rate should not be restricted

KR -3

Title: **DOSIMETRIC DATA FOR DIAGNOSTIC DIGITAL MAMMOGRAPHY EMPLOYING FULLY AUTOMATED SELF ADJUSTING TILT COMPRESSION**

Authors: WPE Boonzaier, SN Acho
Departments: Medical Physics
Presenter: Willie Boonzaier

Introduction and aim: Digital mammography aims to clinically detect breast pathology or cancer. This is important as breast cancer has one of the highest incident and mortality rates worldwide for women. The aim of this study was to evaluate several imaging and demographic parameters of the 2D imaging done at Universitas Academic Hospital and to compare the mean glandular dose (MGD) values obtained to recent studies published from other institutions worldwide.

Methodology: Data were collected for 200 patients who underwent mammographic imaging at Universitas Academic Hospital. The data were analysed for the patient age, MGD, mAs, kV, target filter combination, compression force and compressed thickness from the Digital Imaging and Communications in Medicine file.

Results: Imaging parameter results showed that the average MGD was 1.52±0.71 mGy, the average compression force, 69 N, the average kV, 30, the average mAs, 138 and the average compressed thickness, 58 mm. The mean patient age was recorded as 55years.

Conclusion: The MGD from Universitas Academic Hospital compared well with the average screening MGD values of other institutions worldwide (average 1.72±0.36 mGy). Higher MGD values were expected for Universitas Academic Hopsital as diagnostic mammography and not screening mammography is practiced at this institution. The mean compression force is considered low if compared to the recommendations from the European guidelines of a minimum of 110 N compression force. The performance of the Fully Automated Self adjusting Tilt compression mode could explain lower registered compression values found in this study.

KR -4

Title: **THE TRANSVERSE ACETABULAR LIGAMENT AS AN INTRA-OPERATIVE GUIDE TO CUP ABDUCTION**

Authors: WB Hiddema, JF Van Der Merwe, W Van Der Merwe
Departments: Orthopaedic surgery
Presenter: Willem Hiddema

Introduction and aim: The success of a total hip arthroplasty relies on optimal acetabular cup placement to ensure mating of the femoral head and acetabular cup throughout all positions of the hip joint. Poor cup placement is associated with dislocation, impingement, microseparation, component loosening, and accelerated wear due to rim loading. This study examined a novel method of using the transverse acetabular ligament (TAL) to guide cup inclination during primary total hip arthroplasty.

Methods: A descriptive study using 16 hips from 9 cadavers. A computer navigation system measured inclination and version of the acetabular component in 3 positions with the lower edge of cup: (1) flush with, (2) 5 mm proximal to, and (3) 5 mm distal to free border of the TAL.

Results: The median inclination angles were 44degrees in position (1), 30degrees in position (2), and 64degrees in position (3). The median anteversion angle for all positions was 19degrees.

Conclusion: Cup inclination was acceptable when the lower edge of the cup was flush or within 5 mm proximal to the TAL.

KR -5

Title: **TYPE 2 DIABETES OUT-PATIENT CARE IN MASERU: A REVOLVING DOOR?**

Authors: VL van den Berg, M Mokhele, J Raubenheimer
Departments: Nutrition and Dietetics; Biostatistics
Presenter: Louise van den Berg

Introduction and aim: Diabetes is the fourth leading cause of mortality, with 80% of these deaths occurring in low-and-middle income countries. This study evaluated lifestyle, medical history, glycemic control, and barriers to treatment compliance among Basotho out-patients in Lesotho.

Methodology: In an observational study, a convenience sample of 124 patients (30 to 69 years) with type 2 diabetes who attended government-funded clinics in Maseru (10/2012 to 03/2013), completed questionnaires assessing diet, lifestyle habits and factors related to treatment compliance, during structured interviews. Medical and biochemical information was obtained from the patient files and anthropometry and HbA1c were measured by the researcher.

Results: Most participants (53.9 years ± 9.4 years; 79.8% females; 53.2 diagnosed =5 years) were married (72.6%), had secondary school (49.2%) education, and were employed (69.3%), although 52.4% earned =M1500/month. Whilst almost all were knowledgeable about basic lifestyle recommendations and were moderately active (98%), most did not meet recommended intakes of dairy (92.7%), vegetables (78.2%) and fruit (65.3%); 89.2% were overweight/obese, 91% had waist circumferences above cut-off values indicating substantial risk for metabolic complications, 10% used tobacco, and 52% of men drank excessively. None performed self-monitoring of blood glucose and 90.3% had no idea what normal blood glucose levels should be. HbA1c was elevated in 36.3%. At the three-monthly clinic visit, 94.4% had uncontrolled hypertension, despite being on anti-hypertensive medication. Evidenced by the patient files and their personal rendition, participants were not screened for long-term glycemic control or comorbidities at the clinics, nor referred to a dietician. Yet, 98.4% were satisfied with the services, although 75.8% felt that it takes too long.

Conclusion: These Basotho outpatients were not meeting treatment goals for type 2 diabetes, were not being screened for comorbidities, and were not referred, rendering their three-monthly clinic visits a mere revolving door and putting them at risk of costly diabetes-related complications.

KR -6

Title: **HYDRATION PRACTICES OF LONG DISTANCE RUNNERS IN THE SOUTH AFRICAN NATIONAL DEFENCE FORCE**

Authors: R Lategan-Potgieter, L Benade, JE Raubenheimer
Departments: Nutrition and Dietetics; Biostatistics
Presenter: Ronette Lategan-Potgieter

Introduction and aim: Endurance sports are challenging in terms of maintaining optimal hydration, especially in extreme environmental conditions and appropriate fluid replacement to maintain optimal hydration is fundamental for an athlete's physical performance. This study aimed to determined hydration practices of long distance runners from the South African National Defence Force.

Methodology: A descriptive, observational study was conducted amongst athletes, 18 years and older who participated in a half (21.1 km) or full (42.2 km) marathon. A structured, self-administered questionnaire was used to collect data on hydration practices. Weight and height were measured, using standard techniques to calculate body mass index (BMI).

Results: 144 participants were included, with ages ranging between 19 and 60 years. More than a third (37.2%) were classified as overweight/ obese and fifty five (42%) lost 2% or more of body weight during the race. Nine participants (6.3%) did not consume any extra fluids before, during or after the race. Mean fluid intake during the half marathon was 176 ml/hour, significantly more (p=0.0001) than the mean fluid intake of 125 ml/hour for the full marathon. Participants mostly preferred energy drinks (32.6%) before a race and water during (28.5%) and after (21.5%) a race. Most participants (78.5%) relied solely on fluids provided by the organisers during the race and few (13.2%) carried fluids with them. Most participants (61.8%) reported to drink according to thirst rather than to maintain weight or according to schedule.

Conclusion: A large number of athletes lost more than 2% of body weight during the race, which may influence performance and increase risk for heat-related illness. Participants mostly preferred water as rehydration fluid during and after the race, which is not considered ideal to replace electrolytes and replenish carbohydrates. Athletes should be trained to monitor hydration status and develop an appropriate individualized rehydration strategy to ensure optimal performance.

KR -7

Title: **ANATOMICAL VARIATIONS IN CELIAC TRUNK BRANCHING PATTERNS**

Authors: R Ebersohn, A Vorster
Department: Basic Medical Sciences
Presenter: Reinette Ebersohn

Introduction: The normal trifurcation of the celiac trunk involves the left gastric, common hepatic and splenic arteries. However, many variations have been noted. Knowledge of these different branching patterns may play a significant role in the clinical approach, planning and execution of procedures involving structures of the foregut.

Objective: The objective of this study was to investigate the variations in celiac trunk branching patterns in order to improve the efficiency of related clinical procedures.

Methodology: The celiac trunk and its branches were dissected in 46 cadavers. Observations were recorded according to a tabular classification of the various branching patterns of the celiac trunk.

Results: The normal trifurcation of the celiac trunk was observed in 91.3% of cases. They were classified as either true (61.9%) or false (38.1%) tripods. A number of other variations for example a common celiacomesenteric trunk (4.3%) and several additional branches (69.6%) were observed including the dorsal pancreatic artery in 43.8% of cases and the inferior phrenic arteries in 75.0% of the cases of additional celiac trunk branches. Results were supported by previous literature and studies done in this field.

Conclusion: A better knowledge and understanding of these celiac trunk branching variations can significantly improve the efficiency and outcome of associated clinical procedures.

KR-8

Title: **MINIMAL EXTRACORPOREAL CIRCULATION: A CLINICAL APPRAISAL**

Authors: MJ Swart, G Joubert
Departments: Health Science Education, Mediclinic & Biostatistics
Presenter: Marius Swart

Introduction: The systemic inflammatory response associated with cardio-pulmonary bypass (CPB) is detrimental to organ function in varying degrees. Minimal extracorporeal circulation (MECC) assumes an attenuation of these deleterious effects. The aim of this study was to assess the clinical effect of MECC in a population of patients who had their CABG done in a private practice.

Methods: In a historical cohort analytical study all patients who had isolated CABG done by one surgeon in Mediclinic Bloemfontein were divided into two groups. Patients who had their CABG done using MECC (mCABG n=367) were compared statistically using logistic regression as well as by using a propensity score to those who had their CABG done with conventional CPB (cCABG n=1572). A qualitative assessment of the technique by the various role players in theatre was added to the study.

Results: Parsonette score and renal dysfunction were amongst other factors a risk for negative outcome. The two groups differed in terms of age, the prevalence of diabetes mellitus, hypertension, usage of an intra-aortic balloon pump and the Parsonette risk score for operative mortality. Hence the application of a propensity score~~s~~ analysis to match the two groups. No statistically significant outcome difference was found in terms of mortality, major morbidity, post operative blood loss or usage of homologous blood. MECC had some renal protection and the rise in serum creatinine was less with MECC. However it did not prevent dialysis. In general the anaesthetists and perfusionists were less enthusiastic about MECC.

Conclusions: MECC did not live up to its reputation of being clinically more beneficial. MECC is technically more demanding. To continue with MECC in this practice has no obvious advantage to conventional CPB .

KR-9

Title: **THE ROLE OF POST MORTEM COMPUTED TOMOGRAPHY IN ASSAULT VICTIMS WITH HEAD TRAUMA IN SOUTH AFRICA**

Authors: N Combrinck, S Jansen van Vuuren
Departments: Clinical Imaging Sciences; Forensic Pathology
Presenter: Nantes Combrinck

Background: The role of post-mortem computerised tomography (PMCT) has been studied extensively, though not in South Africa. In many countries it has become an important adjunct to the routine forensic examination.

Objectives: The study compared the findings of PMCT and conventional autopsy in victims of assault who presented with head injuries. Outcomes were compared to similar studies published internationally.

Method: Non-randomised prospective analytical study. Victims of assault who presented with head injuries underwent PMCT, followed by a conventional autopsy. Findings were compared.

Results: PMCT proved superior for detecting bony injuries. Autopsy was more effective in detecting subdural haemorrhages. No major statistical difference was found in detecting intra-axial injuries. More injuries were detected in total by combining the findings of PMCT and autopsy. Several ethical and logistical problems were identified, mainly resulting from the CT scanner not being in the same facility as the forensic laboratory. Our findings were similar to those of other published studies.

Conclusion: PMCT is an important augmentation to conventional autopsy of trauma victims and could add valuable diagnostic information to the forensic examination. A CT scanner on site would eliminate the logistical and ethical problems identified during the study.

KR-10

Title: **CT STROKE FINDINGS AND POPULATION DEMOGRAPHICS AT PELONOMI HOSPITAL, BLOEMFONTEIN**

Authors: K Daffue, G Joubert, SF Otto
Department: Clinical Imaging Sciences
Presenter: Kevin Daffue

Background: Stroke remains the number one cause of death in patients older than 50 years of age in South Africa and the number four cause of death overall. Information regarding this disease is lacking for the Free State.

Objectives: To assess the stroke profile of patients referred for computed tomography (CT) imaging to our institution along with evaluating factors that could improve stroke management.
Method: The demographic information, stroke risk factors, stroke types and time to imaging were evaluated for all patients presented for CT stroke imaging from July 2014 until July 2015. Information was gathered prospectively from the Hospital and Radiology Information Systems.

Results: 174 patients (53.5% female, 46.5% male) were included in the study of which 86.2% were Black patients (n = 150). The mean age waspp 59 years (SD 14.6). The most prevalent risk factors were hypertension (83.7%), smoking (20.5%) and diabetes (15.0%). The population group consisted of 67.8% ischaemic- (n = 118) and 32.2% (n = 56) haemorrhagic strokes. The majority of patients with a known time of symptom onset (n = 102) presented after 8 hours (82.4%). The median order to report time (ORT) was 61 minutes (range: 18 minutes to 22 hours and 41 minutes). The median arrival to report time (ART) was 32 minutes (range: 4 minutes to 14 hours 53) minutes.

Conclusion: Our stroke population did not differ significantly from others in South Africa and Africa as a whole. Pre- and in-hospital delays significantly influenced patient numbers qualifying for thrombolysis.

KR-11

Title: **INVESTIGATION OF THE GROWTH PATTERNS OF NON-FUNCTIONING PITUITARY MACROADENOMAS USING VOLUMETRIC ASSESSMENTS ON SERIAL MRI INVESTIGATIONS**

Authors: J Pieterse, CS de Vries, SF Otto
Department: Clinical Imaging Sciences
Presenter: Jaco Pieterse

Introduction: Benign non-functioning pituitary macroadenomas (NFMA) often cause mass effect on the optic chiasm necessitating transsphenoidal surgery to prevent blindness. Surgery is however complicated, and there is a high tumour recurrence rate. Currently, very little is known about the natural (and residual post-surgical) growth patterns of these NFMA. Conflicting data describe decreased growth to exponential growth over various time periods. Due to lack of information on growth dynamics of these NFMA, suitable follow-up imaging protocols have not been described to date.

Aim: To determine if NFMA grow or stay quiescent over a time period using serial MRI investigations and a stereological method to determine tumour volume. In addition, to evaluate if NFMA adhere to a certain growth pattern or grow at random.

Methodology: Thirteen patients with NFMA had serial MRI investigations over a 73-month period at Universitas Academic Hospital. Six of the selected patients had undergone previous surgery, while seven patients had received no medical or surgical intervention. By using a stereological method, tumour volumes were calculated and plotted over time to demonstrate growth curves. The data were then fitted to tumour growth models already described in literature in order to obtain the best fit calculating the r2 value.

Results: Positive tumour growth was demonstrated in all cases. Tumour growth patterns of nine patients best fitted the exponential growth curve while the growth patterns of three patients best fitted the logistic growth curve. The remaining patient demonstrated a linear growth pattern.

Conclusion: A specific growth model best described tumour growth observed in non-surgical and surgical cases. If follow-up imaging confirms positive growth, future growth can be predicted by extrapolation. This information can then be used to determine the relevant follow-up-imaging interval in each individual patient.

KR -12

Title: **THE YIELD OF PATHOLOGICAL FINDINGS FROM ROUTINE SCREENING CHEST X-RAYS IN A MILITARY POPULATION**

Authors: G van der Westhuizen, M Naude
Department: Deparment of Clinical Imaging Sciences
Presenter: Gerhard van der Westhuizen

Background: The South African Military Health Services (SAMHS) includes a screening chest x-ray (s-CXR) as part of a yearly medical examination for all members over the age of 40. The aim is early detection of significant pathology, including pulmonary tuberculosis (PTB), lung carcinoma and other radiographically identifiable pathology. The efficacy of lung cancer screening programmes using either s-CXRs or low-dose chest CT, has been extensively researched in first-world countries, but limited data is available on PTB s-CXR programmes in high-incidence countries. This data is relevant in resource-limited countries, like South Africa, where a high burden of HIV and tuberculosis (TB) leads to significant morbidity and mortality.

Objectives: To evaluate the efficacy of a s-CXR programme for the detection of PTB and other significant pathology in asymptomatic, military patients.

Method: This retrospective descriptive study analysed s-CXR reports of patients over the age of 40, done between May 2011 and October 2015 at 3 Military Hospital, Bloemfontein, South Africa. Findings were categorised as either significant findings that changed patient management, or insignificant findings that identified previous or possible underlying pathology.

Results: 4 137 s-CXR reports done on 2 371 patients were included. Of these, 3 696 (89.3%) were male and 441 (10.7%) female, and the sample had a median age of 44.7 years. In total 304 (7.4%) s-CXRs had significant findings (95% CI 6.6%–8.2%), 464 (11.2%) had insignificant findings and 76 (1.8%) had both. Furthermore, 38 s-CXRs (0.92%) showed active PTB, 75 (1.8%) showed possible PTB and 241 (5.8%) showed previous PTB. Additional significant findings included solitary pulmonary nodules, pleural effusions, lymphadenopathy, pneumonia, interstitial lung disease, bronchiectasis, chronic obstructive pulmonary disease, pulmonary hypertension and cardiac pathology.

Conclusion: A s-CXR programme is a feasible method of screening asymptomatic patients for PTB and other significant pathology in resource-limited environments with a high burden of disease.

KR -13

Title: **PREVALENCE OF RISK FACTORS AND HUMAN IMMUNO DEFICIENCY VIRUS AMONG THE PATIENTS WITH DOPPLER PROVEN DEEP VEIN THROMBOSIS IN KIMBERLEY HOSPITAL**

Authors: FK Mampuya, WJ Steinberg, J Raubenheimer
Departments: Family Medicine, Biostatistics, Family Medicine
Presenter: Ferdinand Mampuya

Introduction: Kimberley Hospital is a 694-bed regional/tertiary hospital in Northern Cape Province that serves a population of about one million people. Deep Vein Thrombosis (DVT) is a common condition at Kimberley Hospital. There has not been a study previously that quantified the different Risk factors in patients with DVT managed at Kimberley Hospital.

Aim: To determine the prevalence of HIV in Doppler proven DVT patients at Kimberley Hospital and the prevalence of Well's score criteria/ risk factors associated with DVT.

Method: It is a retrospective descriptive study. All the adult patients with Doppler proven DVT during the 5-year period (Jan 2010-Dec 2014) were included in the study. These patients were identified from the ultrasound register of the patients from Radiology Department. The data were extracted from the ultrasound register and clinical files of the selected patients, on a specially designed data collection sheet. The statistical analysis was done by the biostatistician from the University of the Free State.

Results: 852 patients were included in the study. The majority of the patients were female 536 (62.9%) while 316 (37.1%) were male. The median age of the patients was 45 years. The HIV prevalence among these patients was 52%. The most common risk factors in the study population were TB (12%), cancer (11%) and Smoking (9%). The least common risk factors were long distance travel (0.4%) and Thrombophilia (0.4%). The left popliteal vein was the most frequently affected site (15.3%) followed by left superficial femoral vein (14.5%) and left common femoral vein (12.6%). The location of the DVT was not associated with the HIV status of the patients.

Conclusion: At Kimberley Hospital, the commonest risk factor in patients presenting with DVT was found to be HIV with half of the patients infected, followed by Tuberculosis, Cancer, and Smoking.

KR -14

Title: **NATIVE TISSUE PELVIC FLOOR RECONSTRUCTIVE SURGERY IN THE HIV-POSITIVE WOMAN: RESULTS FROM A PROSPECTIVE COHORT**

Author: EW Henn
Department: Obstetrics & Gynaecolgy
Presenter: Etienne Henn

Introduction and aim: There is no published evidence on the outcomes of pelvic floor reconstructive surgery in HIV positive women. The aim of this prospective observational case-cohort study was to evaluate the surgical outcomes for native tissue repairs in a cohort of HIV positive (HIVp) women matched in procedure to a cohort of HIV negative (HIVn) women.

Methodology: Women undergoing pelvic floor reconstruction in an Urogynaecology unit from June 2010 until December 2014 were included. Matching was done based on surgical procedure in a ratio of 1:2 (HIVp:HIVn). Exclusion criteria were synthetic mesh augmented procedures or mid-urethral slings and a follow-up period of <12 months.Categorical data were evaluated with the Fisher's exact and Chi-square tests. Continuous pre- and post-operative data were summarised and compared by means of the t-test.

Results: 41 HIVp women could be analysed. The median follow-up period was 18 months (12;64) for HIVp and 20 months (12;60) for HIVn women. The median CD-4 count was 380 (164;1200) and 87.8% (n=36) of the women were using ARV treatment. Post-operative POP-Q and QOL scores were similarly improved. Surgical time (p 0.03) and hospital stay (p 0.01) were significantly longer in the HIVp women, but there was no significant difference in operative complications. Surgical success was achieved in 78% (n=32) of HIVp and 89% (n=66) of HIVn women (p=0.16) with 17% (n=7) of HIVp and 5% (n=4) of HIVn women requiring repeat surgery (p 0.05)

Conclusion: HIVp women do not have significantly inferior surgical outcomes for pelvic floor surgery. HIV positive women should therefore not be discriminated against in regards to surgical treatment based on their status alone.

KR -15

Title: **CAN WE SAFELY USE MESH FOR PELVIC FLOOR RECONSTRUCTIVE SURGERY IN HIV POSITIVE WOMEN? AN AFRICAN PERSPECTIVE**

Author: EW Henn
Department: Obstetrics & Gynaecology
Presenter: Etienne Henn

Introduction and aim: Synthetic mesh is generally avoided in the immunocompromised patient due to the fear of complications. There is no evidence on the use and outcome of mesh for pelvic floor reconstructive procedures in HIV positive(HIVp) women. The aim of this prospective observational case-cohort study was to assess the outcomes for synthetic mesh augmented procedures in a cohort of HIVp women matched in procedure to a cohort of HIV negative (HIVn) women.

Methodology: Women who underwent pelvic floor reconstruction with the use of synthetic mesh from June 2010 until December 2014 were included. Matching was done based on surgical procedure in a ratio of 1:2 (HIVp: HIVn). Cases with a follow up period of <12 months were excluded. Categorical data were evaluated with the Fisher's exact and Chi-square tests. Continuous pre- and post-operative data were summarised and compared by means of the t-test.

Results: 23 HIVp women could be evaluated. The median follow-up period was 17 months (12;60)for HIVp and 16 months (12;57) for HIVn women. The median CD-4 count was 375.5 (175;1171) and 87.5% (n=21) of thpe women were using antiretroviral treatment. Operative blood loss and post-operative antibiotic use was non-significantly higher in the HIVp group (p =0.05). There were no significant differences in the complications between the 2 groups. Surgical success was noted in 95.8% (n=23) HIVp and 91.7% (n=44) HIVn women (p=0.6) with 1 woman in each group requiring a repeat procedure and 1 woman in each group requiring a procedure for complications.

Conclusion: This is the first report on a cohort of HIVp women having had pelvic floor reconstructive surgery with mesh. It shows that mesh augmented pelvic floor reconstructive procedures can be used safely in HIV positive women where the clinical indications warrant the use of these products.

KR -16

Title: **WOMEN SCHEDULED FOR PELVIC FLOOR RECONSTRUCTIVE SURGERY: A NEURO-MUSCULOSKELETAL PERSPECTIVE**

Authors: C Brandt, HS Cronje, EC Janse van Vuuren, R Nel
Departments: Physiotherapy, Obstetrics and Gynecology, Economic and Business Science, Biostatistics
Presenter: Corlia Brandt

Introduction: The pelvic floor muscles (PFM) are important in the prevention and treatment of pelvic floor dysfunction. A more integrated definition of PFM function is necessary, based on more recent bio-psychosocial and motor control models. Controversy and a lack of research exist regarding the interaction between the PFM and abdominal muscles (motor control), and pelvic organ prolapse (POP).

Aim: To determine quality of life (QOL), PFM and abdominal muscle function in women scheduled for pelvic floor reconstructive surgery.

Method: One hundred women scheduled for pelvic floor reconstructive surgery were non-randomly sampled for ultrasonography, electromyography (EMG), strength (PERFECT scale) and endurance measurement of the PFM. The abdominal muscles were assessed by the Sahrmann scale, Pressure Biofeedback Unit and EMG. QOL was assessed by means of the standardised prolapse-specific QOL questionnaire (the P-QOL). Demographic data and medical history was recorded on a self-compiled questionnaire. Descriptive statistics and Spearman/Pearson correlation coefficients were used to describe data.

Results: The participants (average 59 years) were mostly unemployed (80%) and physically inactive (85%). Approximately 47% were treated for heart/vascular disease, 18% for hypo-thyroidism and 12% for depression. The median scores of the prolapse impact, social, emotional, sleep/energy and severity domains of the P-QOL also indicated impairment. The levator hiatus at rest, thickness, amount of movement, strength and endurance of the PFM showed abnormal values. Median values of zero were found for the Sahrmann scale and PBU, and 10.95µV for the abdominal EMG. Significant correlations were found between PFM strength, endurance, movement and EMG activity ($r>0.4$, $p<0.001$), as well as between PFM strength, endurance and abdominal muscle function ($r>0.4$, $p<0.05$).

Conclusion: It seems as if social/emotional aspects, co-morbidities, PFM and abdominal muscle function may affect the neuro-musculoskeletal interaction necessary for pelvic organ support. These aspects were further investigated by a randomised controlled trial.

KR -17

Title: **ANAEMIA PREVALENCE AND DIETARY DIVERSITY AMONG WOMEN IN THE RURAL FREE STATE, SOUTH AFRICA**

Authors: EM Jordaan, CM Walsh, VL van den Berg, FC van Rooyen
Departments: Nutrition and Dietetics, Biostatistics
Presenter: Marizeth Jordaan

Introduction and aim: Anaemia is a global public health problem, particularly among women. Optimal nutrition is important to prevent anaemia and to ensure optimal health of women, especially women of childbearing age. This study aimed to determine dietary diversity, prevalence of anaemia and contraception use in rural women between 25–49 years in the Free State province, South Africa.

Methodology: A cross-sectional descriptive study design was applied in a sample of 134 women. A 24-hour recall was completed in a structured interview to determine dietary diversity, which was categorised as low, medium and high. Blood samples were collected and analysed according to standard techniques. Full blood counts, transferrin saturation, ferritin, homocysteine and red cell folate levels were determined. Data on contraceptive use were obtained with a structured questionnaire.

Results: Median age of the women was 41 years. Half (51.5%) of the women had medium dietary diversity and 44.7% had low dietary diversity. Overall, 76.9% consumed flesh meats and fish with only a quarter (25.4%) consuming dark green leafy vegetables. All the women consumed starchy foods, some of which are sources of folate and iron due to mandatory fortification. Only 4.6% suffered from anaemia, 1.5% from iron deficiency and 0.7% from iron deficiency anaemia. Overall, 7.5% presented with elevated homocysteine levels, however, only 3.8% presented with low red cell folate levels. Only 54.1% reported to menstruate regularly and 71.6% currently used, or had previously used, injectable contraceptives. Significant associations between median MCV and MCH levels and dietary diversity score possibly indicates that the mandatory food fortification programme has a positive impact on the nutritional status of these women.

Conclusion: A diet with moderate variety was consumed. Although the prevalence of anaemia was low, attention should still be given to the women's diets, as foods rich in haemopoietic nutrients were not consumed by all.

KR -18

Title: **DEPRESSION, ANXIETY, STRESS AND SUBSTANCE USE IN MEDICAL STUDENTS AT THE UFS**

Authors: PM van Zyl, E Bowen, F du Plooy, C Francis, F Fredericks, L Metz, S Jadhunandan, G Joubert
Department: Pharmacology
Presenter: Paulina van Zyl

Introduction and aim: The mental health of medical students is a global concern, and medical training has been described by some as being detrimental to the health of medical students; affecting both their student experience and professional life. At the same time, substance abuse among students in general is also a concern.
The study aimed to determine the prevalence of depression, anxiety and stress, and substance use among pre-clinical students in a 5-year outcomes based medical curriculum. The study also investigated the association of selected demographic factors with these outcomes.

Methodology: All University of the Free State medical students in Semesters 3 (n=164) and 5 (n=131) during 2015 were included in this cross-sectional study. Depression, anxiety and stress levels were measured by means of the Depression Anxiety Stress Scales (DASS-21). Demographic questions were included in an anonymous self-administered questionnaire. Lifetime and past month substance use were determined.

Results: A prevalence of 26.5% for moderate to extremely severe depression, 26.5% for moderate to extremely severe anxiety and 29.5% for moderate to extremely severe stress was recorded. Female students had significantly higher stress levels, but not increased anxiety. Relationship status and accommodation were not associated with these outcomes. Lifetime use of methylphenidate, lifetime use of alcohol and past month use of alcohol were associated with increased depression.

Conclusion: The study reveals high levels of depression, anxiety and stress in second- and third-year medical students compared to the general population, but comparable to medical students elsewhere in the world. Past month substance use of alcohol and cannabis are lower than in international studies, but nicotine use is higher.

KR -19

Title: **DO THE THINGS THAT MEN DO INFLUENCE SEMEN PARAMETERS?**

Authors: E du Toit, R Lategan-Potgieter, J Raubenheimer
Departments: Nutrition and Dietetics, Biostatistics
Presenter: Elmine du Toit

Introduction and aim: Various factors have been described to influence general health and semen parameters of males. This study describes the effect of anthropometric-, dietary-, environmental- and lifestyle factors on semen parameters of apparently healthy males.

Methodology: Fifty males between the ages of 18 and 45 years volunteered to participate. Anthropometric-, dietary-, environmental- and lifestyle data were collected by means of a structured questionnaire; and anthropometric measures and semen parameters measured using standard techniques. Anthropometric measures included weight and height, neck-, waist- and hip circumference. Weight and height were used to calculate Body Mass Index (BMI). Body Adiposity Index (BAI) was calculated, using hip circumference and height.

Results: In this young sample (median age 24 years), 60% were classified as overweight/obese according to BMI and 22% according to BAI. Eighteen percent did not meet the lower reference limit for sperm concentration, 8% for sperm motility, 2% for normal morphology and 14% for semen volume. Only 40% consumed vegetables and 20% consumed fruit daily. No associations were found between sperm parameters and anthropometric indices, position where cellular phones are carried, the use of hot baths or tight underwear, stress, smoking, recreational drug use or activity level. Mean alcohol intake was 10.1 units/week and an intake of =5 units/week was associated with lower sperm concentration (p=0.03). The use of electronic devices connected to Wi-Fi for =4 hours/day was associated with lower sperm motility (p=0.05) and a negative correlation with sperm morphology was observed in participants spending =8 hours/day sitting.

Conclusion: The high percentage of overweight/obesity and low intake of vegetables and fruit in this young sample, although not associated with sperm parameters, are areas of concern. The effect of alcohol intake, number of hours spent sitting/day and use of electronic devices connected to Wi-Fi on sperm parameters should be taken in to account when addressing male fertility.

KR -20

Title: **THE RELATIONSHIP BETWEEN COMPUTED TOMOGRAPHY MEASUREMENT OF THE OPTIC NERVE SHEATH DIAMETER AND ELEVATED INTRACRANIAL PRESSURE IN NON-TRAUMA PATIENTS**

Authors: DF Luyt, D Hurter, G Joubert
Departments: Clinical Imaging Sciences, Biostatistics
Presenter: Danie Luyt

Introduction and aim: While invasive intracranial pressure (ICP) monitoring remains the gold standard for diagnosing elevated ICP, non-invasive measurement of the optic nerve sheath diameter (ONSD) with ultrasound and magnetic resonance imaging has shown promising results as a screening test to predict elevated ICP. We investigated the relationship between the ONSD measured on CT images with opening pressure manometry during lumbar puncture (LP).
The purpose of this study was to provide the observer with a non-invasive objective measurement to predict elevated ICP where routine CT investigations of the brain are indicated and invasive intracranial pressure monitoring is not available, or a LP is contraindicated.

Method: We conducted a cross sectional retrospective analysis of anonymised patient data comparing the ONSD with opening pressure manometry during LP on patients who presented with a Glascow coma scale score of less than 15 or focal neurology, who received CT of the brain to assess for the safety of a LP prior to the procedure.

Results: ONSD measurement of ≥ 4.8 mm identified patients with elevated ICP with a sensitivity of 92.9% (95% confidence interval 68.5%-98.7%) and specificity of 97.6% (95% confidence interval 87.7%-99.6%). Raising the ONSD cut-off value to ≥ 5.0 mm decreased the sensitivity to 85.7% but increased the specificity to 100%.

Conclusion: The ONSD cut-off with the highest combined sensitivity and specificity for elevated ICP measured ≥ 4.8 mm. Raising the ONSD cut-off to ≥ 5.0 mm decreased sensitivity, but excluded all patients with normal ICP in our study population.
The ONSD can be measured on digital images obtained by routine CT investigations of the brain to predict elevated ICP in non-trauma patients ≥ 18 years of age with acceptable sensitivity and specificity. This method provides the observer with a non-invasive objective measurement to predict elevated ICP.

KR -21

Title: **BODY MASS INDEX CUT-POINTS TO IDENTIFY CARDIOMETABOLIC RISK IN BLACK SOUTH AFRICANS**

Authors: C Walsh, HS Kruger, AE Schutte, A Kruger, KL Rennie
Departments: Nutrition and Dietetics, UFS, North West University
Presenter: Corinna Walsh

Introduction and aim: Body mass index (BMI) is the most widely used and accepted index for classifying overweight and obesity among adults. The aim of this study was to determine optimal body mass index (BMI) cut-points for the identification of cardiometabolic risk in black South African adults.

Methods: We performed a cross-sectional study of a weighted sample of healthy black South Africans aged 25–65 years (721 men, 1386 women) from the North West and Free State Provinces. Demographic, lifestyle and anthropometric measures were taken, and blood pressure, fasting serum triglycerides, high-density lipoprotein (HDL) cholesterol and blood glucose were measured. We defined elevated cardiometabolic risk as having three or more risk factors according to international metabolic syndrome criteria. Receiver operating characteristic curves were applied to identify an optimal BMI cut-point for men and women.

Results: BMI had good diagnostic performance to identify clustering of three or more risk factors, as well as individual risk factors: low HDL-cholesterol, elevated fasting glucose and triglycerides, with areas under the curve >.6, but not for high blood pressure. Optimal BMI cut-points averaged 22 kg/m2 for men and 28 kg/m2 for women, respectively, with better sensitivity in men (44.0–71.9 %), and in women (60.6–69.8 %), compared to a BMI of 30 kg/m2 (17–19.1, 53–61.4 %, respectively). Men and women with a BMI >22 and >28 kg/m2, respectively, had significantly increased probability of elevated cardiometabolic risk after adjustment for age, alcohol use and smoking.

Conclusion: In black South African men, a BMI cutpoint of 22 kg/m2 identifies those at cardiometabolic risk, whereas a BMI of 30 kg/m2 underestimates risk. In women, a cut-point of 28 kg/m2, approaching the WHO obesity cutpoint, identifies those at risk.

KR -22

Title: **ROLE OF CRANIAL COMPUTED TOMOGRAPHY IN HUMAN IMMUNODEFICIENCY VIRUS-POSITIVE PATIENTS WITH GENERALISED SEIZURES**

Authors: C van Zyl, D Hurter, V Sood, L Koning
Department: Clinical Imaging Sciences, Radiology Kimberley Hospital, Emergency Centre, Kimberley Hospital
Presenter: Chris van Zyl

Introduction: Emergency neuroimaging of human immunodeficiency virus (HIV)-positive patients with generalised new onset seizures (NOS) and a normal post-ictal neurological examination remains controversial, with the general impression being that emergency imaging is necessary because immunosuppression may blur clinical indicators of acute intracranial pathology.

Aim: The objectives of our study were to establish whether cranial computed tomography (CT) affects the emergency management of HIV-positive patients with generalised NOS and a normal post-ictal neurological examination.

Methodology: We conducted a prospective descriptive observational study. Consecutive HIVpositive patients of 18 years and older, who presented to the Kimberley Hospital Complex's Emergency Department within 24 hours of their first generalised seizures and who had undergone normal post-ictal neurological examinations, were included. Emergency CT results as well as CD4-count levels were evaluated.

Results: A total of 25 HIV-positive patients were included in the study. The results of cranial CT brought about a change in emergency care management in 12% of patients, all of them with CD4 counts below 200 cells/mm3 .

Conclusion: We suggest that emergency cranial CT be performed on all HIV-positive patients presenting with generalised NOS and a normal post-ictal neurological examination, particularly if the CD4 count is below 200 cells/mm3.

KR -23

Title: **ASSESSMENT OF THE MICROBIOLOGICAL PROFILE OF BREAST ABSCESSES TREATED AT A TERTIARY HOSPITAL IN BLOEMFONTEIN, SOUTH AFRICA**

Authors: C Wu, O Buchel, D Menge
Department: Surgery
Presenter: Chun-yen Wu

Introduction: The predominant bacterial isolate in patients with breast abscess is Staphylococcus aureus. Recent data show that a proportion of Staphylococcus aureus isolates are methicillin resistant, having implications for empiric antibiotic therapy. There are no recent data on the microbiological profile of breast abscesses in South Africa.

Aims: To determine the microbiological profile of breast abscesses referred to our department and the differences in the microbiological profile between lactational and non-lactational breast abscesses.
Methods:

- Study design: Retrospective analytic cohort study.
- Setting and sampling: Stratified random sampling.
- Inclusion and exclusion criteria: Women treated for breast abscess at Surgery clinic in 2014 and had a pus sample sent for culture were included. Those without pus samples or presented before and after 2014 were excluded.
- Data collected: Dependant variables were age, bacterial isolates, lactational status and findings of additional pathology after initial management.
- Data analysis and statistical analysis used: Continuous variables were compared using the Mann-Whitney U test. Categorical variables were compared using Fisher's exact test. A p value of <0.05 is considered statistically significant.
- Ethical considerations: Ethical approval was obtained from the Ethics Committee and Free State Department of Health (ECUFS 63/2015).

Results: 38 women met inclusion criteria; 17 lactational and 21 non-lactational. 63 % had a positive culture: 38% Staphylococcus aureus, 13% Staphylococcus epidermidis, 13% anaerobes, 13% Mycobacterium tuberculosis, 13% Candida albicans, 8% α haemolytic streptococci and 4% Enterobacter cloacae. Staphylococcus aureus, was the most common isolate, predominated in lactating women (70% vs. 14%; p=0.03). S. aureus isolates were methicillin sensitive (MSSA). Five additional cases of tuberculosis and one carcinoma, were found on histology in the non-lactational group. No lactating patient had either tuberculosis or carcinoma of the breast (p=0.005).

Conclusion: Drainage and antibiotic cover will suffice for the majority of lactational breast abscesses. Non-lactational breast abscesses require follow up until abscess resolution or definitive microbiological or histological diagnosis.

KR -24

Title: **STRESS ULCER PROPHYLAXIS IN THE ICU - FRIEND OR FOE?**

Authors: AF Malan, G Joubert
Departments: General Surgery, Critical Care
Presenter: Asha Malan

Introduction: The association between severe physiologic stress and gastrointestinal (GI) ulceration is well established with 75-100% of critically ill patients developing stress-related mucosal disease (SRMD) within 24 hours of admission to the intensive care unit (ICU). Stress ulcer prophylaxis is, therefore, recommended in a subset of high-risk critically ill patients. It has, however, been implicated in the development of nosocomial infections, specifically pneumonia and Clostridium difficile infection (CDI), but data in the ICU setting are limited.

Methodology: This single-center, prospective, randomised controlled, pilot trial was conducted in the multidisciplinary ICUs of Universitas and Pelonomi Hospitals in Bloemfontein, South Africa. Patients admitted from 1 July 2014 until 30 June 2015 who were mechanically ventilated for longer than 48 hours were included. The participants were randomised to receive either daily intravenous pantoprazole (40mg) as stress ulcer prophylaxis or no pharmacologic prophylaxis. The primary end-point of the study was the development of ventilator-associated pneumonia (VAP) and Clostridium difficile-associated disease (CDAD). Secondary end-points were clinically important gastrointestinal (GI) bleeding, length of ICU stay and death.

Results: 29 patients were randomised: 14 in the PPI prophylaxis group and 15 in the no prophylaxis group. There was a slightly higher incidence of VAP in patients randomised to the PPI prophylaxis group, but this difference was not statistically significant. There were no statistically significant differences in the incidence of either CDAD or GI bleeding.

Conclusions: Although no statistically significant differences were observed between the two study groups, the results of this pilot trial could suggest a potential trend towards an increased risk of VAP in critically ill patients receiving PPIs for stress ulcer prophylaxis. As the evidence for routine stress ulcer prophylaxis in the ICU setting is controversial, further adequately powered, randomised placebo-controlled trials are required to evaluate the efficacy and risks of PPIs for this intervention.

KR -25

Title: **CLINICALLY RELEVANT MRI FINDINGS IN ELITE SWIMMERS SHOULDERS**

Authors: A Celliers, F Gebremariam, L Holtzhausen
Department: Clinical Imaging Sciences
Presenter: Arno Celliers

Aim: To assess clinically relevant MRI findings in the shoulders of symptomatic and asymptomatic elite swimmers.

Methodology: 20 young (16-23 years) elite swimmers completed questionnaires on their swimming training, pain and shoulder function. MRI of both shoulders (n= 40) were performed. 15 swimmers were given a standardised clinical shoulder examination.

Results: Eleven male and 9 female elite swimmers (40 shoulders) with a mean age of 18.9 years were examined. Eleven of the 40 shoulders were clinically symptomatic and 29 were asymptomatic. The most common clinical finding in both the symptomatic (57.1%) and asymptomatic shoulders (30.4%) was impingement during internal rotation. The most common MRI findings in the symptomatic and asymptomatic shoulders were supraspinatus tendinosis (45.5% vs 20.7%), sub acromial subdeltoid fluid (45.5% vs 34.5%), increased signal in the AC Joint (45.5% vs 37.9%) and AC joint arthrosis (36.4% vs 34.5%). 97.5 % (39/40) of the shoulders showed abnormal MRI features.

Conclusion: The MRI findings in the symptomatic and asymptomatic shoulders of young elite swimmers are similar and care should be taken when reporting shoulder MRI's in these young athletes.

KR -26

Title: **THE EFFECT OF POPLITEUS TENDON DIVISION ON TOTAL KNEE ARTHROPLASTY**

Authors: JD Arndt, JF van der Merwe, W van der Merwe
Department: Orthopaedic Surgery
Presenter: Jan Arndt

Introduction/Aim: The popliteus tendon may be divided during total knee arthroplasty of the varus knee in one of two scenarios: as treatment for the tendon snapping over the prosthesis or inadvertently.
Only a few in vivo studies have been done on the effect of its division. None of these used an accurate measuring tool to determine the resultant instability.
We wanted to use computer assisted surgery (CAS) to determine the amount of instability caused by dividing the popliteus tendon during normal arthroplasty surgery.

Methods: Fourteen successive patients with osteoarthritic varus knees were operated on doing fifteen total knee arthroplasties using CAS.
The gap balancing technique was used. The gap information was recorded in millimeters at 0°, 30°, 45°, 60° and 90° of flexion with varus and then valgus stress.
The popliteus tendon was then divided and the same gap information was recorded and compared with the previous values.

Results: For the different tests of flexion, the mean increase in gap size varied from 0mm to 0,967mm.
The biggest difference in gap size was noted at 90°flexion.
The standard deviation of differences ranged from 0,327 to 1,172.

Conclusion: Dividing the popliteus tendon intra operatively in varus osteoarthritic knees during total knee arthroplasty does not lead to significant immediate instability.

KR -27

Title: **COMPARATIVE EVALUATION OF IN-HOUSE PREPARED ^{99m}Tc-EC-DG AND ^{18}F-FDG IN PRIMARY BREAST CANCER: CLINICAL RELEVANCE AND PRACTICABILITY**

Authors: J Horn-Lodewyk, JM Wagener, JR Zeevaart, GHJ Engelbrecht, MG Nel, J van Staden, AC Otto
Departments: Nuclear Medicine, The South African Nuclear Energy Corporation, NWU Preclinical Drug Development Platform, Medical Physics
Presenter: Je'nine Horn-Lodewyk

Introduction and aim: Nuclear medicine techniques play an increasing role in the early diagnosis of breast cancer that is important for efficient patient management. Promising pre-clinical findings with in-house prepared (IHP) technetium-ethylenedicysteine-deoxyglucose (^{99m}Tc-EC-DG), as a glucose metabolism imaging agent in tumors, resulted in ethical approvals for a pilot study in breast cancer patients. The aim of the study was to compare the uptake pattern of IHP ^{99m}Tc-EC-DG single photon computed tomography (SPECT/CT) with ^{18}F-FDG positron emission tomography-computed tomography (PET/CT) in histological proven breast carcinoma patients.

Methodology: Serial whole-body scans were acquired at different time intervals in five breast cancer patients (Stage II-IV). SPECT/CT was performed at 2 hours post ^{99m}Tc-EC-DG administration. An average blood time–activity curve was calculated from the pooled blood sample data of five patients at 0-, 1-, 2- and 4 h after ^{99m}Tc-EC-DG injection. One hours post administration ^{18}F-FDG-PET scans were also acquired. All the scans were qualitatively evaluated by one board-certified nuclear medicine physician.

Results: The primary breast tumor uptake was visualized with ^{99m}Tc-EC-DG and ^{18}F-FDG in five patients. ^{99m}Tc-EC-DG tumor uptake in *n*=3 patients were similar to the ^{18}F-FDG uptake. Lower ^{99m}Tc-EC-DG was found in *n*=2 compared to ^{18}F-FDG. The blood time-activity curve indicated rapid ^{99m}Tc-EC-DG clearance.

Conclusion: The primary breast lesion in the five patients could be visualized with ^{99m}Tc-EC-DG. The diagnostic accuracy of the ^{99m}Tc-EC-DG scan for the primary breast tumor was the same as that of the ^{18}F-FDG PETCT scan. Yet, advantages of ^{99m}Tc-EC-DG would be lower cost (no special equipment) as well as lower radiation dose patient and staff. IHP ^{99m}Tc-EC-DG has promising uptake properties as a diagnostic breast tumor-imaging agent and can play a future role in the diagnostic workup of these patients.

KR -28

Title: **PREDICTING THE FOREST GRADE IN PEPTIC ULCER DISEASE IN PATIENTS PRESENTING WITH UPPER GASTRO-INTESTINAL HAEMORRHAGE. WHAT INFORMATION ARE WE NOT OPTIMISING**

Authors: M de Kock, NE Pearce
Department: General Surgery
Presenter: Marcel de Kock

Introduction: We hypothesized that patients presenting with upper Gastrointestinal (GIT) bleeding can be triaged for emergency scope based on routine investigations i.e. blood tests.

Aim and Objectives: Our aim was to establish if we can use baseline blood investigations to predict if the patient has got a significant risk of rebleeding (defined as a Forrest 1-2b).

Methodology: We designed a retrospective cross sectional study. 200 adult patients, seen at Universitas Hospital Referrals with a primary diagnosis of upper GIT bleeding, with complete data were included. Results: The mean patient age was 55.6 years. Out of the 200 patients 88 patients had ulcers. (n=88/200 46%) The ulcer group had a mean Haemoglobin of 7.9 g/dL, the non-ulcer group had a mean of 10,2 g/dL ($p<0.0001$). We found a haemoglobin value of <10.0 g/dL gave us a sensitivity of 75.0% and a specificity of 49.6% in its ability to determine whether a significant risk of rebleeding was present. The Urea values in the ulcer group had a mean value of 9.0 mmol/L and the non-ulcer group had a mean value of 6.0 mmol/L ($p=0.03662$). We found a urea value of > 8.0 mmol/L gave us a sensitivity of 58.3% and a specificity of 65.6% in its ability to determine whether a significant risk of rebleeding was present. A low haemoglobin and high urea was compared to a high Rockall score (>3) and a clinical significance was found ($p=0.00096$ and $p=0.0198$ respectively).

Conclusion: After statistical analysis we found that by adding certain blood tests to patient workup we can improve our accuracy in predicting the patient's Forrest classification. We would like to prospectively validate our results in a follow up study.

CLINICAL POSTERS / KLINIESE PLAKKATE

KPV-1

Title: **BREAKFAST EATING HABITS AND ANTHROPOMETRICAL MEASUREMENTS OF GRADE 8 AND 9 LEARNERS IN BLOEMFONTEIN, SOUTH AFRICA**

Authors: NML Meko, E du Toit, C van Rooyen
Department: Nutrition and Dietetics
Presenter: Lucia Meko

Introduction: Although breakfast is seen as the most important meal of the day, adolescents often skip this meal.

Aim: The aim of this study was to determine the breakfast habits and anthropometric status of high school learners.

Methods: Breakfast habits of 115 learners from Quintile 5 schools, were assessed by a self-administered questionnaire, and anthropometrical indices including weight, height, Waist Circumference (WC) and Neck Circumference (NC) were measured.

Results: Eighty six % of the learners consumed breakfast 4-5 days of the week. Breakfast was mostly eaten at home before school. Refined cereals and white bread were preferred over fibre-rich and whole grain cereals, and fruit-juice over fresh fruit. Ninety two % of the learners reported that they consumed milk for breakfast. An encouraging 95% considered breakfast as important for their well-being. WC measurements showed that 14.3% were at risk for non-communicable diseases. A strong positive correlation (r=0.74) was found between WC and NC as well as between NC and Body Mass Index (BMI) (r=0.65) for both genders. The median BMI for both boys (20.8kg/m2) and girls (21.8kg/m2) were classified as healthy. The results did not show any statistically significant association between breakfast eaters and skippers: NC (p=0.6294), height (p=0.9161), weight (p=0.9162), and WC (p=0.7322).

Conclusions: Even though the majority of learners did consume breakfast regularly, the ideal would be to consume breakfast daily.

KPV-2

Title: **THE USE OF ULTRASONOGRAPHIC LUNG SLIDING SIGN IN CONFIRMING CORRECT PLACEMENT OF DOUBLE-LUMEN TUBE INTUBATION**

Authors: NJ Bernard, EW Turton
Department: Anaesthesiology
Presenter: Nico Bernard

Study objective: To assess the accuracy of the ultrasonographic lung sliding sign in detecting correct positioning of the endotracheal double-lumen tube after intubation, compared to flexible bronchoscopy, in adult patients who present for thoracic surgery requiring one lung ventilation.

Design: Prospective clinical study

Setting: Cardiothoracic theatre, Universitas Hospital, Bloemfontein

Patients: 30 adult patients, 18 years of age or older, who present for elective thoracic surgery, and require endotracheal double-lumen tube intubation after induction of anaesthesia for lung isolation.

Intervention and measurement: The presence of the lung sliding sign was determined with an ultrasound in all 30 patients before induction of anaesthesia and after intubation, as well as post lung isolation. All patients were intubated with a left sided double-lumen tube. The anaesthesiologist then performed a flexible bronchoscopy on all patients to verify the position of the double-lumen tube.

Results: A total of 17 patients were enrolled in the study. 1 Patient was excluded who did not meet inclusion criteria. In 1 case no bronchoscope was available to confirm correct position of the double-lumen tube. In 11 cases the presence of the lung sliding sign pre-intubation on the affected side was absent, and thus could not be used in comparing ultrasound findings with bronchoscopy. The overall sensitivity of the ultrasonographic lung-sliding to confirm correct placement was 94.11%.

Conclusion: Our study suggests that the ultrasonographic lung-sliding sign can accurately detect correct positioning of the double-lumen tube as compared to the gold standard – a flexible bronchoscope.

KPV3

Title: **ALCOHOL AND SUBSTANCE USE AMONG NURSING STUDENTS AT THE UNIVERSITY OF THE FREE STATE**

Authors: A Vorster, AM Gerber, L van der Merwe, S van Zyl
Departments: Basic Medical Sciences; Director, Undergraduate Program Management
Presenter: Annelize Vorster

Introduction and aim: Alcohol and substance use among university students is of global concern. Nursing students are no exception and may in particular be vulnerable, as they face stressful situations as students and developing professionals. The physical and emotional stress of dealing with patients and exhaustion due to academic activities, could contribute to excessive drinking and substance use.

The aim of this study was to determine the self-reported use of alcohol, cigarettes and other substances among nursing students at the Faculty of Health Sciences, University of the Free State.

Methodology: In this observational, descriptive, cross-sectional study, an anonymous questionnaire, developed from internationally validated questionnaires, obtained voluntary self-reported information regarding alcohol, cigarette and substance use among undergraduate nursing students, as well as academic performance. Data were analysed using descriptive statistics.

Results: The response rate for completion of the questionnaire was 92.0% (n = 69). Most (81.2%) of the participants reported consuming alcohol in the past year and 20.3% reported alcohol use at more than 40 occasions. More than half (52.2%) combined alcohol with energy drinks. Participants smoked cigarettes (40.6%), waterpipes (40.6%) and cannabis (21.7%). ADHD medication, sedatives and tranquilliser use, without prescription, were reported by 13.1%. Seventy one percent used cough and cold medicines, 5.8% glue/other solvents and 2.9% 'spice' respectively.

Conclusion: Research has found that students who participate in excessive drinking and substance use have decreased academic success, because of lapses in concentration and recollection, spending less time studying and skipping more classes resulting in a poor throughput and a greater risk for discontinued enrolment.

Substance abuse places students at risk for unprofessional behaviour. There is a need for intervention programs that decrease academic stress, teach effective time management skills and educate students on the consequences of substance use.

KPV-4

Title: **THE DEVELOPMENT OF A PHYSIOTHERAPY INTERVENTION PROGRAM FOR MANDIBULAR CONDYLE FRACTURE PATIENTS**

Authors: A van der Merwe, RY Barnes
Department: Physiotherapy
Presenter: Anke van der Merwe

Introduction and aim: The need for physiotherapy intervention in the treatment of mandibular condyle fractures has been highlighted. No unifying criteria are currently available regarding a post-surgical functional exercise program for patients who sustained mandibular condyle fractures. The study aimed to develop a proposed post-operative functional exercise program for patients who sustained mandibular condyle fractures.

Methodology: A quantitative, non-experimental study, by means of a Delphi questionnaire was done. Data obtained from literature and a previously conducted needs analysis was used to compile the Delphi questionnaire with statements regarding the type and dosage of a suitable physiotherapeutic treatment protocol. The questionnaire was distributed amongst 20 experts (national and international) in the fields of physiotherapy, maxillo-facial surgery and dental surgery. A convenience sampling method was used to select appropriately trained participants for the Delphi review panel.

Results: By utilising the Delphi technique, a suitable physiotherapy intervention program for mandibular condyle fracture patients was developed. Inter-reviewer consensus was reached regarding what each exercise entails, as well as what in-hospital physiotherapy visits should be comprised of. Stability was reached regarding the commencement and dosage of the various jaw exercises.

Conclusions: Experts in the field proposed that physiotherapists should provide post-operative rehabilitative therapy for mandibular condyle fracture patients. The proposed post-surgical intervention program provided in this study can serve as a baseline for implementation in further research studies. The advantages of referring mandibular condyle fracture patients to physiotherapy were also presented.

KPV-5

Title: **COMMUNICATION STRATEGIES TO ACCOMPLISH EFFECTIVE HEALTH DIALOGUE IN ADULTS WITH CHRONIC DISEASES IN LOW AND MIDDLE INCOME COUNTRIES: A SYSTEMATIC REVIEW**

Authors: MA Pienaar, M Reid, C Van der Walt
Department: Nursing
Presenter: Melanie Pienaar

Introduction: Communication strategies are used to inform, influence and motivate individuals and communities about health (USA Government Office of Disease Prevention and Health Promotion, 2004: s.p. on-line). Chronic diseases such as diabetes mellitus, cardiovascular diseases, cancers and respiratory diseases are nevertheless reaching endemic proportions in low and middle income countries (LMICs) (World Health Organisation, 2011:1). Since lives can be saved and quality of life improved, establishing which communication strategies will accomplish effective health dialogue in patients with chronic diseases in LMICs is therefore of utmost importance.

Aim: To provide a critical review and synthesis of the best available evidence of communication strategies used by healthcare providers to accomplish effective health dialogue in adults with chronic diseases in LMICs.

Methods: Multiple sources of data included electronic platforms and databases, reference list checking and contact with authors of studies, from 2000 to 2014.

Results: The search yielded 3464 studies and after a rigorous filtering process, 7 studies were included in the review. The studies constituted a heterogenous sample of five randomised control trials, one case-study and one qualitative study.

Conclusions: There are different ways to deliver health dialogue in LMICs such as face-to-face, mobile cellular, computer communication and others depending on the context. A multi-strategy approach consisting of frequent communication sessions provided by healthcare providers, trained healthcare promoters or automated computer systems may be more effective. Information that is tailored and specific to the needs of the patient, provided in a private and/or a setting where internet is accessible, may be more effective.

Recommendations: A greater sensitivity needs to be created towards the benefits of tailoring health communication and skills training of healthcare providers in tailored communication. The development and strengthening of the necessary infrastructure for computed and mobile cellular communication is essential in LMICs.

LABORATORY PAPERS / LABORATORIUM REFERATE

LR-1

Title: **CHARACTERISATION OF HPV31 COMPLETE GENOME ASSOCIATED WITH HEAD AND NECK CANCER**

Authors: Y Munsamy, R Seedat, P Bester, F Burt
Departments: Medical Microbiology and Virology, Otorhinolaryngology, NHLS
Presenter: Yuri Munsamy

Introduction and aim: Approximately 25% of all oropharyngeal cancers are linked to human papillomavirus (HPV) infection. Genomic characterisation of HPV, especially for high-risk types other than HPV16 and 18, has not been described in South Africa. The aim of the study was to characterise the complete genome of an HPV31 isolate from a laryngeal cancer patient treated at Universitas Academic Hospital in the Free State, and to subsequently identify mutations that may influence expression of viral oncogenes.

Methodology: The ~8kb HPV31 genome was amplified in two overlapping fragments by PCR before utilising the Illumina next-generation sequencing platform to obtain the complete sequence. The resulting sequence map was annotated with the following features: HPV31 gene/ region, amino acid changes and transcription factor binding site changes. The sequence was aligned with sequence data retrieved from GenBank to identify novel mutations. Phylogenetic relationships were inferred using a neighbour-joining tree.

Results: The isolate clustered with HPV31 lineage B, and was genetically similar to an isolate from Thailand. The mean nucleotide sequence difference between the isolate and lineage A and C was 0.86% and 1.15%, respectively. The E5 gene, which may augment viral oncogene action, showed a 15bp deletion that was not observed in other HPV31 sequences. The Yin Yang 1 (YY1) protein is a transcription factor involved in regulation of cell growth, development, and differentiation and regulates the viral oncogenes. A nonsynonymous mutation in one of eight YY1 binding sites of the noncoding region was identified.

Conclusion: The genomic polymorphism of high-risk HPV for types other than HPV16 and HPV18 has not been extensively described. It is crucial to characterise other high-risk HPV types to fully understand the molecular epidemiology of infection. Identified mutations warrant further analysis by functional reporter gene assays, to assess influence on oncogene expression.

LR-2

Title: **CAN DRINKING ROOIBOS TEA PREVENT STROKE?**

Authors: WJ Janse van Rensburg, J de la Rey, M Cawood
Departments: Haematology and Cell Biology, Plant Sciences
Presenter: Walter Janse van Rensburg

Introduction and aim: Ischaemic stroke occurs when the blood supply to the brain is obstructed by a blood clot, resulting in brain cell death. Established anticoagulant drugs may be used for stroke prevention, but have numerous adverse effects. Therefore, the search for novel agents with fewer side-effects is ongoing. Rooibos tea (Aspalathus linearis) has been found to prolong the clotting times of bovine blood, and to decrease factor VIII plasma levels. Our aim was to determine which particular rooibos tea extract caused the decrease in FVIII, and whether this inhibition was sufficient to prevent clot formation in patients with an increased stroke risk.

Methodology: Five extracts were made from fermented and green rooibos tea, each. We mixed the extracts with citrated plasma from 10 healthy volunteers. Additionally, we mixed saline with each sample as control. The prothrombin time, activated partial thromboplastin time and FVIII levels were determined. The Mann-Whitney U-test was used to establish significance.

Results: The only noteworthy finding was a significant decrease in active FVIII of 21.22%, when mixed with crude green rooibos tea extract. No single rooibos tea component was able to significantly decrease active FVIII levels.

Conclusion: We hypothesise that two or more components of green rooibos tea synergistically influence FVIII, although the observed decrease is not substantial enough to inhibit clot formation. Therefore, we conclude that Rooibos tea consumption is unlikely to prevent ischaemic stroke.

LR-3

Title: **PREPARATION OF TRANSCRIBED RNA FOR USE AS A POSITIVE CONTROL FOR DETECTION OF TRANSCRIPTIONALLY ACTIVE HUMAN PAPILLOMAVIRUSES**

Authors: TR Sekee, D Goedhals, RY Seedat, FJ Burt
Departments: Medical Microbiology and Virology, NHLS, Otorhinolaryngology
Presenter: Tumelo Sekee

Introduction and aim: Reverse transcriptase polymerase chain reaction (RT-PCR) is regarded as the gold standard for detection of transcriptionally active human papilloma virus (HPV) in a tissue biopsy. HPV and positive controls are required for the optimization of the assay. An RT-PCR assay for detection of transcriptionally active HPV was developed in-house. Positive controls were not available; hence the aim of this study was to transcribe RNA for use as positive controls and optimization of RT-PCR assay for detection of transcriptionally active HPV.

Methodology: HPV type specific primers were designed that target a region of the E6 gene. HPV types -16, -18, -31 and -45 were amplified from HPV DNA available from a related study. Partial E6 genes were ligated into cloning vector with an SP6 promoter site downstream from the inserted gene. The region which included the SP6 promoter site was amplified and used as template for transcription of RNA. Transcribed RNA was characterised and used to optimise the RT-PCR. RT-PCR was used to test four clinical samples that were HPV DNA positive.

Results: RNA was transcribed from DNA template for HPV types -16, -18, -31 and -45. PCR performed on purified RNA was negative confirming that HPV DNA was not present in the controls. RNA was used to confirm reaction and cycling conditions for RT-PCR prior to testing clinical samples. Four samples that previously tested positive for high risk types -16, -18, -31 and -45 were tested for HPV E6 mRNA using the RT-PCR. Samples that were screened for HPV E6 mRNA tested negative for transcriptionally active HPV.

Conclusion: Detection of transcriptionally active HPV is more suggestive that the virus is associated with tumorigenesis than detection of HPV DNA. Hence an RT-PCR that can detect HPV RNA was developed and will be used for future investigations.

LR-4

Title: **INTERACTIVE BREAST MASS SEGMENTATION USING CONVEX ACTIVE CONTOUR MODEL WITH OPTIMAL THRESHOLD VALUES**

Authors: SN Acho, WID Rae
Department: Medical Physics
Presenter: Sussan Acho

Introduction: A convex active contour model requires a predefined threshold value to determine the global solution for the best contour to use when performing mass segmentation. Fixed thresholds or manual tuning of threshold values for optimum mass boundary delineation are impracticable.
A proposed method is presented to determine an optimised mass-specific threshold value for the convex active contour derived from the probability matrix of the mass with the particle swarm optimization method. We compared our results with the Chan-Vese segmentation, an experienced expert and a published global segmentation model on masses detected on direct digital mammograms.

Methods and materials: The regional term of the convex active contour model maximizes the posterior partitioning probability for binary segmentation. Suppose the probability matrix is binary thresholded using the particle swarm optimization to obtain a value 〖T〗_1, we define the optimal threshold value for the global minimizer of the convex active contour as the mean intensity of all pixels whose probabilities are greater thanT_1.

Results: The mean Jaccard similarity indices were 0.89 ± 0.07 for the proposed/Chan-Vese method and 0.88 ± 0.06 for the proposed/published segmentation model. The mean Euclidean distance between Fourier descriptors of the segmented areas was 0.05 ± 0.03 for the proposed/Chan-Vese method and 0.06 ± 0.04 for the proposed/published segmentation model.

Conclusions: This efficient method avoids problems of initial level set contour placement and contour re-initialization. Moreover, optimum segmentation results are realized for all masses improving on the fixed threshold value of 0.5 proposed elsewhere.

LR-5

Title: **PERFORMANCE OF A COST-EFFECTIVE ADAMTS13 ANTIGEN ASSAY**

Authors: S Myeni, M Meiring
Department: Haematology and Cell Biology
Presenter: Sne Myeni

Introduction and Aim: Thrombotic thrombocytopenic purpura (TTP) is a life-threatening disease characterised by microvascular platelet deposition and thrombus formation in selected organs, resulting in microangiopathic haemolytic aneamia, thrombocytopenia, neurological symptoms and renal failure. Typically a very rare disorder, TTP is being seen with increased frequency in patients infected with the human immunodeficiency virus (HIV). Deficiency of the von Willevrand factor cleavage protease, ADAMTS13 (a disintegrin and metalloprotease with thrombospondin type motifs, member 13) has been implicated as the cause of TTP. The measurement of the ADAMTS13 levels in plasma is vital in the diagnosis of TTP and also to distinguish it from other thrombotic microangiopathies (TMA's). Commercial ADAMTS13 antigen assays are expensive for healthcare service providers in developing countries. However, several antibodies and antibody pairs have been produced against ADAMTS13 and are commercially available.

Methodology: In this study we evaluated an in-house ADAMTS13 antigen assay using two different commercial antibodies to ADAMTS13 and we compared it to a commercial ADAMTS13 antigen kit by using plasma of 40 patients with possible HIV-associated TTP and 40 normal subjects.

Results: The cost of our ADAMTS13 antigen assay is 10 times lower than that of a commercial ADAMTS13 antigen assay. The intra- and inter-assay coefficients of variation were 8% and 7% respectively. The assay was found linear between the range of 0.78 to 12.5% ADAMTS13. Limit of detection was 0.2% and limit of quantification was 0.8%. Our assay correlates to the commercail assay with R-square of 0.9.

Conclusion: Our cost-effective in-house ADAMTS13 antigen assay produced reliable results. We recommend the use of this test in the diagnostic work-up of HIV-associated TTP.

LR-6

Title: **VALIDATION OF AND SCREENING OF SOUTH AFRICAN FAMILIAL BREAST CANCER PATIENTS FOR LARGE GENOMIC REARRANGEMENTS USING MULTIPLEX LIGATION DEPENDANT PROBE AMPLIFICATION (MLPA)**

Authors: PJ Moeti, BK Dajee, M Theron, J Oosthuizen, WD Foulkes, G Chong, NC van der Merwe
Departments: Human Genetics, NHLS, Oncology and Human Genetics, McGill University, Montreal, Canada
Presenter: Pakiso Moeti

Introduction and aim: Diagnostic screening for mutations within *BRCA1* and *BRCA2* is a well-established part of the clinical assessment of familial breast cancer (BC) risk. The genomic regions of both genes contain very high densities of *Alu* sequences that have the potential to contribute to genomic instability. For this reason, the laboratory aimed to optimize and validate the use of the MLPA technique to detect these larger genomic rearrangements (LGR). Once validated, MLPA was used to screen the South African familial BC patients for LGRs.

Methodology: The use of five SALSA probe mixes were optimized within the SA laboratory in order for it to be validated. Twelve SA BC patients, together with two Canadian positive controls were used. The validation was performed by both the Canadian and SA laboratories in Canada for both *BRCA1* and *BRCA2* and once optimized, by the SA laboratory in Bloemfontein. Archived DNA samples were prepared and hybridized to the various probe mixes during an incubation period of 16 hours. Once hybridized, the bound probes were ligated, conventionally amplified and separated using capillary electrophoresis. Fragment analysis was performed and the data analyzed using GeneMarker software v 2.6.4 (SoftGenetics).

Results: The validation of the 12 SA MLPA negative patients and two Canadian positive controls proved to be successful with no discrepancies in the data sets. Once validated, a total of 129 BC patients that tested negative for the presence of smaller disease-causing mutations within the *BRCA* genes, was screened. No LGRs were detected.

Conclusion: This study resulted in the validation of MLPA as mutation screening technique. Although no patients were identified that carried LGRs, valuable data was generated for the SA population. It seems as if LGRs do not contribute significantly to the familial BC risk within SA.

LR-7

Title: **MONTE CARLO SIMULATION BENCHMARKED AGAINST MEASUREMENT FOR AN ELEKTA SYNERGY LINAC EQUIPPED WITH AN AGILITY 160-LEAF MLC**

Authors: OM Oderinde, FCP du Plessis
Departments: Medical Physics, University of the Free State
Presenter: Oluwaseyi Oderinde

Introduction and aim: The Agility^{TM} multileaf collimator (Elekta AB, Stockholm, Sweden) is designed to meet present day demand for fast, accurate, and efficient radiation treatment. Agility's leaf speeds are twice as fast as previous MLCs produced. Specifically, Agility is utilized for advanced radiotherapy such as VMAT. The aim of this study was to characterize photon beams using a detailed linac model in BEAMnrc of the Linac equipped with an Agility MLC and to validate the beam data with measurement.

Methodology: The head of the Linac was simulated for 1 x 1 up to 30 x 30 cm^2 square field sizes for 10 MV photon beams using the BEAMnrc MC Code. Photon beam data were calculated in a homogenous water phantom using the DOSXYZnrc MC Code. The MC calculations were validated by water bath measurements that included beam profiles, depth dose and relative output factors.

Results: For the square field sizes considered, the MC calculations and physical measurements agreed to within 2.1% for percentage depth doses (PDDs), lateral dose profiles and output factors.

Conclusion: BEAMnrc input linac model is highly accurate up to 2%/2 mm. It has the potential to be used for dose calculation in advanced radiotherapy treatment planning.

LR-8

Title: **SEQUENCING THE TARGET (ATPE) OF BEDAQUILINE IN MYCOBACTERIUM TUBERCULOSIS ISOLATES**

Authors: A van der Spoel van Dijk, T Arendse, K Baba, A Hoosen
Department: Medical Microbiology
Presenter: Anneke van der Spoel van Dijk

Introduction and aim: Bedaquiline (BDQ) is a new drug active against replicating and dormant tuberculosis (TB) bacilli as alternative for the treatment of multi-drug resistant (MDR) TB. Introduction of BDQ treatment is planned in the Free State Province (FS) for late 2016. Resistance to BDQ occurs due to mutations in the atpE gene coding for ATPase synthase. To our knowledge, no analysis for natural mutations in clinical strains have been done before in the FS. The aim of this study was to analyze the sequences of the atpE gene in isolates from MDR- and XDR-TB patient's.

Methodology: Forty one MDR- and extensively DR (XDR) TB isolates were retrieved from stored samples of the academic TB Laboratory, National Health Laboratory Service, Universitas, Bloemfontein. Of the isolates, 21 were XDR, 17 MDR and three were mono-resistant to isoniazid with additional resistance to ofloxacin or an aminoglycoside. DNA was extracted from these isolates followed by amplification (in-house PCR) and Sanger sequencing of the atpE gene. Sequence data was analyzed with ChromasPro 1.7.7 software and compared to the reference strain (ATCC 27294).

Results: Thirty three (81%) of the isolates had no mutations in the atpE gene, while 8 (19%) had a substitution in codon 69 resulting in an amino acid change from alanine to glutamic acid. Previously described mutations for BDQ in codons 28, 59, 61, 63 and 66 were not found. Furthermore, the mutation in codon 69 has to be confirmed and the significance of this mutation is not known.

Conclusion: This study provides an important sequence baseline for the monitoring of resistance in isolates of TB patients on BDQ for the future.

LR-9

Title: ***PALB2* MUTATIONS IN *BRCA* NEGATIVE SA WOMEN WITH A POSITIVE FAMILY HISTORY**

Authors: MF Makhetha, BK Dajee, NC van der Merwe
Department: Human Genetics
Presenter: MF Makhetha

Introduction and aim: PALB2 is the third most important breast cancer (BC) gene after *BRCA1* and *BRCA2.* In some countries, *PALB2* mutations are found to predispose to BC with the risk similar to that of *BRCA* genes whereas in other populations such as the Icelandic, *PALB2* mutations are not considered important. Studies showed that *PALB2* mutation carriers who have a positive family history are at a higher risk of developing BC compared to those with no history. Pre-symptomatic testing for deleterious mutations in *PALB2* will therefore assist individuals to make more informed decisions regarding their family planning and lifestyle as well as assist in the management of the associated disease.

Methodology: Archived DNA samples of 33 *BRCA* negative BC patients were retrospectively selected for analysis using High Resolution Melting Analysis. These patients all had a positive family history of BC (>3 affecteds per family). Thirty primer pairs that span across the entire gene were optimized for the detection of deviations in the various amplicons using melting profiles. Samples that deviated from the baseline, were sequenced using Sanger sequencing. The electropherograms were analysed by visual inspection using sequence analysis software. The sequences were aligned to the reference sequence for *PALB2* (NG_007406.1) using LAlign and translation was executed using Expasy translation tool. The designation and influence of the variants were investigated using Mutation taster.

Results: Various mutations representing benign polymorphisms to pathogenic changes were detected within the 13 exons. These mutations were situated throughout the coding region of the gene and were not localized within hotspots such as exon 4. Both previously detected and novel changes were identified.

Conclusion: Only two studies have been done in SA and have not uncovered much, thus more research still needs to be done. This study is therefore the first to investigate the presence of such mutations in specifically high risk *BRCA* negative BC patients who have a positive family history.

LR-10

Title: **HIV-ASSOCIATED TTP – WHAT WE KNOW SO FAR**

Author: M Meiring
Department: Haematology and Cell Biology
Presenter: Muriel Meiring

Introduction and Aim: Thrombotic Thrombocytopaenic Purpura (TTP) is a life-threatening disease characterised by microvascular platelet deposition and thrombus formation in selected organs resulting in microangiopathic haemolytic anaemia, thrombocytopaenia, neurological symptoms, and renal failure. Typically a very rare disorder, TTP is being seen with increased frequency in patients infected with the human immunodeficiency virus (HIV). Deficiency of the von Willebrand factor cleavage protease, ADAMTS13, has been implicated as the cause of TTP. However, the patho-physiology of HIV-associated TTP and the thrombotic potential in these patients is not known. This presentation provides not only an overview of the literature regarding HIV-associated TTP, but also presents new data on this disease. We propose a mechanism for the initial onset of HIV-associated TTP that includes the release of extreme amounts of von Willebrand factor and the down-regulation of ADAMTS13 and/or the production of auto-antibodies to ADAMTS13.

Methodology: The following tests were done on plasma samples from 40 patients with HIV-associated TTP, 40 HIV-positive patients on ARV treatment, 40 HIV-positive patients not on ARV treatment and 40 healthy individuals: ADAMTS13 levels, ADAMTS13 activities, ADAMTS13 auto-antibodies, VWF levels, Tissue Factor levels, Thrombin generation tests and Interleukin-6 and tumour necrosis factor levels.

Results: Only TTP patients had low ADAMTS13 levels and 50% of patients with HIV and HIV associated TTP had auto-antibodies to ADAMTS13. VWF and tissue factor levels are increased in HIV and HIV associated TTP. Thrombin generation assays shows the effect of microparticles on thrombin generation.

Conclusion: HIV infection is a precipitating factor for the onset of TTP. It causes increased cytyokine release, and increased VWF synthesis. It further caused decreased ADAMTS13 release and it is also responsible for the production of auto-antibodies to ADAMTS13.

LR-11

Title: **LARGE CONTRIBUTION OF ANCESTRAL FOUNDER MUTATIONS TOWARDS FAMILIAL BREAST CANCER RISK IN THE COLOURED POPULATION FROM THE WESTERN CAPE**

Authors: J Oosthuizen, J van der Merwe, HMVE Combrink, PJ Moeti, M Urban, WD Foulkes
Departments: Human Genetics, NHLS, Molecular Biology and Human Genetics, US & Tygerberg Hospital, SA; Oncology and Human Genetics, McGill University, Montreal, Canada
Presenter: Jaco Oosthuizen

Introduction and aim: Breast cancer (BC) research in South Africa (SA) has been challenging due to its rainbow diversity of ethnic groups. Admixed ancestral genomic contributions impact personalized medicine and diagnosis. With the limitation to a SA genomic reference database, the classification of variants with unknown significance (VUS) still remain challenging in day-to-day routine diagnostics for our rainbow nation. Furthermore variant classification is limited due to incomplete or insufficient clinical data presented during requesting for genetic testing. The aim of this study was to investigate the landscape of mutations and variants observed in the familial *BRCA* genes within the Coloured population of SA to identifiy possible ethnic and family segregating pathogenic mutations.

Methodology: A total of 122 patients were screened for the most common SA European BC mutations. Post genotyping, comprehensive screening was performed using the protein truncation test and high resolution melting anaylsis. A total of 29 *BRCA* negative patients were also screened for larger genomic aberrations within the *BRCA* gene regions using multiple ligation dependent probe amplification.

Results: The patient cohort was limited to the Coloured population residing in the Western Cape. Of the 122 patients screened, 27% carried a deleterious *BRCA* mutation. During the screening process, 58 variants have been identified of which 17 where very rare and 2 are novel. From the total amount of variants identified, 27.6% remain incompletely classified due to the absence of clinical information from the 33 *BRCA* positive patients, 14 carried mutations unique to SA.

Conclusion: A stepwise fashion to genetic diagnosis in SA still remains the most cost effective approach with regards to turn-around-times, yet NGS offers a cheaper, more cost effective approach to full screening. SA rainbow diversity complicates *BRCA* testing due to it unique distinct ethnic heritage.

LR-12

Title: **PERFORMANCE EVALUATION OF THE COAG-SENSE® POINT-OF-CARE INR-TESTING SYSTEM**

Authors: J Joubert, MC Van Zyl, J Raubenheimer
Departments: Haematology and Cell Biology, Biostatistics
Presenter: Jaco Joubert

Introduction: Novel point-of-care (POC) instruments for International Normalised Ratio (INR) testing are regularly entering the market. We aimed to be the first investigators to evaluate the Coag-Sense® INR monitoring system for accuracy, precision and measurement repeatability, instrument & test strip variability, and error rates.

Materials and Methods: Capillary blood Coag-Sense® values from 202 patients on warfarin were compared with venous blood INRs obtained with Thromborel® S on a Sysmex CS-2100i® analyser. Control materials were used to assess precision, and measurement repeatability was calculated on 46 duplicate finger-prick values. Instrument & test strip variability was evaluated on triplicate finger-prick values obtained on three different instruments (30 patients) and three different test strip lots (28 patients).

Results: A correlation coefficient of 0.93 ($p<0.0001$) and a positive proportional bias of 15.3% was found on linear regression analysis. None of the ISO standard 17593:2007 system accuracy requirements were met. Although overall dosage concordance was low (70.3%), broader clinical agreement was high (91.0%). Control material coefficients of variation (CV) varied from 3.6% to 19.0%, depending on the control type, and the capillary blood measurement repeatability CV was 17.6%. There was no significant instrument ($p=0.59$) or test strip ($p=0.36$) variability, but the error rate was high (16.4%).

Conclusions: Although the Coag-Sense® instrument is generally adequate in terms of accuracy, broader clinical agreement, precision, repeatability, and instrument & test strip variability, the lack of compliance with the system accuracy requirements of ISO 17593:2007, low dosage concordance, and high instrument & test strip error rate, can be improved.

LR-13

Title: **PERFORMANCE EVALUATION OF THE MICROINR® POINT-OF-CARE INR-TESTING SYSTEM**

Authors: J Joubert, MC Van Zyl, J Raubenheimer
Departments: Haematology and Cell Biology, Biostatistics
Presenter: Jaco Joubert

Introduction: Point-of-care (POC) International Normalised Ratio (INR) testing is becoming more varied and widely available. We aimed to evaluate the microINR® POC system for accuracy, precision and measurement repeatability, and also to be the first investigators to evaluate the system for instrument & test chip variability, and error rates.

Materials and Methods: A cohort of 210 patients on warfarin therapy was selected. Venous blood INRs obtained with Thromborel® S on the Sysmex CS-2100i® analyser, and capillary blood microINR® values, were compared. Precision was assessed using control materials and measurement repeatability was calculated on 41 duplicate finger-prick INRs. Triplicate finger-prick INRs using three different instruments (30 patients) and three different test chip lots (29 patients) were used to evaluate instrument & test chip variability.

Results: Linear regression analysis of microINR® and Sysmex CS2100i® values, showed a correlation coefficient of 0.96 ($p<0.0001$) and a positive proportional bias of 4.4%. Dosage concordance (92.4%) and clinical agreement (96.0%) was high. All ISO standard 17593:2007 system accuracy requirements were met. Control material Coefficients of Variation (CV) varied from 6.2% to 24.7%, depending on control type, and the capillary blood measurement repeatability CV was 7.5%. There was no significant instrument ($p=0.93$) or test chip ($p=0.81$) variability, and the error rate was low (2.8%).

Conclusions: The microINR® instrument is sufficiently accurate and precise, with adequate dosage concordance and clinical agreement, to monitor warfarin therapy. It has a low instrument & test chip error rate and is not subject to significant instrument or test chip variability.

LR-14

Title: **DO MUTATIONS IN BLOOM'S SYNDROME ACT AS A MODIFIER OF FAMILIAL BREAST CANCER RISK IN SOUTH AFRICANS?**

Authors: J Adams, S-R Schneider, E Imyanitov, NC van der Merwe
Departments: Human Genetics, Genetics, N.N. Petrov Institute of Oncology, Russia
Presenter: Johnathan Adams

Introduction and aim: Bloom's syndrome is a rare homozygous autosomal recessive chromosomal instability disorder with a high incidence of various types of neoplasia, including breast cancer (BC). Whether heterozygous BLM mutations predispose to BC has been a long-standing question. A recurrent nonsense mutation, p.Q548X, has recently been associated with an increased risk for BC in a Russian case-control study. In the present study, we investigated the prevalence of this Slavic BLM founder mutation in the SA population and screened familial BC cases for other mutations in the gene.

Methodology: A total of 245 BC patients who presented with early-onset disease and reported a positive family history, were screened using high resolution melt analysis (HRMA) as mutation screening method. All samples deviating from the base line were Sanger sequenced. With the application of predictive algorithms PolyPhen-2 and Mutation Taster the clinical significance of the various mutations were assessed.

Results: The p.Q548X truncating mutation detected by exome sequencing in the Russian case-control study did not occur in the SA familial BC cases. No other commonly known recurrent and truncating mutations were detected for this gene. However, several novel variants of unknown significance (VUS) were detected in this previously unstudied population.

Conclusion: This study demonstrated that the p.Q548X truncating mutation does not predispose to increased risk of BC in selected SA patients with a positive family history of the disease. Moreover the results obtained are inconclusive to deduce that BLM heterozygous mutation carriers are not at an increased risk for developing BC.

LR-15

Title: **THE SOUTH AFRICAN INDIAN POPULATION: WHY IS FAMILIAL BREAST CANCER COMPLICATED FOR THIS UNIQUE POPULATION?**

Authors: HMVE Combrink, NC van der Merwe, J Oosthuizen, B Visser, I Buccamazza, WD Foulkes
Departments: Human Genetics, NHLS, Plant Sciences, Surgery, Inkosi Albert Luthuli Hospital, Oncology and Human Genetics, McGill University, Montreal, Canada
Presenter: Michael Combrink

Introduction and aim: The lifetime risk for developing breast cancer (BC) within the Indian population of South Africa (SA) is one in 17. The familial breast cancer genes *BRCA1/2* play a role in the functional transcription and DNA repair of double-stranded breaks. Pathogenic mutations within *BRCA1/2* increases the risk of developing this disease by up to 80%. Knowledge of the prevalence and genetic location of these mutations in the SA Indian population is necessary to provide accurate genetic testing. The main objective of this study was to comprehensively screen this unique population for mutations in *BRCA1/2* and in addition, determine the extent of *BRCA1/2* diversity present within this population.

Methodology: A total of 50 unrelated BC patients, were screened using High Resolution Melt analysis (HRMA), the Protein-Truncation Test, and Multiplex Ligation-dependent Probe Amplification (MLPA). Samples that deviated from the negative controls were analysed and sequenced. Clinical significance was determined based on the Evidence-based Network for the Interpretation of Germline Mutant Alleles (ENIGMA) guidelines. Moreover, an investigation was conducted to understand the genetic diversity of this population by using population specific genetics.

Results: A total of nine pathogenic mutations were detected in this study. Furthermore, these mutations were dispersed across both genes. One mutation was detected within three separate patients. Of the nine mutations, only two were previously detected for an Indian population. An analysis revealed that the Indian population of South Africa, is a unique mixture of populations, due to several historic events.

Conclusion: This study shed light on factors that influences familial breast cancer testing for this unique SA population. This research contributed towards the knowledge pool for predictive *BRCA* testing in the clinical setting of SA, and gave insight into possible diagnostic tests that could be designed for this group specifically.

LR-16

Title: **OPTIMIZATION OF RNA EXTRACTION AND ENRICHMENT TECHNIQUES FOR APPLICATION IN VIRUS DISCOVERY**

Authors: GIDUP Terblanche, FJ Burt
Department: Medical Microbiology and Virology
Presenter: Gert Terblanche

Introduction and aim: Many medically significant diseases are caused by RNA viruses and more than 70% of emerging pathogens are RNA viruses. Important RNA viral families include the Bunyaviridae, Flaviviridae and Togaviridae. A challenge with studying RNA viruses is that it is difficult to isolate RNA and it degrades rapidly. The aim of this study was therefore to test various RNA enrichment techniques using Sindbis virus spiked samples, to determine the influence on the RNA concentration.

Methodology: Sindbis virus was used as a proof of principle virus as it is a RNA virus that can be safely handled in a biosafety level 2 facility. Aliquots of 50 mg of chicken liver tissue were spiked with 1µl of heat-inactivated Sindbis virus. RNA was extracted using TRIzol® RNA extraction and several viral enrichment techniques, including: centrifugation, spin columns, DNase treatment and filtration. RNA was amplified using a quantitative two-step RT-PCR. The number of copies of cDNA per sample was used to determine the influence of viral enrichment methods on the RNA yield.

Results: The number of copies of cDNA was highest using TRIzol® with enrichment techniques or TRIzol® with centrifugation to enrich the samples. Treating the samples with DNase or using spin columns or combinations of these methods reduce the copy number up to 10^3 fold.

Conclusion: The results indicate that these methods can influence RNA yield. However, a limitation of this study was that the amount of host RNA removed during the viral enrichment was not determined. Hence enrichment methods need to balance loss of viral RNA with removal of host RNA.

LR-17

Title: **PREPARATION OF RECOMBINANT ANTIGEN FOR SEROLOGICAL DETECTION OF AFRICAN HANTAVIRUSES**

Authors: D Damane, FJ Burt
Department: Medical Microbiology and Virology
Presenter: Deborah Damane

Introduction: Hantaviruses are rodent-borne viruses belonging to the Bunyaviridae family, genus Hantavirus. The first African hantavirus was identified in 2006 and subsequently nine more have been identified. The emergence of hantaviruses has public health implications. The presence of hantaviruses in southern Africa has not been confirmed. Serological studies showed a 1% seroprevalence in human sera from the Western Cape using antigen prepared from European hantaviruses. The aim of the study was to investigate serological assays for the detection of antibody against African hantaviruses using a recombinant nucleoprotein (rNP) of Sangassou virus (SANGV).

Method: The open reading frame (ORF) of the nucleocapsid protein (NP) of Sangassou virus was retrieved from GenBank. The sequence was codon optimized for expression in a mammalian system and the gene was modified to include a histidine tag at the 3'end and a kozak sequence at the 5' end. Restriction sites were also included in the gene to facilitate cloning. Baby hamster kidney (BHK) cells were transfected using the construct. Transfected cells were fixed on antigen slides for screening human serum samples for IgG antibody against hantaviruses.

Results: The NP gene of Sangassou virus was synthesized and supplied in expression plasmid, pcDNA3.1(+). The sequence of the plasmid DNA was confirmed by sequencing. Expression of the recombinant NP was confirmed using Western blot analysis and immunofluorescence by detection of the histidine tag.

Conclusion: The r NP is a safe reagent for developing serological assays and will be used to screen human sera for IgG antibodies against hantaviruses.

LR-18

Title: **THE EFFECT OF COLLIMATOR CHOICE ON QUANTITATIVE ASSESSMENT OF IODINE-123 ON THE GROUNDS OF CONTRAST ACCURACY AND HEART-MEDIASTINUM RATIO**

Authors: D Violante, K Ramonaheng
Department: Medical Physics
Presenter: Daniella Violante

Introduction and aim: Literature reports much debate about collimator choice for imaging with I-123 depending on whether an image quantification or image quality interpretation is required. The aim of this study was to investigate the relative effect of septal penetration due to collimator choice on contrast quantification accuracy and image quality using a segmented and thoracic phantom, simulated using Simind Monte Carlo software.

Methodology: The first part of this study evaluated the amount of septal penetration present when using either a low-energy-high-resolution or medium-energy collimator with Iodine-123 inside a segmented phantom for source-to-collimator distances of 2 cm and 10 cm. Contrast accuracy was determined by correlating the collected counts in a region of interest with the expected number predetermined from the ratio of activities simulated.
The second part focussed on the clinical implication, where the heart-to-mediastinum ratio is evaluated using I-123 in a thoracic phantom set-up using abovementioned collimators. All images were evaluated for image quality by blinded independent human observers provided with a score sheet.

Results: In part one, the contrast accuracy proved marginally better by 7.6±2.3% and 16.2±6.2% at 2 and 10 cm respectively when using the medium-energy collimator. In part two, the heart-mediastinum ratio was more accurate with a percentage difference of <4.8% for the medium-energy collimator in comparison to <21.4 % for the low-energy-high-resolution collimator. In both part one and two the medium-energy collimator delivered better contrast whilst the low-energy high-resolution collimator provided better image resolution.

Conclusion: When conducting a quantitative analysis based Iodine-123 study using contrast ratios in planar images, contrast accuracy should be prioritized above the overall image quality and the medium-energy collimator should be employed. For an Iodine-123 study in which a visual diagnosis needs to be made from the planar images, image resolution should be optimized by using the low-energy high-resolution collimator.

LR-19

Title: **COMPARISON OF THYROID IMAGE QUALITY FOR PINHOLE AND PARALLEL HOLE COLLIMATORS: A PHANTOM STUDY**

Authors: D Potgieter, K Ramonaheng
Department: Medical Physics
Presenter: Demare Potgieter

Introduction and aim: Developing countries often have limited funds and thus diagnostic and treatment modalities should be operated in a cost effective manner while maintaining proper patient care. Gamma camera collimators are acquired at additional cost and the pinhole collimator is often more expensive than the more commonly used Low-energy-high-resolution (LEHR) collimator. The aim of this study was to compare the image quality of a pinhole and parallel-hole collimator using a thyroid phantom.

Methodology: The thyroid phantom is a perspex block of 10 X 10 cm with thickness of 3 cm. It contained a cavity of an average human thyroid with one hot spot and three cold spots of different sizes and locations. A defect was placed on the phantom at different locations and 53 MBq Tc-99m was injected into the phantom and imaged using the following imaging protocols; i) clinical protocol as specified by the manufacturer, ii) equivalent count densities for the pinhole and parallel hole, iii) equivalent zoom factor for both collimators, iv) variable detector to phantom distance for the parallel hole collimator. The images were assessed for defect detectability, contrast and sensitivity using human observers.

Results: All the observers could find the defect for all imaging protocols when the pinhole collimator was used, while in the case of the parallel hole collimator this was only possible when the detector to phantom distance was decreased. The pinhole collimator had superior contrast to that of the parallel hole collimator. As expected the sensitivity of the pinhole collimator was less than that of the parallel hole collimator.

Conclusion: From this study it is evident that the image quality of the pinhole collimator is superior to the parallel-hole collimator and therefore acquiring a pinhole collimator for thyroid imaging on the gamma camera is justified.

LR-20

Title: **DEVELOPMENT AND VALIDATION OF A MOLECULAR ASSAY AND EVALUATION OF THE GENEXPERT MTB/RIF ASSAY FOR THE RAPID DETECTION OF GENITAL TUBERCULOSIS**

Authors: CM Sokhela, JDP Strydom, AA Hoosen, D Goedhals
Departments: Medical Microbiology and Virology; Obstetrics and Gynaecology
Presenter: Cebolenkosi Sokhela

Introduction and aim: Tuberculosis (TB) is caused by the bacterium *Mycobacterium tuberculosis* (MTB). Globally in 2014 there were 9.6 million new cases of TB with 1.5 million deaths. While TB mostly affects the lungs, extrapulmonary TB affects other organs. Symptoms for genital TB (GTB) in women include abnormal bleeding patterns and infertility. Molecular techniques for TB diagnosis have shown high sensitivity and specificity with reduced turnaround times, however, culture remains the gold standard. The commercial PCR assay, GeneXpert has yet to be validated for GTB. The aim of this project is the development and validation of an in-house nested PCR assay and validation of the GeneXpert for the laboratory diagnosis of GTB.

Methodology: A nested PCR was designed targeting the IS6110 insertion sequence of MTB. Menstrual fluid and endometrial tissue samples from the Unit for Human Reproduction from women investigated for infertility (n=53) were submitted for screening. Samples were screened using the GeneXpert assay, the in-house nested PCR, and cultured in MGIT tubes with both molecular methods compared to culture.

Results: Of the 53 samples that were screened for GTB, 5 were culture positive indicating a prevalence of 9.4%. Only 1/53 samples was positive with the GeneXpert assay and 2/52 samples were positive with the in-house nested PCR resulting in a sensitivity of 20% and 50% respectively. The specificity for both assays was 100%.

Conclusion: While both molecular methods were able to detect GTB from clinical samples, it remains evident from the results that TB culture has better sensitivity. The poor sensitivity of the molecular methods likely results from the low mycobacterial load in GTB samples. It is therefore recommended that while these molecular techniques can be implemented for rapid GTB screening, TB culture remains the gold standard for the diagnosis of GTB.

LR-21

Title: **SCREENING FOR CALRETICULIN MUTATIONS IN A FREE STATE COHORT SUSPECTED OF HAVING A MYELOPROLIFERATIVE NEOPLASM**

Authors: C Booysen & A de Kock
Department: Haematology and Cell Biology
Presenter: Chantell Booysen

Introduction and aim: The discovery of calreticulin (CALR) has shown it to be the second most frequent mutation after the Janus Kinase 2 (JAK2) mutation in myeloproliferative neoplasms (MPN). Its structure indicates various functions of which two are to ensure calcium homeostasis and proper folding of other target proteins. Over 36 types of CALR mutations have been identified, all causing a recurrent frameshift in the C-terminal domain affecting CALR's localization and calcium binding function. This study aimed to screen a cohort of 89 patients suspected of having a MPN for the calreticulin mutation.

Methodology: Hot-start PCR using published primers was used to amplify exon 9 of the CALR gene. Capillary and gel electrophoresis were used in conjunction as confirmatory tests to screen the cohort of patients. Sequencing was used to confirm positive samples.

Results: Three samples screened positive for a type 1 CALR mutation, of which two were heterozygous and one homozygous. Contrary to most studies, the outcome of this study proves that CALR mutations are not mutually exlcusive to JAK2 mutations and CALR can be present in all three types of myleoproliferative neoplasms.

Conclusion: CALR mutations have clinical outcomes that differ to those of JAK2 mutations and thus prognostic advantages such as a lower thrombotic risk, longer median survival, and a more benign course of the disease. It can thus be useful in future prognostic and therapeutic indications of Philadelphia chromosome-negative disorders. Knowledge of CARL mutations can allow for a more definitive classification of myeloproliferative neoplasms.

LR-22

Title: **PRESENCE OF GLYPHOSATE IN FOOD PRODUCTS IN SOUTH AFRICA OF WHICH MAIZE OR SOYBEAN IS THE PRIMARY CONSTITUENT**

Authors: BJ Koortzen, S Sreenivasan and CD VIljoen
Department: Haematology and Cell Biology
Presenter: Barend Koortzen

Introduction and aim: It is estimated that 72% of maize and 92% of soybean produced in South Africa is genetically modified to be herbicide tolerant (HT). HT crops allow the application of the herbicide, glyphosate, during the growing season to manage weeds. The WHO recently classified glyphosate as a "probable carcinogen". Studies have shown that glyphosate is detected in treated HT maize and soybean, and cannot be removed by washing, processing or cooking. Maize is a major staple and soybean an important source of protein in South Africa. The aim of this study was to determine the level of glyphosate in food products that contain maize and/or soybean as a primary constituent.

Methodology: Commercially available food products (81) containing maize and/or soybean as a primary constituent were used in this study. Real-time PCR was used to screen products for the presence of HT events (GA21 and NK603 for maize and GTS40-3-2 for soybean) and positive samples quantified per event. The level of glyphosate was determined using ELISA.

Results: Of the 81 products sampled, HT events were detected in 75% of maize, 55% of soybean and 85% of maize-soybean blends. Of these, 54 samples contained glyphosate in a range of 0.018 to 2.253 mg/kg.

Conclusion: Glyphosate was present in the majority of maize and soybean food products tested but at below the maximum residue level (MRL). The MRL is based on agricultural application and not safety. In vitro and animal studies have shown that glyphosate can result in chromosomal and/or DNA damage as well as endocrine disruption at the level detected in three soybean samples in this study. It is estimated that the average South African consumes 500 grams of maize meal per day. It is currently unknown if chronic low dose exposure to glyphosate has any safety implications in the long term.

LR-23

Title: **INFLUENCE OF SMALLER MUTATIONS ON THE MULTIPLEX LIGATION DEPENDANT PROBE AMPLIFICATION TECHNIQUE (MLPA)**

Authors: BK Dajee, PJ Moeti, M Theron, J Oosthuizen, WD Foulkes, G Chong, NC van der Merwe
Departments: Human Genetics, NHLS, Oncology and Human Genetics, McGill University, Montreal, Canada
Presenter: Bhavini Dajee

Introduction and aim: The genomic regions of the familial breast cancer (BC) genes contain high densities of repetitive DNA elements, that have the potential to cause genomic instability due to unequal homologous recombination. Therefore, the laboratory implemented MLPA to screen for larger genomic rearrangements (LGRs). As MLPA is based on the hybridization capture method of target enrichment, factors affecting the binding and ligation of probes will influence the result. The study focused on determining the influence of the location of smaller deleterious mutations on the ability of MLPA to detect LGRs.

Methodology: Four probe mixes from MRC Holland were validated and used for the screening of SA BC patients. MLPA was performed on DNA samples representing three mutation positive BC patients and analyzing using GeneMarker software.

Results: Three patients carrying a deleterious smaller *BRCA* mutation including a single base deletion [*BRCA2* c.7954_7954delG,p.Arg2645Asnfs], a 2bp deletion [*BRCA1* c.5229_5230delAA, p.Gly1743_Arg1744GlyLysfs] and a 5bp deletion [*BRCA2* c.771_775delTCAAA]) were used to illustrate the effect of mutation position on MLPA results. All samples delivered false positive MLPA results, indicating a dosage reduction. It was found that all mutations were situated either within the ligation or the binding area of one of the probes.

Conclusion: Screening of familial BC is performed according to a tiered approach, with MLPA representing the final phase. The results serve as a warning to SA pathology laboratories performing MLPA for familial BC. The smallest mutation proven to affect MLPA analysis, is the common Afrikaner founder mutation *BRCA2* c.7954_7954delG. This mutation is situated within a critical ligation site of the European designed *BRCA2* P0045 probemix and can result in false positive results being reported should MLPA be performed as a first tier screen. It further emphasizes that positive MLPA results always needs to be confirmed by an alternative method.

LR-24

Title: **COMPARISON OF THE DIFFERENT BLOOD PRODUCTS CURRENTLY AVAILABLE IN SA FOR THE TREATMENT OF THROMBOTIC THROMBOCYTOPENIC PURPURA**

Authors: AC Van Marle, J Joubert, SM Meiring
Department: Haematology and Cell Biology
Presenter: Anneke Van Marle

Introduction: Thrombotic thrombocytopenic purpura (TTP) is a life threatening condition, resulting from a deficiency in the von Willebrand factor (VWF) cleaving protease, ADAMTS13. Plasma exchange therapy with either fresh frozen plasma (FFP), cryosupernatant (CSP) or solvent detergent treated plasma (locally available as Bioplasma FDP®) forms the corner stone of treatment.

Aim: We aimed to generate in-vitro data on the locally available products used to treat TTP, in order to confirm their in-vitro equivalence and utility for local use, and also to explore any possible product differences, which may offer treatment advantages.

Methods: Twenty test samples of each product were analysed for their levels and activities of ADAMTS13, VWF and plasminogen (a proposed physiological back-up system for ADAMTS13). The FFP and CSP samples were further subdivided according to ABO blood group.

Results: All sixty samples had normal ADAMTS13 activity and plasminogen levels. Statistically significant differences were found in at least one of the blood products for almost every other parameter tested (p-value <0.0001), as well as between blood group O and non-O FFP samples (p-values ranging from <0.0001 to 0.0276). Bioplasma FDP® was the most standardised with Coefficients of Variation (CVs) ranging from 14.1% to 27.3%, whilst FFP showed great inter-individual variation, with CVs ranging from 24.6% to 208.6%, depending on the parameter. Not surprisingly, the majority of CSP samples showed deficiency of VWF antigens and activities which may offer treatment benefits in TTP.

Conclusion: Any of the products tested can confidently be used for the treatment of TTP. Choice of product would depend on factors such as the need for viral safety, costs, product availability and the perceived practical impact of within-product variations.

LR-25

Title: **SCREENING OF INFREQUENT RIFAMPICIN MUTATIONS IN MYCOBACTERIUM TUBERCULOSIS**

Authors: M Maotoana, A van der Spoel van Dijk
Department: Medical Microbiology
Presenter: Makgotso Maotoana

Introduction and aim: Antibiotic resistance to rifampicin (RIF) and isoniazid (INH) is the mainstay of first line treatment for Mycobacterium tuberculosis (MTB). The GenoType® MTBDRplus assay also known as a line probe assay (LPA) is globally used to detect resistance to these drugs by detecting mutations in the RIF resistance determining region (RRDR) of the rpoB gene (codons 504 – 535). Four frequently occurring mutations in RRDR are detected. The aim of the study was to determine infrequently occurring mutations not specifically classified with the LPA.

Methodology: During June 2014 - June 2015 diagnostic testing recorded that 195/2472 (7.8%) of all LPA tested isolates had non-specific mutations reported as RIF resistant. The study was conducted on 20/195 randomly selected TB isolates that did not have one of the four most frequently detected RRDR mutations responsible for RIF resistance. RIF susceptibilities of these isolates were tested using a commercial kit (Sensititre MYCOTB). A 197 base pair region of the RRDR was amplified by PCR and the nucleotide sequence of the amplicon was determined using Sanger sequencing.

Results: Of the 20 isolates 65% were confirmed as RIF resistant and 35% was susceptible. Sequence analysis indicated that eight isolates had a Q513P codon mutation, three had a D516Y mutation, and two had a L511P mutation. Three isolates had other substitution mutations located on different codons. One isolate had deletions at codons 510-515 while three had no mutations detected within the RRDR. No correlation was found between the susceptibility profiles and the mutations. The presence of mutations that are not specifically detected by the LPA approximately 7/195 (3.6%) have the potential to infer susceptibility.

Conclusion: This study suggests that it is imperative to confirm susceptibility to rifampicin in isolates with mutations not specifically classified with the LPA. For 5.8% of the isolates with infrequent.

LR-26

Title: **TECHNETIUM-99M AND GOLD-198 ACTIVITY QUANTIFICATION USING SPECT/CT MONTE CARLO SIMULATIONS**

Authors: M Morphis, J Van Staden, H du Raan
Department: Medical Physics
Presenter: Michaella Morphis

Introduction and Aim: Accurate activity quantification is important for radiation dose calculations in Nuclear Medicine. Quantification accuracy varies due to inherent limitations of imaging methods, object shape, size and background levels. The aim of this study was to evaluate the accuracy of activity quantification for Tc-99m and Au-198 with a SPECT/CT system using Monte Carlo (MC) computer simulations.

Methodology: Segmented CT images of each phantom setup were used as input for the MC simulations. Three phantom studies and a patient study were simulated with Tc-99m and Au-198 respectively. A radioactive concentration of 0.27 MBq/ml* was placed in all cylinders or spheres mentioned below.
(i) Cylinder phantom study: Six different sized cylinders filled with radioactivity* were simulated in the water filled large cylinder phantom (LCP), with two levels of background activity.
(ii) Sphere phantom study: Six different sized spheres filled with radioactivity* were positioned in the LCP and simulated as mentioned above.
(iii) RSD thorax phantom study: Two spheres filled with radioactivity* were positioned in the RSD phantom with three different levels of organ and background activity. This was repeated for three different sphere sizes.
(iv) Patient study: A patient study with two spherical lesions was simulated.
Corrections for attenuation, scatter and collimator response were applied during image reconstruction. Using CT regions of interest, count from reconstructed SPECT images were converted to activity using a partial volume correction (PVC) and a calibration factor.

Results: For cylindrical sources, good accuracies were observed (=10% for Tc-99m and =40% for Au-198). Similar results were obtained for the spherical sources in LCP, RSD phantom and patient study (=10% for Tc-99m and =20% for Au-198).

Conclusion: The accuracy of activity quantification varies with object size and from the results it is evident that a PVC remains necessary for the smallest sphere sizes.

LABORATORY POSTERS / LABORATORIUM PLAKKATE

LPV-1

Title: **THE EFFECT OF PHELA ON *P*-GLYCOPROTEIN AND MULTIDRUG RESISTANCE-ASSOCIATED PROTEIN 2 TRANSPORTERS IN THE GASTROINTESTINAL TRACT OF A RAT MODEL**

Authors: ME Binyane, A Walubo & MG Matsabisa
Department: Pharmacology
Presenter: Moleboheng Binyane

Introduction and aim: Membrane transporters play an integral role in the determination of the pharmacokinetic, safety and efficacy profiles of drugs. Even so, little is known about the role of membrane transporters in herb-drug interactions. Therefore, the effect of Phela on intestinal P-glycoprotein (P-gp) and multidrug resistance-associated protein 2 (MRP2) was investigated in a rat model. Paclitaxel (PTX) and cyclosporin A (CyA) were used as the respective substrate and inhibitor of P-gp, while methotrexate (MTX) and probenecid (PRO) were those of MRP2.

Methodology: Ethical approval was obtained and male Sprague-Dawley (SD) rats (200-250 g) were used. The animal experiment was divided into two parts. In Part I, three groups of 40 rats each received a once-off oral dose of PTX-only (10 mg/kg), PTX & CyA (10 mg/kg) or PTX & Phela (15.4 mg/kg), while in Part II, three groups of 40 rats each received a once-off oral dose of MTX-only (10 mg/kg), MTX & PRO (20 mg/kg), or MTX & Phela (15.4 mg/kg). For each group, 5 rats were sacrificed after 0.5, 1, 2, 4, 6, 8, 10, and 12 hours. Blood was analysed for full blood count, liver function, and PTX and MTX concentrations.

Results: CyA and PRO increased the area under the plasma concentration-time curve (AUC) of PTX and MTX, respectively, whereas Phela had no effect on the AUC of PTX or MTX.

Conclusion: Therefore, Phela did not inhibit P-gp or MRP2, and this implies that Phela will most probably not be involved in herb-drug interactions of membrane transporter origin.

LPV-2

Title: **THE EFFECTS OF VARIOUS COMBINATIONS OF DIFFERENT CLASSES OF ANTICANCER DRUGS AND TYROSINE KINASE INHIBITORS ON THE HUMAN MCF-7 BREAST CARCINOMA CELL LINE**

Authors: B Abrahams, DC Hiss, Abdul-Rasool
Department: Basic Medical Sciences
Presenter: Beynon Abrahams

Introduction and aim: In breast cancer, the altered expression of epidermal growth factor receptors (EGFR and HER-2) parallels an aggressive clinical course and the development of resistance to anticancer therapies. EGFR inhibitors that specifically target the intracellular and extracellular domains of EGFR include monoclonal antibodies (e.g., trastuzamab) and tyrosine kinase inhibitors (TKIs): (e.g., gefitinib) are amongst the most effective agents that are currently used in clinical practice.

Objective: In this study we examined the effects of doxorubicin (DOX), cisplatin (CPL) and three investigational TKIs: EGFR inhibitor I, EGFR Inhibitor II/BIBX1382 and EGFR/ErbB-2/ErbB-4 Inhibitor, individually and in combination, on human MCF-7 breast carcinoma cells.

Methodology: Analyses of MCF-7 cells exposed to DOX, CPL and TKIs, alone and in combination, included dose-response curves (cytotoxicity assays), drug synergy analysis, morphological staining of apoptotic cells with haematoxylin and eosin and Annexin V-FITC. Combination drug effect analysis was used to study the efficacy of EGFR inhibitor combinations on MCF-7 cells.

Results: MCF-7 cells were exposed to different concentrations of TKIs alone and in combination with each other. The combination of the TKIs demonstrated a significant reduction in cell growth, compared to the inhibitors used individually. Synergistic as well as antagonistic effects were observed in combinations with DOX, CPL and the TKIs with resultant decreases in dose reduction indices (DRIs) implying greater efficacies with the respective combinations.

Conclusion: Our findings coincide with previous assertions that concurrent blocking of the ErbB family of RTKs and other drug targets in cancer cells may be of particular benefit to breast cancer patients. Elucidation of the mechanisms involved in the combined cytotoxicity of DOX, CPL and TKIs and optimizing their synergistic concentrations to enhance efficacy would be a major breakthrough in cancer drug discovery and development.

EDUCATIONAL PAPERS / ONDERWYSKUNDIGE REFERATE

OR-1

Title: **SPECIALISATION PREFERENCES OF UFS UNDERGRADUATE MEDICAL STUDENTS**

Authors: DT Hagemeister, N Mokgosana, U Kristen, G Joubert
Departments: School of Medicine/ Department of Biostatistics
Presenter: Dirk Hagemeister

Introduction and aim: A focus on primary health care will be essential to achieve the target of universal access to health care in South Africa. We aim to establish the specialisation preferences of undergraduate medical students at the University of the Free State (UFS) over the five years of their programme.

Methodology: A questionnaire-based survey, annually repeated for five years and targeting every medical student in all years of the undergraduate program, will provide both annual cross-sectional data and longitudinal data for student cohorts. The students are requested to indicate their interest in specialising in specific disciplines on a 5-point Likert scale from 'highly unlikely' to 'very likely' for each speciality.

Results: In the first two years, we collected 1036 completed questionnaires, with 28% of the respondents having a rural background and 55% being female. The rate of students considering specialisation declined from 94% amongst first years students to 82% in the final year. The discipline considered most often is anaesthesiology (selected as 'likely' or 'very likely' by 1st/5th year students: 20%/47%), while surgery (70%/ 38%) ahead of internal medicine (51%/ 30%) and paediatrics (50%/31%) all lost 'popularity' over the years of studies. Amongst the lesser chosen fields were psychiatry (23%/26%), obstetrics & gynaecology (22%/ 18%), radiology (15%/15%). ENT (10%/22%), dermatology (10%/27%) and urology (3%/28%) showed strong increases in interest, while the opposite was the case for neurology (41%/19%), orthopaedic surgery (26%/17%) and pathology (16%/7%). Family medicine was considered by 29% of both first and final year students (but by only 14% of third years), with female students and speakers of African languages being most interested.

Conclusion: 'General specialities' such as surgery, internal medicine and paediatrics appear to top the list of choices, possibly reflecting the 'exposure time' to these fields during the undergraduate programme. Home language/ ethnicity and gender show some correlation with the interest to specialise in family medicine.

OR-2

Title: **REPORT BACK ON ASSESSMENT RUBRIC TO EVALUATE INTERPROFESSIONAL STUDENT COLLABORATION**

Authors: MJ Labuschagne, Y Botma, JE Raubenheimer
Departments: Clinical Simulation and Skills Unit, School of Nursing, Biostatistics
Presenter: Mathys Labuschagne

Introduction: The study aims to determine the interrater reliability of an assessment rubric developed to evaluate interprofessional training and collaboration of students in the Faculty of Health Sciences, University of the Free State. A rubric was developed from three core documents (WHO; RNOA 2013; HPCSA 2014). The aspects evaluated were collaborative practice, professional roles and established shared values, shared decision-making, shared power and collaborative leadership through effective communication and collaboration among all healthcare professionals, towards patient centred care.

Aim and Methodology **:** A quantitative methodological design was applied. The aim of the study is to describe the interrater reliability of the rubric. Fourth year students from seven professions in the Faculty of Health Sciences participated in the Interprofessional education sessions. Approximately 300 Students were divided into 32 interprofessional groups with a facilitator per group. On concluding the module each group had to apply the principles of collaborative practice and compile a plan on how to establish a collaborative team using interprofessional principles in a healthcare setting.
Twenty nine assessors used the rubric to assess 30 visual representations of the plans. A spreadsheet was created per item and the responses of ten assessors were captured per group. The inter-rater variation per item and for the rubric as a whole was calculated.

*Results***:** Shrout and Fless reliability with a randomised set of mean raters used for the study, resulted in +0.568 (moderate reliability). The Kendall's coefficient was used in attribute agreement analysis test inter- and intra rater reliability and test the internal consistency of the assessment instrument. The degree of success of the rubric indicated fair reliability. The limitations of the rubric will be elaborated on.

*Conclusion***:** The rubric can be used to evaluate the students' grasp of collaborative practice even if the reliability is fair, because of the subjectivity of the content evaluated.

OR-3

Title: **FROM PAPER TO PRACTICE – ACADEMICS AND PRACTITIONERS WORKING TOGETHER IN ENHANCING THE USE OF OCCUPATIONAL THERAPY CONCEPTUAL MODELS**

Authors: ME Vermaak, M Nel
Departments: Occupational Therapy, Biostatistics
Presenter: Mia Vermaak

Introduction and aim: Occupational therapy students are exposed to occupational therapy conceptual models in lectures, and are expected to practice application of these models during clinical fieldwork placements. During fieldwork, they are exposed to practitioners' approach to the use of occupational therapy conceptual models; and are often confronted with a gap between theory and practice. The objective of this study was to investigate the use of conceptual models by occupational therapy practitioners in the Free State, South Africa, to inform collaborative efforts in the process of reinforcing the link between theory and practice, by enhancing the use of occupational therapy conceptual models.

Methodology: A cross sectional study was done in two phases: by means of a questionnaire survey, with practitioners responsible for fieldwork supervision of students; and a workshop survey completed by practitioners attending a workshop on occupational therapy models.

Results: Results in the first phase describe the perceptions of 22 supervising practitioners around occupational therapy conceptual models; and their own and students' application thereof in practice. These results were used as the basis to design a workshop on the application of occupational therapy conceptual models. In the second phase, workshop survey questionnaires completed by 20 participants, indicated that they perceived the workshop as enabling with regard to applying new occupational therapy conceptual models with more confidence and competence, and that they felt more confident to supervise students in using occupational therapy conceptual models.

Conclusion: This study and its' resulting workshop show how collaboration between practitioners and academics can improve the link between theory and practice, benefiting practitioners' professional identity and ultimately impacting on undergraduate training.

OR-4

Title: **COCHLEAR IMPLANTATION AND DEAF EDUCATION ARE COST EFFECTIVE IN SUB-SAHARAN AFRICA**

Authors: SD Emmett, DL Tucci, M Smith, IM Macharia, et al
Department: Otorhinolaryngology
Presenter: Magteld Smith

Background: Cost-effectiveness of pediatric cochlear implantation has been well established in developed countries but is unknown in low resource settings, where access to the technology has traditionally been limited. With incidence of severe to profound congenital sensorineural hearing loss 5 to 6 times higher in low/middle-income countries than the United States and Europe, developing cost effective management strategies in these settings is critical.

Methods: Costs were obtained from experts in Nigeria, South Africa, Kenya, Rwanda, Uganda, and Malawi using known costs and published data, with estimation when necessary. A disability adjusted life years (DALY) model was applied using 3% discounting and 10-year length of analysis. Sensitivity analysis was performed to evaluate the effect of device cost, professional salaries, annual number of implants, and probability of device failure. Cost-effectiveness was determined using the World Health Organisation standard of cost-effectiveness ratio/gross domestic product per capita (CER/GDP) less than 3.

Results: Cochlear implantation was cost effective in South Africa and Nigeria, with CER/GDP of 1.03 and 2.05, respectively. Deaf education was cost effective in all countries investigated, with CER/GDP ranging from 0.55 to 1.56. The most influential factor in the sensitivity analysis was device cost, with the cost effective threshold reached in all countries using discounted device costs that varied directly with GDP.

Conclusion: Cochlear implantation and deaf education are equally cost effective in lower-middle and upper-middle income economies of Nigeria and South Africa. Device cost may have greater impact in the emerging economies of Kenya, Uganda, Rwanda, and Malawi.

OR-5

Title: **DO ACADEMIC INDICATORS INCLUDING NBT SCORES PREDICT SUCCESS IN THE FIRST SEMESTER OF AN MBCHB PROGRAMME?**

Authors: AP Hugo, LJ Van Der Merwe, GJ Van Zyl, A St Clair Gibson, L Du Toit & S Du Plessis

Departments: Undergraduate Programme Management, School of Medicine, Dean, Faculty of Health Sciences, Former Head, School of Medicine, Student Administration, Faculty of Health Sciences

Presenter: Alwyn Hugo

Introduction and aim: Selection for medical studies at the University of the Free State (UFS) School of Medicine is done based on academic and non-academic performance. Students who do not successfully complete the first semester of the MBChB programme are placed in a Learning Development Programme (LDP). Students re-enter the MBChB programme provided they meet the academic requirements of the LDP successfully. Academic indicators may predict success at medical school but other factors also impact student throughput and success. The aim of this study is to examine the link between academic performance indicators and success in Semester 1 of the MBChB programme.

Methodology: A descriptive study design was followed. The National Benchmark Test scores (NBT) and the combination of the NBT and Selection scores (NKP) of first year MBChB students from 2011 to 2015 were ranked according to students' position in the class group to determine the academic standing of LDP students.

Results: Seventy eight students out of 672 admitted students were included in the LDP from 2011 – 2015. NBT scores were 31 – 90.6%. Only 11.5% of students in the LDP had NBT scores < 60%. NKP scores were 46 - 97. Only 15.4% of students in the LDP had NKP scores < 70.

Conclusion: Academic performance reflected by NBT and NKP scores are not predictors of academic success in the first semester. Further investigation is necessary to identify factors contributing to MBChB 1 students' poor academic performance.

OR-6

Title: **DIABETES-RELATED KNOWLEDGE, ATTITUDES AND PRACTICES OF ADULT PATIENTS WITH TYPE 2 DIABETES IN THE FREE STATE, SOUTH AFRICA**

Authors: M le Roux, CM Walsh, M Reid, JE Raubenheimer

Departments: Nutrition and Dietetics, School of Nursing, Statistics

Presenter: Maretha le Roux

Introduction: Type 2 Diabetes mellitus (T2DM) is a global clinical and public health problem with high morbidity and mortality among patients of which the majority are still economically active. The growing incidence and health implications for those affected, make T2DM a major public health issue globally as well as in South Africa.

Objective: To compile a demographic, anthropometry and KAP profile of adult patients with T2DM in the Free State public health sector.

Design: This was a descriptive observational study.

Setting: 255 participants were interviewed from 22 primary health care and community health care facilities, using convenience sampling.
Outcome measures: Questionnaire completed in an interview was used to determine demographics and KAP. Anthropometry measurements were taken using standard techniques.

Results: The majority of the participants were black women from urban areas (median age 57 years), who were overweight and obese (87%). Median age at diagnosis was 48 years and 10% were illiterate. 83% had a waist circumference above cut-off points. Half of participants knew normal range of blood glucose although 90% knew common signs of high blood glucose and two thirds were knowledgeable about complications. 81% felt that they would be a different person if they did not have diabetes. 71% felt that diabetes was the worst thing that had happened to them and 79% felt embarrassed about having diabetes. Although 96% were knowledgeable about the benefits of physical exercise, only 31% reported exercising every day during the past week.

Conclusions: Poor knowledge, a negative attitude and poor practices related to diabetes were observed in a very high percentage of participants, which may contribute to morbidity and mortality. Interventions to equip patients to successfully manage their condition are urgently required.

OR-7

Title: **DIFFERENCES IN MATCH ACTIVITIES BETWEEN THE SUPER RUGBY AND CURRIE CUP COMPETITION DURING THE 2014 SEASON**

Authors: R Schoeman, D Coetzee, R Schall

Departments: Exercise and Sport Sciences, Mathematical Statistics and Actuarial Sciences

Presenter: Riaan Schoeman

Introduction and aim: Previous studies on differences in level of competition in rugby focused on physiological and psychological components, yet little research is available on differences between levels of play. Therefore, this study attempted to differentiate between match activities of Currie Cup and Super Rugby.

Methodology: Descriptive statistics were calculated per competition for the winning and losing teams separately, and for the two teams involved in each game combined (that is, for the total count per game). Each count variable (such as number of lineouts, scrums, rucks, mauls) was analysed using a generalised linear mixed model (GLIMM) with competition (Super versus Currie Cup) as fixed effect, and both winning team and losing team as random effect. The fitting of the variables winning team and losing team as random effects allowed for correlation between the counts in question for a given team across several games.

Results: The data showed that lineouts ($p = 0.6314$) and scrums ($p = 0.9544$) occurred more frequently in Currie Cup but showed no significance, while the number of lineouts lost (4.5 vs 4.3 per game), scrums lost (2.1 vs 2.4 per game) and rucks (139.6 vs 143.1 per game) were lower in Currie Cup compared to Super Rugby and also showed no significance. Mauls (9.6 vs 6.4 per game) decreased significantly ($p = 0.0071$) from Currie Cup to Super Rugby. The number of mauls and missed tackles also showed significant differences ($p=0.0074$ and $p=0.0009$, respectively) between winning and losing teams for both competitions.

Conclusion: Such data can identify developing trends in rugby and predict future performance. Identifying the numbers of activities can assist coaches in the process of talent identification and set standards for level of play.

OR-8

Title: **FACULTY OF HEALTH SCIENCES RESEARCH FORUM: 2001-2005 AND 2011-2015 COMPARED**

Author: G Joubert

Department: Biostatistics

Presenter: Gina Joubert

Introduction and aim: The profile of Faculty of Health Sciences Research Forum presentations from 2001 to 2005 was reported in 2005. Some yearly differences and the varying participation of different departments and Schools in the Faculty were noted. The aim of this presentation is to reflect on the Faculty Research Forum by providing a comparative profile of presentations for the period 2011 to 2015.

Methods: Faculty Research Forum programmes (in hard copy and online) were used to obtain information regarding the profile of presentations for this comparative study. Personal notes made by the researcher provide reflective context.

Results: In 2011 to 2015 the number of presentations per Faculty Research Forum varied from 84 to 104, whereas 84 was the largest number in the period 2001 to 2005. Oral presentations predominate (approximately 75% in the period 2011 to 2015, compared to approximately 65% from 2001 to 2005). The clinical category is approximately 50% of all presentations in both time periods. Presenters are mainly from the School of Medicine (>75%). Presenters from Parexel ranged from 9% in 2001 to 20% in 2003, compared to 0% from 2011 to 2015. All Schools had at least one presenter at each Forum from 2011 to 2015, which was not the case for 2001 to 2005. Eight departments in the School of Medicine and 1 department in the School for Allied Health Professions had a presenter at each Forum within both time periods whereas 4 departments in the School of Medicine had no presenter in both time periods. Some personal reflection will be provided.

Conclusion: The number of presentations has increased and there has been a shift towards oral presentations. All Schools recently had presenters at each Forum but some departments still do not participate at all.

OR-9

Title: **THE POSTGRADUATE RESEARCH METHODOLOGY MODULE IN THE SCHOOL OF MEDICINE, UFS: INVESTIGATING AN ONLINE APPROACH**

Author: G Joubert, WJ Steinberg
Department: Biostatistics, Family Medicine
Presenter: Gina Joubert

Introduction and aim: Since 2008 a compulsory research methodology module is presented to registrars in the School of Medicine, UFS using various formats: evening contact sessions in the first semester, and a 2-mornings workshop in the second semester. The aim of this presentation is to describe the findings of an attempt to incorporate an online component into the module.

Methodology: In the first semester of 2016 the contact session for Ethics, the second theme of the 4 theme module, was replaced with a requirement that participants successfully complete two modules of the free international online Training and Resources in Research Ethics Evaluation (TREEE) programme. These online modules include questions, which need to be passed (70%) for successful completion of the module and attaining of a certificate. At the final session of the research methodology module, participants were requested to respond to some open and closed questions regarding this online experience, on the anonymous module evaluation form. The Postgraduate Office of the Faculty e-mailed the evaluation form to participants who did not attend the final session. Their responses were anonymized before submission to the module leader for use in this descriptive study.

Results: Of the 31 participants of the research methodology module of the first semester 2016, 23 (74%) completed the evaluation form. One respondent had not yet attempted the TRREE modules and one experienced technical problems. The majority indicated that the online questions were just right (90%) and the content was relevant to them (81%). The median time for completion of the online modules was 3 hours (range 1.5 to 6 hours), 57% of respondents indicating that the time required was lengthy. Most (71%) were positive about the experience and 62% were positive regarding the research module following a similar online approach, but a desire for continuing contact sessions was expressed.

Conclusion: The online exposure was a success. How this module should utilise an online approach more, without losing the benefits of the contact sessions, needs consideration.

OR-10

Title: **A FRAMEWORK FOR OCCUPATIONAL ENABLEMENT THROUGH SERVICE LEARNING IN OCCUPATIONAL THERAPY**

Author: E Janse van Rensburg
Department: Occupational Therapy
Presenter: Elize Janse van Rensburg

Introduction: Occupational therapists concern themselves with human occupation, and the enablement of occupation can be viewed as the profession's collective domain of concern when working towards health, well-being and occupational justice. Six enablement foundations are described in occupational therapy literature, namely choice, risk and responsibility; client participation; vision of possibilities; change; justice and power sharing.

Aim and Methodology: Drawing on these and other theoretical foundations and based on the findings of a qualitative, descriptive enquiry that investigated the perceptions of community representatives in occupational therapy service learning engagements, the author constructed a framework for occupational enablement through service learning.

Results: This framework details outcomes and objectives that may be sought successfully during occupational therapy service learning engagements and provides for specific activities that may assist in achieving these objectives. The framework further provides for strategies that are based on the perceptions of community representatives themselves, which relate to contextual factors, role players and specific engagement strategies that enhance the potential for 'successful' service learning engagements.

Conclusion: Rooted in theoretical principles from community development, service learning and occupational enablement theory, this framework can provide a strategic management guideline to occupational therapists and students who engage with communities in endeavours such as service learning. It was also suggested during subsequent exploration of the framework by academics and clinicians that the framework may also have more general application in community-based practice in occupational therapy.

OR-11

Title: **COMMUNITY OUTCOMES OF OCCUPATIONAL THERAPY SERVICE LEARNING ENGAGEMENTS: PERCEPTIONS OF COMMUNITY REPRESENTATIVES**

Authors: E Janse van Rensburg, T Rauch van der Merwe, MA Erasmus
Department: Occupational Therapy
Presenter: Elize Janse van Rensburg

Introduction and aim: Service learning is used as an educational approach in many undergraduate occupational therapy programmes in South Africa and the rest of the world. While the educational benefits and pitfalls of service learning have been well researched, evidence for the impact of occupational therapy service learning engagements in communities, from the perspectives of community partners, is limited. The aim of this study was to describe the perceptions of community representatives regarding occupational therapy service learning engagements at one South African university. This paper reports on one theme that emerged from the larger study, namely the perceptions of community representatives regarding the outcomes of occupational therapy service learning engagements.

Methodology: The study was positioned in a constructivist paradigm and utilised a descriptive qualitative enquiry design. In-depth interviews were conducted with eight purposively sampled community representatives. Following inductive qualitative content analysis of the transcribed interviews, the interpreted findings of the study were verfied with participants.

Findings: Eight categories emerged from the data that related to community outcomes of occupational therapy service learning engagements, namely (a) increased knowledge and skills, (b) attitudinal change leading to practice reform, (c) increased access to resources and infrastructure, (d) enhanced community connections, (e) enhanced confidence and dignity, (f) enhanced occupational participation and (g) non-realisation of partnership goals.

Conclusion: The findings of the study demonstrated that although there were some instances in which partnership goals were not realised, occupational therapy service learning engagements contributed to occupational enablement, occupational justice, health and well-being for community members.

OR-12

Title: **A FRAMEWORK TO SUPPORT THE NEWLY APPOINTED ACADEMIC IN THEIR ROLE AS HEALTH PROFESSIONS EDUCATOR**

Authors: C van Wyk; MM Nel; GJ van Zyl
Department: Health Sciences Education, Office of the Dean, Faculty of Health Sciences
Presenter: Chantel van Wyk

Introduction and aim: The newly appointed health professional educator is “bright, capable and energetic” (Jarvis 1992) thus the ideal cohort to orientate to the culture of a Faculty and to equip them with knowledge and skills to become expert educators. Careful planning of an orientation programme can prepare newly appointed health professions educators at the University of the Free State for their specific educational role in a multicultural educational environment.

Methods: Qualitative and quantitative data by means of focus group interviews and a questionnaire survey were obtained. The analysed data was used to develop an outcomes-based staff development programme, which complies with adult education principles, aimed at newly-appointed academic staff members in Health Sciences.

Results: Entering the programme colleagues commonly have no or little prior teaching experience and seem to lack knowledge of important medical education concepts. Three phases were identified (orientation, intermediate and advanced) to offer learning opportunities in several units including: teaching-learning, learning design, practical evaluated learning opportunities, networking opportunities, and concludes with a portfolio of evidence. The content and learning experiences advance through the three phases considering the busy schedule of the health sciences educator.

Conclusion: To best support the newly appointed academic in their role as professional practitioner and health sciences educator a Faculty of Health Sciences will benefit from investing in a contextually relevant, original and functional staff development programme that offers orientation, development and support.

EDUCATIONAL POSTERS / ONDERWYSKUNDIGE PLAKKATE

OPV-1

Title: **WELLNESS AMONG STUDENTS IN ALLIED HEALTH PROFESSIONS IN BLOEMFONTEIN, SOUTH AFRICA**

Authors: S van Vuuren, M Oberholzer, R Lategan-Potgieter
Departments: School for Allied Health; Optometry and Nutrition and Dietetifcs
Presenter: Santie van Vuuren

Introduction and goal: Student wellness, a growing concern in institutions of higher learning, impacts on both academic performance and general wellbeing. The aim was to investigate and describe the wellness among undergraduate students in the School for Allied Health Professions at a university in South Africa.

Method: A quantitative descriptive study among 496 undergraduate students from Occupational Therapy, Physiotherapy, Nutrition and Dietetics, and Optometry was performed. Data were collected from 427 students, using five anonymous, self-administered questionnaires.

Results: The mean age was 20.3 years (18–33 years) and female students comprised the largest proportion (89.5%). Most participants agreed that they had good social support from family (91.6%) and friends (85.2%), with the least perceived social support from a special person that is around when they were in need (79.4%). The majority of students did not experience an extremely high level of anxiety and/or depression but more than 40% experienced some feelings of anxiety and 26.4% reported getting upset easily or feeling panicky. The majority (83.0%) indicated feeling blue/down a little or some of the time. Thirty participants (7.0%) received treatment for psychological or psychiatric conditions during the three months preceding the study. Most students had a positive attitude towards work and wellbeing, with 92.0% feeling proud of their work and 88.6% finding their work meaningful and purposeful.

Conclusion: Wellness is a dynamic process which may fluctuate according to daily encounters. Although more than 60% live in private housing, they perceived social support as good, with a positive tendency towards work participation and extra-mural activities. Some still experience feelings of anxiety most of the day and depressive feeling some of the time. It is also concerning that 7.1% had already been treated for psychological of psychiatric conditions. Student wellness and support have to be re-visited in the SAHP.

OPV-2

Title: **SIMULATION AS EDUCATIONAL STRATEGY TO DELIVER INTERPROFESSIONAL EDUCATION**

Authors: R van Wyk, MJ Labuschange, G Joubert
Departments: Clinical Simulation & Skills Unit, Biostatistics
Presenter: Riaan van Wyk

Introduction and aim: To prepare healthcare students for collaborative practice, various educational methods could be utilised to deliver interprofessional education (IPE). One method is the use of simulation based health education. This study aimed to identify the current training tools used in the University of the Free State (UFS) undergraduate program to achieve IPE as well as the opinions of the module leaders on utilising simulation to address IPE.

Methods: The study is a quantitative, cross-sectional descriptive study. Structured interviews were conducted with the module leaders of the undergraduate programmes of the School for Allied Health Professions, School of Nursing and School of Medicine at the University of the Free State.

Results: Forty-seven module leaders of 66 modules were interviewed. In 43.9% there were some IPE activities of which 58.7% was coincidental. Where there is a need to address IPE, the highest response regarding foreseen disadvantages of using simulation was “no disadvantage” (21.7%). The biggest advantage (41.3%) is better role clarification amongst the different professions. Logistical issues are the most challenging aspect identified (19.6%). The use of role-play were proposed by 77.3% and 63.6% the use of standardised patients.

Conclusion: Where the use of simulation is considered for IPE, the modules leaders have a positive attitude towards its potential use and their biggest concern is the logistical challenges. To improve role clarification, a scenario must be developed to engage students from all the relevant professions. The proposed type of simulation is standardised patients in a role-play scenario. The outcomes should also be aligned with the principles of IPE.

OPV-3

Title: **THE BARE BONES: WHAT STUDENTS REALLY NEED FOR LEARNING OSTEOLOGY**

Authors: D Raubenheimer, A Nel, A Mostert
Department: Basic Medical Sciences
Presenter: Daleen Raubenheimer

Introduction and aim: Several osteology learning resources such as textbooks, atlases and digital resources are helpful, but using real bones could optimize students' learning experience. Hence, the Department of Basic Medical Sciences, University of the Free State (UFS), issues bones of a human skeleton to registered Anatomy students. However, due to increasing student numbers, there is currently a shortage of skeletons and since 2014 it has not been compulsory for students to receive bones. The purpose of this study was to explore Anatomy students' use and need for skeletons to study osteology and to suggest alternative resources.

Methodology: This observational descriptive study entailed an opinion survey regarding osteology learning resources amongst Anatomy students at the UFS in 2014. These included first year occupational- and physiotherapy students and first- and second year medical and nursing students (N=564). Questionnaires were completed voluntarily and anonymously (in Afrikaans or English) and the response rate was 75.4% (N=425). The data was captured in Microsoft Excel and results were analyzed using mainly descriptive statistics.

Results: The majority of students (89.9%) found bones useful to study osteology, regardless of whether they were issued bones or not (N=358). The bones were used for several purposes, e.g., learning names, orientation, bone markings and muscle attachments. Various other resources were also used or suggested, e.g., textbooks, atlases, the Anatomy museum and computer software. Of the different bones, the skull was used the most by the students (75%).

Conclusion: This study shows that students need real bones to learn osteology, and if they did not receive bones, they used the bones available in the department. They also have a need for 3D digital resources. The Department of Basic Medical Sciences should therefore create sufficient opportunities for students to handle real bones and also suggest supplementary resources such as suitable software programmes.

OPV-4

Title: **SPORT STACKING MOTOR INTERVENTION PROGRAMME FOR CHILDREN WITH DEVELOPMENTAL COORDINATION DISORDER**

Authors: M de Milander, J du Plessis, A du Randt
Department: Exercise and Sport Sciences
Presenter: Monique de Milander

Introduction and aim: Developmental coordination disorder (DCD) is a neuro-developmental disorder, causing marked impairment in the maturation of motor coordination. The aim of this study was to explore sport stacking as an alternative intervention approach with typically developing children and in addition to improve DCD. Sport stacking consists of participants stacking and unstacking 12 specially designed plastic cups in predetermined sequences in as little time as possible.

Methodology and results: Eighteen children (6 girls and 12 boys) classified with DCD, between the ages of 6 and 7 years, participated. A pre-test/post-test quasi-experimental design with a control group was applied. The Movement Assessment Battery for Children-2 (MABC-2) was used to assess the motor proficiency levels of the children and to classify DCD. The sport stacking intervention consisted of an 8-week programme of 3 sessions per week, 30 minutes per session. During the intervention the children learned the various sport stacking sequences, as well as how to apply them to a variety of physical activities. The results indicate that prior to the intervention no significant differences occurred between the 2 groups. After the intervention, manual dexterity ($p=0.0191$) and balance ($p=0.0472$) showed a significant difference, while aiming and catching ($p=0.0734$), showed no significant difference. The total test score revealed a significant difference ($p=0.0018$) in the overall motor proficiency levels of the experimental group.

Conclusion: Suggest that sport stacking can be used as an effective intervention programme for children with DCD.

OPV-5

Title: **CONTINUOUS PROFESSIONAL DEVELOPMENT: WHAT ARE THE NEEDS OF EMERGENCY MEDICAL CARE PRACTITIONERS?**

Authors: BP Sookram, C van Wyk
Departments: Division Health Sciences Education
Presenter: Chantel van Wyk

Introduction and aim: Health care practitioners who need to provide quality patient care in a constantly changing environment must dedicate themselves to become lifelong learners (Giri, Frankel, Tulenko, Puckett, Bailey & Ross 2012:1). Continuing professional development (CPD) activities as endorsed by the Health Professions Council of South Africa (HPCSA) aims at maintaining and developing up to date competencies in knowledge, skills and attitudes of health care practitioners. The study analysed the needs of emergency medical care practitioners in the Free State province with regard to CPD.

Methods: A quantitative study was conducted using a questionnaire. A total of 261 questionnaires were printed and the hard copies distributed equally across the emergency medical care service stations in all five districts in the Free State province. The study yielded a 94.6% response rate. Data was captured and analysed using the Evasys programme.

Results: Several barriers were identified that affect compliance with CPD regulations. Lack of communication and information were the main reasons, followed by time, transport, difficulty in getting nominated by a manager to attend CPD activities and not having adequate resources available in the workplace. Results indicated a need for the barriers to be addressed. Consideration to take CPD activities to the practitioner and to link it to a reward system in the workplace may further motivate participation.

Conclusion and recommendation: Addressing the needs of emergency medical care practitioners with regard to CPD will contribute positively to the workplace and the community at large. The first step is to ensure effective communication between role players. The second to make CPD activities more readily available.

OPV-6

Title: **PEOPLE LIVING WITH HIV AND AIDS IN LESOTHO: WHAT ARE THE RISK FACTORS?**

Authors: RS Mabathoana, C van Wyk
Departments: Division Health Sciences Education
Presenter: Chantel van Wyk

Introduction and aim: In spite of the success of management, prevention and education of HIV, there are still a number of new HIV infections occurring. Studies worldwide describe various factors related to why People Living with HIV and AIDS (PLWHA) still choose to engage in HIV risk–taking behaviours. Lesotho's prevalence rate remain the second highest at 23.2%. The study investigated factors associated with HIV risk-taking behaviours amongst PLWHA in Lesotho.

Methods: Semi-structured interviews were conducted with nine individuals who are living with HIV and AIDS in the Maseru district, in three textile and clothing factories. Factory workers are supported by group services rendered by the Apparel Lesotho Alliance to fight AIDS (ALAFA). Qualitative data were analysed and thematically categorised.

Results: The risk-taking behaviours identified in this study were consistent with those found in the literature and were broadly categorised as: (a) Socioeconomic factors included ignorance about HIV transmission, treatment access, substance abuse, poverty, transactional sex; (b) Sociocultural factors covered aspects such as lack of communication about sex issues, high rate of multiple concurrent partners, HIV non-disclosure, gender discrepancies as well as stigma and discrimination, beliefs about HIV treatment, peer pressure; and (c) Psychosocial behavioural factors comprised of stress and depression, desire to have children, fear of HIV disclosure, fear of stigma and discrimination. Results indicated that the prevalence of HIV is still of great concern despite successes achieved in the management, prevention and education of HIV.

Conclusion: By fully understanding risk-factors a foundation for further research and the development of appropriate and targeted positive prevention education programmes for PLWHA can be implemented. This study serves as a basis for further investigation in the Basotho population.

OPV-7

Title: **AN INFERENTIAL COMPARISON BETWEEN THE CAPABILITIES AND ACHIEVEMENTS OF FIRST YEAR MEDICAL AND NURSING STUDENTS AT THE UNIVERSITY OF THE FREE STATE**

Authors: AM Gerber, R Botes, A Vorster
Department: Basic Medical Sciences
Presenter: Tonie Gerber

Introduction. Research indicates that academic stressors, living circumstances, working conditions and where students undertake leisurely activities affect students' academic performance, capabilities and achievements (functionings).

Objectives. This study investigated how first-year medical and nursing students perceived their own personal capabilities, compared to their actual achievements (functionings). This article focus on the achievements (functionings) of the respondents, since these students were admitted to a tertiary institution through a selection process, indicating their capability to succeed.

Methodology. In this descriptive, comparison study, all first-year medical and nursing students at the University of the Free State were invited to complete a validated questionnaire to reflect on their capabilities (scope) and achievements (outcomes). The questionnaire incorporated seven domains: happiness, achievements, health, intellect, social, environment and integrity). Data were analysed using standard descriptive statistics (frequencies, median, mean, standard deviation and standard errors).

Results. All respondents in both the medical and nursing group valued the seven domains positively in terms of the outcomes (functionings). However, the nursing students valued the outcome domains on average 17.4% lower than the medical students. Integrity was valued the highest in both groups. Health scored the lowest in the medical group and environment (where students study, do leisurely activities, etc.) the lowest in the nursing group. Students felt that academic stressors, their living circumstances, working conditions and where they undertook leisurely activities were not ideal.

Conclusions. Medical schools should feature wellness curricula, limit the degree of physical and emotional exhaustion associated with training and have realistic expectations of students. Programmes should allocate enough time so that students can do proper time management in order to do physical activity and eat healthy. Nursing students' work environment should improve. More time should be made available for leisurely activities and improve their study environment.

OPV-8

Title: **EFFECTS OF THE INCORPORATION OF THE FREE STATE COLLEGE OF EMERGENCY CARE UNDER A HIGHER EDUCATION INSTITUTION**

Authors: EN Nell, MP Jama
Department: Health Science Education
Presenter: Eduardo Nell

Introduction and aim: The possible incorporation of the Free State College of Emergency Care (FSCoEC) under a higher education institution necessitated a study to determine the effects of the incorporation on lecturers, graduates, and current students.

Methodology: A phenomenological research design was used to explore and understand the lived experiences of the lecturers, graduates, and current students. Explorative interviews were conducted with 23 participants to collect data.

Results: According to the findings most participants had limited knowledge about the possibility and process of the incorporation of the FSCoEC under a higher education institution. Also, most lecturers were uncertain about the effect on their academic qualifications, progression, and careers. In addition, most participants were uncertain about the students' admission requirements as well as educational and professional pathways. Data analysis and data reduction was done by applying Tesch's coding method . Furthermore, the main themes that emerged was, Knowledge about the incorporation of the FSCOEC under a higher education institution, Effect of the incorporation of the FSCoEC under a higher education institution, Barriers and constraints of the incorporation of the FSCoEC under a higher education institution.

Conclusion: The insight into the experiences of lecturers, graduates and current students regarding the incorporation of the FSCoEC provides rich understanding of the full effects of the possible incorporation of the FSCoEC under a higher education institution. Hopefully this understanding and the recommendations made in this study will provide guiding principles on the incorporation process.