FACULTY OF HEALTH SCIENCES
51st RESEARCH FORUM

Thursday 29 and Friday 30 August 2019

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 calendar.

The 2019 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 51st Faculty Research Forum, it is the Faculty's vision that emerging trends in research processes will come to fulfilment.

Message from Professor GJ van Zyl
Dean Faculty of Health Sciences

Professor GJ van Zyl's message for the Faculty Research Forum 2019

A special and warm welcome to the 51st Faculty Research Forum. It is difficult to follow in the footsteps of a celebration such as we had last year. But let us be honest – each year has its own character. May this Faculty Forum produce an excellent result as in the past. Thank you to each researcher who presents this year for having invested the time and effort to participate in this prestigious research event. I want us also to honour all the administrative and support staff behind the scenes who made this event possible; the donors and sponsors and the faculty community at large. Thank you!

A cordial welcome is extended to Prof Laetitia Rispel (WITS) as the presenter of the 2019 FP Retief Lecture. We are grateful to have three highly distinguished external adjudicators attending: Prof Liesl Zuhlke (UCT), Prof Gerda Reitsma (NWU) and Dr Jacqueline Weyer (NICD). Thank you for contributing to this special event!

The annual Faculty Research Forum is one of the most notable 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, attending the paper and poster presentations, or contributing to the success of the forum in any other way. I especially request your attendance of the session that presents the student winners of 2019. Every year this is a session highlight that justly deserves the attention of all faculty members. Your attendance of this session allows our students the recognition they deserve.

My message at the opening this year will be about how we take up the challenge of today to celebrate our history. *"The two most powerful warriors are patience and time." – Leo Tolstoy.* What a challenge!

Once again we are indebted to Prof Corli Witthuhn and to the Faculty Management who both provided generous sponsorships to the Faculty Research Forum. We are also deeply indebted to the organising committee for their expertise and effort behind the scenes; more so for this bumper edition that required additional effort. Finally I would like to repeat my invitation to attend the FP Retief Lecture, as well as the presentations by our external evaluators. May the special 51 year celebrations be a most rewarding experience. Welcome to all and enjoy the forum!

Prof GJ van Zyl
DEAN

HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE
UFS·UV

EXTERNAL ADJUDICATORS

<u>CLINICAL</u> EXTERNAL ADJUDICATOR
Prof Liesl Zuhlke

Prof Liesl Zuhlke is a Paediatric Cardiologist in the Department of Paediatric Cardiology at the Red Cross Children's Hospital. Prof Zuhlke directs the Children's Heart Disease Research Unit, focusing on needs within Africa.

Prof Zuhlke has received a number of awards, including an academic excellence award from Discovery, a NIH Fogarty Fellowship and the Hamilton Naki Post-doctoral Clinical Scholarship, amongst others.

Over the past years, she was one of the organizers of the 6th World Congress of Paediatic Cardiology and Cardiac Surgery, the World Congress of Cardiology and Cardiovascular Health as well as the World Congress of Paediatric Cardiology and Cardiac Surgery.

Prof Zuhlke is NRF rated with over 100 publications including in Circulation, Lancet and European Heart Journal. She was the first woman consultant in her department and one of only two women Associate Professors of Paediatric Cardiology in the country – the only one of colour.

<u>EDUCATIONAL</u> EXTERNAL ADJUDICATOR
Prof Gerda Reitsma

Prof Gerda Marié Reitsma is currently the Director of the Centre for Health Professions Education in the Faculty of Health Sciences at the North-West University (NWU). She has a PhD in Teaching and Learning (2006), Higher Education Diploma (Cum Laude) (2002) and an MSc (1996).

She was appointed as Health Professions Education Researcher in 2014, where she focussed on promoting SoTL, faculty development and on Health Science Education in the Higher Education context. Under her leadership, the Centre for Health Professions Education was established. She is responsible for implementing the Faculty Strategic Teaching and Learning Plan through projects focussing on curriculum transformation, blended learning, graduate attributes, staff development and mentoring, work-integrated learning, inter-professional education and student development. Her outputs include a number of articles in national and international journals, conference presentations and post-graduate students. She is an active member of SAAHE, SAFRI and AfrIPEN.

<u>LABORATORY</u> EXTERNAL ADJUDICATOR
Dr Jacqueline Weyer

Dr Weyer is a Principal Medical Scientist in the Center for Emerging Zoonotic and Parasitic Diseases, National Institute for Communicable Diseases since 2007. She is tasked with the laboratory investigation (diagnostics and research) of human rabies, viral heamorrhagic fevers and arboviral disease of concern to the health of the South African public. She completed her PhD in Microbiology at the University of Pretoria at the age of 26. From 2004 to 2005 she was employed as Research Fellow with the Rabies Unit of the Centers for Disease Control and Prevention, Atlanta Georgia, United States of America. In 2006 she was awarded the L'Oreal-UNESCO, Department of Science and Technology Woman in Science Award: PhD Fellowship for Life Sciences. In 2018 she was awarded the degree Master of Public Health, *cum laude* from the Sefako Makgatho Health Sciences University in South Africa. She is actively involved in the post-graduate supervision of students and serves as an Extraordinary Lecturer at the Department of Medical Virology, University of Pretoria. In the past 10 years, Jacqueline has authored and co-authored more than 40 scientific papers in peer-reviewed journals, and seven chapters in books, and achieved a National Research Foundation C2 rating in 2017. Jacqueline also serves on several institutional, national and regional committees and working groups for rabies, one health and biosafety and biosecurity.

26th – FP RETIEF Lecture

INVITED SPEAKER

Professor Laetitia Rispel

Professor Laetitia Rispel holds a South African Department of Science and Technology/ National Research Foundation Research Chair, entitled *Research on the Health Workforce for Equity and Quality* and is Professor of Public Health at the University of the Witwatersrand. She is a former Head of the Wits School of Public Health (2012-January 2017), as well as a former Head of the Gauteng Provincial Government Department of Health (2001-2006).

Professor Rispel has extensive and wide-ranging experience of research, teaching, and health leadership in different settings, and has published extensively on different aspects of health policy and the transformation of the South African health system. She has won several national and international awards, including the South African Shoprite/Checkers/SABC2 woman of the year award in the health category (2003); International Nurse Researcher Hall of Fame of the Sigma Theta Tau Nursing Honors Society (2013); Gauteng branch of the South African Medical Association award in the allied category (2013); University vice-chancellor's academic citizenship award (2014); Academy of Science of South Africa membership award (2015); and co-chair of the South African Lancet Commission, established as part of the Lancet Global Health Commission on High-Quality Health Systems in the Sustainable Development Goals era (2017).

She is the current president of the World Federation of Public Health Associations, the first woman from Africa, and the third in the 50-year history of the organisation to achieve this honour. Professor Rispel is the Chair of the 2019 Ministerial Task Team on Human Resources for Health (HRH), established to develop the 2030 HRH Strategy and Plan, linked to the country's National Development Plan, and the National Health Insurance System.

FP RETIEF Lecture
26 YEARS OF SPEAKERS

1995 - Dr C Slabber

1996 - Prof T Bothwell
Is dietary iron overload still a problem in South Africa?

1997 - Prof DJ Ncayiyana
Meeting the Higher Education Challenges in the 21st Century.

1998 - Prof S Kallichurum
Ethics: New Challenges

1999 - Prof RC Franz
Veneuse Trombogenese – Eenhonderd jaar na Virchow. 'n Terugblik met waardering.

2000 - Prof J Terblanche
Academic advances in biliary tract surgery: A Cape Town perspective

2001 - Prof JV van der Merwe
Kwessies van Gesondheidsorg

2002 - Dr MW Makgoba
The impact of HIV/AIDS in South Africa

2003 - Prof FP Retief
Prof CJC Nel se loopbaan in die Faculteit / Prof CJ Nel's career span in the Faculty

2004 - Prof A du P Heyns
Blood Safety

2005 - Prof Benatar
Trends in Bioethics: A Review

2006 - Prof B Mayosi
Quality Assurance: the fourth pillar of academic Medicine

2007 - Prof HH Vorster
Nutrition in South Africa: from Research to Polocy

2008 - Prof MJ Viljoen
Bestuur vir Navorsing in 'n Fakulteit Gesondheidswetenskappe

2009 - Prof PN Badenhorst
Keeping the Research flame burning

2010 - Prof LR Uys
Challenges of Higher Education in South Africa

2011 - Prof EWW Sonnendecker
The Omnipotence of Vitamin K

2012 - Prof DJV Weich
Motivating and strengthening research in our Faculty of Health Sciences, UFS

2013 – Prof JD Jansen
The politics and epistemology of the healing sciences in South Africa

2014 – Prof J Volmink
Reflections on the Social Determinants of Health Research Outputs

2015 – Prof H Klopper
Global trends in health care: Implications for research, education and policy

2016 – Prof B Morrow
Bridging the gap: Integrating research and clinical care in South Africa

2017 – Prof J Pettifor
Bone mass and fractures in South African children

2018 – Prof T Pillay
New diagnostic probes for laboratory medicine using nanobodies and next generation technology

ORGANIZING COMMITTEE

Chair: Prof Stephen Brown
Vice chair: Ms Anneke van der Spoel van Dijk
Dean: Prof Gert van Zyl
Vice-Dean: Research: Prof Joyce Tsoka-Gwegweni
Faculty Admin: Ms Marlene Viljoen
Liaison Officer: Ms Sandra Gouws
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School of Pathology: Ms Anneke van der Spoel van Dijk
School of Biomedical Sciences: Dr Tonie Gerber
School for Allied Health Professions: Prof Louise van den Berg
School of Nursing: Dr Cynthia Spies
Laboratory: Prof Dominique Goedhals
Clinical: Prof Hanneke Brits
Educational: Prof Louise van den Berg
Student Forum Chair: Dr Chantelle Liebenberg

EVALUATION COMMITTEES

CLINICAL
Internal Evaluation Committee: Prof Hanneke Brits (Chair)
Dr Shaun Maasdorp
Dr Marsha Oberholzer

External adjudicator: Prof Liesl Zuhlke, University of Cape Town

Adjudicators of research articles: Prof Liesl Zuhlke – University of Cape Town
Prof Verusia Chetty – University of KwaZulu Natal
Dr Klaus von Pressentin – Mossel Bay

LABORATORY
Internal Evaluation Committee: Prof Dominique Goedhals (Chair)
Dr Willie Shaw
Ms Sandhya Sreenivasan Tantuan

External adjudicator: Dr Jacqueline Weyer – NICD

Adjudicators of research articles: Dr Jacqueline Weyer – NICD
Prof Lesley Scott – University of the Witwatersrand
Prof Kobus Slabbert – prev iTHEMBA LABS

EDUCATIONAL
Internal Evaluation Committee: Prof Louise van den Berg (Chair) /
(Secundi – Prof CM Walsh)
Dr Lizemari Hugo
Dr Chantel van Wyk (Secundi Dr M Jama)

External adjudicator: Prof Gerda Reitsma – North-West University

Adjudicators of research articles: Prof Gerda Reitsma – North-West University
Prof Lionel Green-Thompson – Sefako Magatho Health Sciences University
Dr Veena Singaram – University of KwaZulu Natal

PRIZE WINNERS OF RESEARCH ARTICLES

John van der Riet Medal Winner

R Tydeman-Edwards, FC van Rooyen & <u>CM Walsh</u>
Department of Nutrition and Dietetics, School for Allied Health Professions

Obesity, undernutrition and the double burden of malnutrition in the urban and rural southern Free State, South Africa

Heliyon 4 (2018)

Muller Potgieter Medal Winner

<u>MM Nyaga,</u> Y Tan, ML Seheri, RA Halpin, A Akopov, KM Stucker, NB Fedorova, S Shrivastava, AD Steele, JM Mwenda, BE Pickett, SR Das, MJ Mphahlele
Division of Virology, School of Pathology

Whole-genome sequencing and analyses identify high genetic heterogeneity, diversity and endemicity of rotavirus genotype P [6] strains circulating in Africa

Infection, Genetics and Evolution 63 (2018)

Kerneels Nel Medal Winner

<u>EC Janse van Vuuren</u>, K Bodenstein, M Nel
Department of Physiotherapy, School for Allied Health Professions

Stressors and coping strategies among physiotherapy students: Towards an integrated support structure

Health SA Gesondheid 23(0) (2018)

We express our sincere gratitude to the evaluation committees.

ACKNOWLEDGEMENTS

PARTICIPATING COMPANIES

We express our sincere thanks to the companies mentioned below for their financial support and valued participation in the 2019 Faculty of Health Sciences Faculty Research Forum of the University of the Free State.

DONORS
BRONZE
South African Medical Association (SAMA)
Life Rosepark Hospital
Discovery
Ascendis Medical

SILVER
None

GOLD
Free State Branch SA Heart
UFS School of Nursing

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

EXHIBITORS
- Discovery
- Elsevier
- Hillrom
- Life Rosepark Hospital
- Novagen
- Partner4Life
- South African Medical Association (SAMA)
- The Scientific Group
- SANBS
- 3F Scientific Pty Ltd
- SSEM Mthembu Medical
- Whitehead Scientific

Programme
THURSDAY, 29 AUGUST 2019

	KINE 1		
SESSION 1 **08h00-08h30**	*Chairperson: Prof Stephen Brown* **Opening Lecture**: *Prof GJ van Zyl (Dean: Faculty of Health Sciences)*		
SESSION 2 **08h35-10h05**	**KINE 1**	**KINE 2**	**KINE 3**
	Chairperson: *Prof JM Tsoka-Gwegweni* **Clinical Papers**: CR 1 to 6	*Chairperson:* *Prof CD Viljoen* **Laboratory Papers**: LR 1 to 6	*Chairperson:* *Dr D van Jaarsveldt* **Educational Papers**: ER 1 to 6
08h35-08h50	CR1 Lucky Khambule	LR1 Stalyn Mutsakanyi	ER1 Lesego Radebe
08h50-09h05	CR2 Robyn Smith	LR2 Iqra Barakzai	ER2 Anke van der Merwe
09h05-09h20	CR3 Mariette Rothman	LR3 Makgotso Maotoana	ER3 Durotolu Adeleke
09h20-09h35	CR4 Carika Fourie	LR4 Johané Cronjé	ER4 Melanie Pienaar
09h35-09h50	CR5 Johannes van Niekerk	LR5 Déte van Eeden	ER5 Lynette van der Merwe
09h50-10h05	CR6 Carina Haasbroek	LR6 Matefo Litabe	ER6 Champion Nyoni
	TEA (10h05 – 10h25)		
	KINE 1		
SESSION 3 **10h25-10h55**	*Chairperson: Prof Hanneke Brits* **Invitation Lecture**: *Prof Liesl Zuhlke* *Integrating research into clinical practice: an example from Children Heart Disease*		
SESSION 4 **11h00-13h00**	**KINE 1**	**KINE 2**	**KINE 3**
	Chairperson: *Prof JC Naicker* **Clinical Papers**: CR 7 to 14	*Chairperson:* *Ms A vd Spoel v Dijk* **Laboratory Papers**: LR 7 to 14	*Chairperson:* *Dr M Reid* **Educational Papers**: ER 7 to 9
11h00-11h15	CR7 Sanet van Zyl	LR7 Jaco Oosthuizen	ER7 Arnelle Mostert
11h15-11h30	CR8 Chantelle van der Bijl	LR8 Karl Sachse	ER8 Monique de Milander
11h30-11h45	CR9 Malekhetho Mohale	LR9 André de Kock	ER9 Tania Rauch van der Merwe
11h45-12h00	CR10 Colleen Sinclair	LR10 Micah Dimaculangan	
12h00-12h15	CR11 Sam Letsoara	LR11 Sandhya Sreenivasan Tantuan	
12h15-12h30	CR12 Corinna Walsh	LR12 Chantelle Booysen	
12h30-12h45	CR13 Thelma Hansen	LR13 Riaan Schoeman	
12h45-13h00	CR14 Thelma Hansen	LR14 Peter Mwangi	
	LUNCH (13h00-13h45)		

	KINE 1	
SESSION 5 **13h45-14h15**	Chairperson: *Prof GJ van Zyl* **FP Retief Lecture**: *Prof Laetitia Rispel* *Building Scholarship and Capacity for Universal Health Coverage*	
SESSION 6 **14h15-15h00**	Chairperson: *Dr Chantelle Liebenberg*	
14h15-14h30	Best Student Paper	School for Allied Health Professions
14h30-14h45	Best Student Paper	School of Nursing
14h45-15h00	Best Student Paper	School of Medicine
	TEA (15h00-15h20)	
SESSION 7 **15h20-16h20**	**KINE 1**	
	Chairperson: *Dr E Le Grange* **Clinical Posters**: CP 1 to 5	
15h20-15h25	CP1 Elna de Waal	
15h25-15h30	CP2 Terence Mutize	
15h30-15h35	CP3 Jovane Esterhuizen	
15h35-15h40	CP4 Susan Louw	
15h40-15h45	CP5 Lehlohonolo Makhakhe	
	Chairperson: *Dr L Haupt* **Laboratory Posters**: LP 1 to 3	
15h45-15h50	LP1 Esther Kalambi-Matengu	
15h50-15h55	LP2 Jolly Musoke	
15h55-16h00	LP3 Piet-Theron Jansen	
	Chairperson: *Prof EC Janse van Vuuren* **Educational Posters**: EP 1 to 4	
16h00-16h05	EP1 Marianne Reid	
16h05-16h10	EP2 Hanneke Brits	
16h10-16h15	EP3 Hanneke Brits	
16h15-16h20	EP4 Ute Hallbauer	

Programme
FRIDAY, 30 AUGUST 2019

	KINE 1	
SESSION 8 **08h00-08h30**	Chairperson: *Prof Corinna Walsh* **Invitation Lecture:** *Prof Gerda Reitsma* *Health Sciences and the Scholarship of Teaching and Learning - a winning partnership*	

	KINE 1	KINE 2
SESSION 9 **08h35-10h05**	Chairperson: *Prof N Mofolo* **Clinical Papers:** CR 15 - 20	Chairperson: *Dr MM Nyaga* **Laboratory Papers:** LR 15 – 20
08h35-08h50	CR15 Paulina van Zyl	LR15 Chris Viljoen
08h50-09h05	CR16 Monwabisi Nonkula	LR16 Sebotsana Rasebotsa
09h05-09h20	CR17 Thabo De-Huis	LR17 Anneke van der Spoel van Dijk
09h20-09h35	CR18 Taha Gwila	LR18 Corne Thuynsma
09h35-09h50	CR19 Cornelius van der Westhuizen	LR19 Elsmari Wium
09h50-10h05	CR20 Sthenjiswa Mhlongo	LR20 Hans van den Heever

TEA/TEE (10h05-10h25)

	KINE 1	KINE 2
SESSION 10 **10h25-11h10**		Chairperson: *Dr D van Eeden* **Laboratory Papers:** LR 21 – 23
10h25-10h40		LR21 Walter Janse van Rensburg
10h40-10h55		LR22 Monique Nel
10h55-11h10		LR23 Hané Pieters

	KINE 1	
SESSION 11 **11h15-11h45**	Chairperson: *Prof Dominique Goedhals* **Invitation Lecture:** *Dr Jacqueline Weyer* *Ebola virus disease: an update on recent outbreaks and developments towards treatment and prophylaxis*	

LUNCH (11h45-12h30)

SESSION 12 12h30 – 13h15	KINE 1	
	Chairperson: *Prof Stephen Brown* **Reflections**: External Evaluators	
12h30-12h45	Reflection Clinical External Adjudicator	Prof Liesl Zuhlke
12h45-13h00	Reflection Educational External Adjudicator	Prof Gerda Reitsma
13h00-13h15	Reflection Laboratory External Adjudicator	Dr Jacqueline Weyer
CLOSURE		
	FOYER	
16h00	**Announcement of Winners** **IMPORTANT NOTICE:** **All persons** who present papers during the Forum must assemble in the Foyer for the announcement of the winners and handing over of prizes during the prize function.	

Programme
THURSDAY, 29 AUGUST 2019

Session 2	**KINE 1**	**CR1 FACTORS INFLUENCING INFRAINGUINAL REVERSE VEIN BYPASS PATENCY AT UNIVERSITAS ACADEMIC HOSPITAL**
	08h35-08h50	Presenter: <u>Lucky Khambule</u>
		Authors: LM Khambule, A Malan
		Department: Surgery

Session 2	**KINE 1**	**CR2 NEURODEVELOPMENTAL EVALUATION AND REFERRAL PRACTICES IN CHILDREN WITH CONGENITAL HEART DISEASE IN CENTRAL SOUTH AFRICA**
	08h50-09h05	Presenter: <u>Robyn Smith</u>

Authors: R Smith[+], H Nel[+], C Marais[+], R Kraaij[+], H Le Roux[+], E Scholtz[+], R Steenekamp[+], T van Eeden[+], M van Wyk[+], C van Rooyen[*], SC Brown[#]
Departments: Department of Physiotherapy, University of the Free State[+]; Department of Biostatistics, University of Free State[*]; Department of Paediatrics and Child Health, University of Free State[#]

Session 2	**KINE 1**	**CR3 A RETROSPECTIVE REVIEW OF PATIENTS WITH STAGE 3 CERVICAL CANCER TREATED WITH RADICAL RADIOTHERAPY AT UNIVERSITAS HOSPITAL ANNEX FROM 2001 TO 2010**
	09h05-09h20	Presenter: <u>Mariette Rothman</u>
		Authors: M Rothman, H Napo
		Department: Oncology

Session 2	**KINE 1**	**CR4 OUTCOMES OF PATIENTS RECEIVING RADICAL RADIATION WITH CONCURRENT CHEMOTHERAPY FOR VULVA CANCER AT UNIVERSITAS HOSPITAL ONCOLOGY DEPARTMENT, FREE STATE, SOUTH AFRICA**
	09h20-09h35	Presenter: <u>Carika Fourie</u>
		Authors: C Fourie, A Sherriff
		Department: Oncology

Session 2	**KINE 1**	**CR5 THE EMOTIONAL IMPACT OF A DEATH ON THE THEATRE TABLE ON THE ANAESTHETIST IN SOUTH AFRICA**
	09h35-09h50	Presenter: <u>Johannes van Niekerk</u>
		Authors: JJS van Niekerk, J Lemmer-Malherbe
		Department: Department of Anaesthesiology

Session 2	**KINE 1**	**CR6 OVERWEIGHT, OBESITY AND THE PREVALENCE OF LIFESTYLE DISEASES AT THE AIR FORCE BASE BLOEMSPRUIT**
	09h50-10h05	Presenter: <u>Carina Haasbroek</u>
		Authors: C Haasbroek, R Lategan-Potgieter, M Jordaan
		Department: Department of Nutrition and Dietetics

Session 2	**KINE 2**	**LR1 CHARACTERISATION OF PHOTON MULTILEAF COLLIMATED ELECTRON BEAMS FOR ELEKTA SYNERGY USING FILM MEASUREMENTS**
	08h35-08h50	Presenter: <u>Stalyn Mutsakanyi</u>
		Authors: S Mutsakanyi
		Department: Medical Physics

Session 2	**KINE 2**	**LR2 HIV DRUG RESISTANCE IN SAMPLES FROM THE ROUTINE EARLY INFANT DIAGNOSIS PROGRAMME.**
	08h50-09h05	Presenter: <u>Iqra Barakzai</u>
		Authors: I Barakzai, PA Bester, J Frater, D Goedhals
		Department: Division of Virology, Faculty of Health Sciences, University of the Free State/NHLS; Nuffield Department of Clinical Medicine, University of Oxford

Session 2	KINE 2	**LR3 CHARACTERIZATION OF T CELL RESPONSES TO THE NON-STRUCTURAL PROTEINS OF THE M-SEGMENT IN SURVIVORS OF CRIMEAN- CONGO HAEMORRHAGIC FEVER**
	09h05-09h20	Presenter: <u>MG Maotoana</u>

Authors: MG Maotoana[+], WJ Janse van Rensburg[*], LW Murray[#], FJ Burt[+,++],D Goedhals[+,++]

Departments: Division of Virology, UFS[+] Human Molecular Biology Unit, Department of Haematology and Cell Biology, UFS[*] Department of Internal Medicine, University of the Witwatersrand[#] Division of Virology, National Health Laboratory Service[++]

Session 2	KINE 2	**LR4 IMPLEMENTATION AND VERIFICATION OF A MULTIPLEX PCR ASSAY TO DETECT FLT3-ITD AND NPM1 MUTATIONS IN ACUTE MYELOID LEUKAEMIA PATIENTS**
	09h20-09h35	Presenter: <u>Johané Cronjé</u>

Authors: J Cronjé, A De Kock, J Kloppers

Departments: Department of Haematology and Cell Biology, School of Pathology, Faculty of Health Sciences, UFS / Tissue Typing Laboratory, Haematology and Cell Biology, Universitas Academic Complex, National Health Laboratory Services, Bloemfontein

Session 2	KINE 2	**LR5 IMPROVED BREAST CT IMAGES THROUGH INCORPORATION OF A VIRTUAL BOWTIE FILTER**
	09h35-09h50	Presenter: <u>Déte van Eeden</u>

Authors: D van Eeden, FCP du Plessis

Department: Medical Physics, High Performance Computing Unit

Session 2	KINE 2	**LR6 IN VITRO IMMUNE RESPONSES TO SINDBIS VIRUS**
	09h50-10h05	Presenter: <u>Matefo Litabe</u>

Authors: M M Litabe, F J Burt

Department: Division of Virology, NHLS and UFS

Session 2	KINE 3	**ER1 THE USE OF TRADITIONAL FOLK MEDIA TO CONVEY DIABETES MESSAGES TO PATIENTS IN A SOUTH AFRICAN CONTEXT**
	08h35-08h50	Presenter: <u>Lesego Radebe</u>

Authors: Lesego Radebe, D Krige, M Reid, R Nel

Department: Communication Science, Nursing, Biostatistics

Session 2	KINE 3	**ER2 A FRAMEWORK FOR THE INTEGRATION OF SIMULATION IN THE SOUTH AFRICAN UNDERGRADUATE PHYSIOTHERAPY PROGRAMME:A NARRATIVE SYSTEMATIC REVIEW**
	08h50-09h05	Presenter: <u>Anke van der Merwe</u>

Authors: A van der Merwe, RY Barnes, MJ Labuschagne

Department: Department of Physiotherapy; Support School of Medicine

Session 2	KINE 3	**ER3 THE PREVALENCE OF BURNOUT AMONG ANAESTHESIOLOGY REGISTRARS IN THE UNIVERSITY OF THE FREE STATE**
	09h05-09h20	Presenter: <u>Durotolu Adeleke</u>

Authors: DM Adeleke, G Lamacraft

Department: Anaesthesiology

Session 2	KINE 3	**ER4 A FACE-TO-FACE PEER SUPPORT MODEL FOR ADULTS WITH TYPE 2 DIABETES: A SYSTEMATIC REVIEW**
	09h20-09h35	Presenter: <u>Melanie Pienaar</u>

Authors: M Pienaar, M Reid

Department: School of Nursing

Session 2   **KINE 3**   **ER5 COPING IN HEALTHCARE PROFESSIONS STUDENTS AND STAFF AT THE UFS**
09h35-09h50   Presenter: <u>Lynette van der Merwe</u>
Authors: LJ van der Merwe, A Botha, G Joubert
Department: Undergraduate Medical Programme Management, School of Clinical Medicine, Biostatistics, School of Biomedical Sciences

Session 2   **KINE 3**   **ER6 A FRAMEWORK TO IMPLEMENT AND SUSTAIN A CURRICULAR INNOVATION IN A HIGHER EDUCATION MIDWIFERY PROGRAMME**
09h50-10h05   Presenter: <u>Champion Nyoni</u>
Authors: C Nyoni, Y Botma
Department: School of Nursing

Session 4   **KINE 1**   **CR7 MULTIPLE RISK FACTORS AND INFLAMMATORY MARKERS FOR CHRONIC DISEASES OF LIFESTYLE IN URBAN AND RURAL COMMUNITIES IN THE FREE STATE**
11h00-11h15   Presenter: <u>Sanet van Zyl</u>
Authors: S van Zyl, C M Walsh, FC van Rooyen, G Joubert
Department: Basic Medical Sciences, Nutrition and Dietetics, Biostatistics

Session 4   **KINE 1**   **CR8 DOCTOR MOTHERS: INFANT FEEDING INTENTIONS AND BEHAVIOURS**
11h15-11h30   Presenter: <u>Chantelle van der Bijl</u>
Authors: CC van der Bijl, WJS Steinberg, TK Kellerman, C van Rooyen
Department: Family Medicine, Biostatistics

Session 4   **KINE 1**   **CR9 THE PROFILE OF PATIENTS TREATED FOR TTP IN THE WESTERN CAPE:2010 TO 2017**
11h30-11h45   Presenter: <u>Malekhetho Mohale</u>
Authors: M Mohale[+], W Janse van Rensburg*, C Hilton[#], N Mundey[#], C van Rooyen[++], C Barrett[+]
Department: Department of Internal Medicine[+], University of the Free State. Human Molecular Biology Unit, University of the Free State*. Western Cape Blood Service[#]. Department of Biostatistics, University of the Free State[++]

Session 4   **KINE 1**   **CR10 PHYSICAL AND PHYSIOLOGICAL PROFILE OF U18, U19, U21 AND SENIOR ELITE NETBALL PLAYERS**
11h45-12h00   Presenter: <u>Colleen Sinclair</u>
Authors: CJ Sinclair, FF Coetzee, R Schall
Department: Department of Exercise and Sport Sciences; Department of Mathematical Statistics and Actuarial Science

Session 4   **KINE 1**   **CR11 PATIENT AND TUMOUR FACTORS AFFECTING THE HISTOLOGY OF SENTINEL LYMPH NODE BIOPSY IN BREAST CANCER PATIENTS AT UNIVERSITAS HOSPITAL, BLOEMFONTIEN**
12h00-12h15   Presenter: <u>Sam Letsoara</u>
Authors: RS Letsoara, NE Pearce
Department: General Surgery

Session 4   **KINE 1**   **CR12 THE IMPACT OF A FERMENTED MILK AND PHYSICAL ACTIVITY INTERVENTION ON INDICATORS OF FRAILTY AND MALNUTRITION IN THE ELDERLY IN LESOTHO**
12h15-12h30   Presenter: <u>Corinna May Walsh</u>
Authors: R Kokui D Turkson[+], JO Ngounda[+], M Nel*, C M Walsh[+]
Department: Corinna May Walsh

Session 4	**KINE 1**	**CR13 BREAKFAST AND LUNCHBOXES FOR FOUNDATION PHASE LEARNERS: DO KNOWLEDGE AND INTENT REFLECT IN PRACTICES OF CAREGIVERS?**
	12h30-12h45	Presenter: <u>Thelma Hansen</u> **Authors**: T Hansen, E du Toit, R Lategan-Potgieter, C van Rooyen **Department**: Department of Nutrition and Dietetics, University of the Free State, Bloemfontein, South Africa
Session 4	**KINE 1**	**CR14 DO ATTITUDES OF CAREGIVERS TOWARDS HEALTHY EATING REFLECT IN PROVIDING HEALTHY BREAKFAST AND LUNCHBOXES TO CHILDREN?**
	12h45-13h00	Presenter: <u>Thelma Hansen</u> **Authors**: T Hansen, E du Toit, R Lategan-Potgieter, C van Rooyen **Department**: Department of Nutrition and Dietetics, University of the Free State, Bloemfontein, South Africa
Session 4	**KINE 2**	**LR7 LIKELIHOOD OF BRCA2 P3293L TO CAUSE DISEASE**
	11h00-11h15	Presenter: <u>Jaco Oosthuizen</u> **Authors**: J Oosthuizen, K Ntaita, D Notani, P Kgoare, NC van der Merwe, M Theron **Department**: Division of Human Genetics, UFS & NHLS, Bloemfontein
Session 4	**KINE 2**	**LR8 A NOVEL ELECTRON BEAM CHARACTERIZATION MODEL FOR TOTAL SKIN IRRADIATION**
	11h15-11h30	Presenter: <u>Karl Sachse</u> **Authors**: K Sachse, LJ Strauss, W Shaw **Department**: Medical Physics
Session 4	**KINE 2**	**LR9 THE IMPACT OF MOTHERLESS TESTING ON THE OUTCOME OF PATERNITY RESULTS**
	11h30-11h45	Presenter: <u>André De Kock</u> **Authors**: A De Kock, JF Kloppers **Department**: Department of Haematology and Cell Biology
Session 4	**KINE 2**	**LR10 SIMPLE METHOD TO PREPARE A POSITIVE CONTROL FOR DIFFERENTIATING A TRUE POSITIVE FROM A LABORATORY CONTAMINATION**
	11h45-12h00	Presenter: <u>Micah Dimaculangan</u> **Authors**: M Dimaculangan, SC Wiid, PA Bester, TR Sekee, FJ Burt **Department**: Division of Virology, Faculty of the Health Sciences, UFS and NHLS
Session 4	**KINE 2**	**LR11 A PILOT STUDY INVESTIGATING THE INCIDENCE OF MISLABELLING IN PROCESSED MEAT PRODUCTS SOLD IN SOUTH AFRICA**
	12h00-12h15	Presenter: <u>S Sreenivasan Tantuan</u> **Authors**: S Sreenivasan Tantuan, C Booysen, CD Viljoen **Department**: Human Molecular Biology Unit, School of Biomedical Sciences
Session 4	**KINE 2**	**LR12 DNA EXTRACTION FROM ULTRA-PROCESSED FOOD PRODUCTS: #ULTRADIFFICULT**
	12h15-12h30	Presenter: <u>Chantelle Booysen</u> **Authors**: C Booysen, S Sreenivasan Tantuan, CD Viljoen **Department**: Human Molecular Biology Unit
Session 4	**KINE 2**	**LR13 COMPARISON OF MATCH-RELATED PERFORMANCE INDICATORS BETWEEN MAJOR PROFESSIONAL RUGBY COMPETITIONS.**
	12h30-12h45	Presenter: <u>Riaan Schoeman</u> **Authors**: R Schoeman, R Schall **Department**: Exercise and Sport Sciences

| Session 4 | KINE 2 | **LR14 WHOLE GENOME CHARACTERIZATION OF ZAMBIAN ROTAVIRUS STRAINS REVEALS REMARKABLE CHANGES POST-ROTAVIRUS VACCINE INTRODUCTION** |
| | 12h45-13h00 | Presenter: <u>Peter Mwangi</u> |

Authors: P Mwangi, MT Mogotsi, SP Rasebotsa, S Sabiu, J Simwaka, M Monze, EM Mpabalwani, B Matapo, NB Magagula, K Rakau, ML Seheri, MJ Mphalele, JM Mwenda, MM Nyaga
Department: University of the Free State-Next Generation Sequencing Unit (UFS-NGS),Division of Virology

| Session 4 | KINE 3 | **ER7 THE QUALITY OF LIFE OF UNIVERSITY OF THE FREE STATE HEALTH SCIENCES STUDENTS** |
| | 11h00-11h15 | Presenter: <u>Arnelle Mostert</u> |

Authors: A Mostert, MP Jama, G Joubert, LJ van der Merwe
Department: Department of Basic Medical Sciences, Faculty of Health Sciences, University of the Free State, Bloemfontein, Free State, South Africa

| Session 4 | KINE 3 | **ER8 THE PREVALENCE OF DEVELOPMENTAL COORDINATION DISORDER AMONGST GRADE ONE LEARNER'S IN LOW SOCIO-ECONOMIC ENVIRONMENTS IN MANGAUNG** |
| | 11h15-11h30 | Presenter: <u>Monique de Milander</u> |

Authors: M de Milander, AM du Plessiss, FF Coetzee
Department: Exercise and Sport Sciences

| Session 4 | KINE 3 | **ER9 EXCAVATING THE BONES OF THE PAST: FOUCAULDIAN DISCOURSE ANALYSIS AS METHODOLOGY TOWARD DECOLONIZATION OF CURRICULA** |
| | 11h30-11h45 | Presenter: <u>Tania Rauch van der Merwe</u> |

Authors: Tania Rauch van der Merwe
Department: Occupational Therapy

| Session 7 | KINE 1 | **CP1 FUNDAMENTAL MOVEMENT SKILLS AND ACADEMIC PERFORMANCE OF 5-TO 6-YEAR-OLD PRE-SCHOOLERS** |
| | 15h20-15h25 | Presenter: <u>Elna de Waal</u> |

Authors: E de Waal
Department: Department of Exercise and Sport Sciences, School of Allied Health Professions, Faculty of Health Sciences, University of the Free State

| Session 7 | KINE 1 | **CP2 CLINICAL FEATURES OF HEREDITARY HAEMORRHAGIC TELANGIECTASIA (HHT) PATIENTS IN CENTRAL SOUTH AFRICA, A PRELIMINARY REPORT** |
| | 15h25-15h30 | Presenter: <u>Terence Mutize</u> |

Authors: TT Mutize[+], MJ Coetzee[+], RY Seedat[*], SC Brown[#], F Gebremariam[++], HJ Mager[**], HK Ploos van Amstel[**]
Department: Haematology and Cell Biology UFS[+], Otorhinolaryngology UFS[*], Paediatric Cardiology UFS[#], Clinical Imaging Sciences[++], Dutch Centre of Excellence for HHT, St Antonius Ziekenhuis, Utrecht[**]

| Session 7 | KINE 1 | **CP3 A PROSPECTIVE STUDY OF AN ALGORITHM USING PHENYLEPHRINE INFUSED THROUGH A NON-ELECTRONIC DEVICE, FOR PREVENTION AND TREATMENT OF HYPOTENSION FOLLOWING SPINAL ANAESTHESIA FOR CAESAREAN SECTION IN A SOUTH AFRICAN TEACHING HOSPITAL** |
| | 15h30-15h35 | Presenter: <u>Jovane Esterhuizen</u> |

Authors: JL Esterhuizen, G Lamacraft
Department: Anaesthesiology

| Session 7 | KINE 1 | **CP4 THE CLINICAL IMPACT OF THE COMMON AFRIKANER BRCA2 8162delG FOUNDER VARIANT** |
| | 15h35-15h40 | Presenter: <u>Susan Louw</u> |

Authors: S Louw, M Conradie, BD Henderson, NC van der Merwe
Department: Department of Human Genetics and Clinical Genetics

Session 7   KINE 1   CP5 CRYOTHERAPY FOR PEDUNCULATED KELOIDS
15h40-15h45   Presenter: <u>Lehlohonolo Makhakhe</u>
Authors: L Makhakhe, N Dlova, A Mosam, F Maruma
Department: Dermatology, UFS; Nelson R Mandela School of Medicine, University of Kwazulu Natal

Session 7   KINE 1   LP1 VALIDATION OF THE CEREBROSPINAL FLUID (CSF) MODULE OF THE SIEMENS ADVIA® 2120I FOR AUTOMATED CELL COUNTS OF CEREBROSPINAL FLUID
15h45-15h50   Presenter: <u>Esther Kalambi-Matengu</u>
Authors: E Kalambi-Matengu, L Haupt, Y Coovadia
Department: Department of Haematology and Cell Biology & Department of Microbiology

Session 7   KINE 1   LP2 THE PREVALENCE AND BACTERIAL DISTRIBUTION OF PERITONITIS AMONG ADULTS UNDERGOING CONTINUOUS AMBULATORY PERITONEAL DIALYSIS AT UNIVERSITAS HOSPITAL
15h50-15h55   Presenter: <u>Jolly Musoke</u>
Authors: A Natverlal[+], I Moola[+], U Kajee[+], Y Moola[+], A Parlato[+], A Bailey[+], J Arendse[*], F Bisiwe[#], J Musoke[*]
Department: Faculty of Health Sciences, University of the Free State[+] Department of Medical Microbiology, Universitas National Health Laboratory Services[*] Division of Nephrology, Universitas Academic Hospital[#]

Session 7   KINE 1   LP3 WHO'S WHO? AN ERROR OF IDENTITY
15h55-16h00   Presenter: <u>Piet-Theron Jansen</u>
Authors: PT Jansen, TJ Naicker
Department: Chemical Pathology

Session 7   KINE 1   EP1 VALIDITY AND RELIABILITY TESTING OF THE SESOTHO HEALTH LITERACY TEST (SHLT)
16h00-16h05   Presenter: <u>Marianne Reid</u>
Authors: M Reid, M Nel
Department: School of Nursing; Department of Biostatistics

Session 7   KINE 1   EP2 STUDENTS' VOICE: STUDENTS FAILING ASSESSMENTS OR ASSESSMENT FAILING STUDENTS?
16h05-16h10   Presenter: <u>Hanneke Brits</u>
Authors: H Brits, G Joubert, LJ vd Merwe, J Bezuidenhout
Department: Family Medicine

Session 7   KINE 1   EP3 COMMUNICATION IN CPC BEYOND GENERATION, CULTURAL AND LANGUAGE BARRIERS: A CASE SERIES OF DRAWINGS
16h10-16h15   Presenter: <u>H Brits</u>
Authors: H Brits
Department: Family Medicine

Session 7   KINE 1   EP4 EVALUATION OF COMMUNITY-BASED EDUCATION FOR DIETETIC STUDENTS ATTENDING AND ASSISTING AT A CAMP FOR CHILDREN WITH DIABETES
16h15-16h20   Presenter: <u>Ute Hallbauer</u>
Authors: UM Hallbauer, R Lategan-Potgieter, G Joubert
Department: Paediatrics & Child Health, Nutrition and Dietetics, Biostatistics

Session 9	KINE 1	**CR15 SINGLE NUCLEOTIDE POLYMORPHISMS IN FOUR SELECTED GENES AND EARLY OUTCOMES OF ALCOHOL DETOXIFICATION AND REHABILITATION.**
	08h35-08h50	Presenter: <u>Paulina van Zyl</u>
		Authors: PM van Zyl, G Marx, G Joubert
		Department: Department of Pharmacology, UFS, Department of Genetics, UFS, Department of Biostatistics, UFS

Session 9	KINE 1	**CR16 PREVALENCE OF DRY EYE DISEASE AMONG PATIENTS AT THE EYE CLINIC IN NELSON MANDELA ACADEMIC HOSPITAL**
	08h50-09h05	Presenter: <u>Monwabisi Nonkula</u>
		Authors: DM Nonkula, TA Rasengane, Dr Adamjee
		Department: Optometry, Optometry, Ophthalmology

Session 9	KINE 1	**CR17 THE IMPACT OF RACE AND GENDER ON CLINICAL OUTCOMES IN PATIENTS UNDERGOING CORONARY ARTERY BYPASS GRAFT SURGERY**
	09h05-09h20	Presenter: <u>Thabo De-Huis</u>
		Authors: TJ De-Huis, JC Diedericks, FE Smit, L Botes
		Department: Cardiothoracic surgery

Session 9	KINE 1	**CR18 INFECTIVE ENDOCARDITIS IN CENTRAL SOUTH AFRICA IN THE HIV ERA – A SURGICAL PERSPECTIVE**
	09h20-09h35	Presenter: <u>Taha Gwila</u>
		Authors: T Gwila, FE Smit, M Jansen van Vuuren, M Hanekom, L Botes, C A Mestres
		Department: Cardiothoracic surgery

Session 9	KINE 1	**CR19 STANDARDISATION OF 16S RRNA GENE SEQUENCING ASSAY FOR THE IDENTIFICATION OF BORDETELLA PERTUSSIS AND VALIDATION USING SAMPLES OF A SURVEILLANCE STUDY IN PAEDIATRIC CASES IN BLOEMFONTEIN**
	09h35-09h50	Presenter: <u>Cornelius van der Westhuizen</u>
		Authors: C van der Westhuizen, A van der Spoel van Dijk, M Nyaga, U Hallbauer, J Musoke
		Department: Medical Microbiology

Session 9	KINE 1	**CR20 LOCO-REGIONAL CONTROL WITH HYPO FRACTIONATED SPLIT COURSE RADIOTHERAPY IN PATIENTS WITH LOCAL ADVANCED SQUAMOUS CELL CARCINOMAS OF THE HEAD AND NECK, TREATED AT UNIVERSITAS ACADEMIC HOSPITAL, BLOEMFONTEIN**
	09h50-10h05	Presenter: <u>Sthenjiswa Mhlongo</u>
		Authors: S Mhlongo
		Department: Oncology

Session 9	KINE 2	**LR15 PREDICTIVE VALUE OF DNA CONCENTRATIONS DETERMINED USING SPECTROPHOTOMETRY COMPARED TO FLUOROMETRY FOR APPLICATIONS IN MOLECULAR BIOLOGY**
	08h35-08h50	Presenter: <u>Chris Viljoen</u>
		Authors: CD Viljoen, C Booysen, S Sreenivasan Tantuan
		Department: Human Molecular Biology Unit

Session 9	**KINE 2**	**LR16 WHOLE GENOME ANALYSES OF ROTAVIRUS G1P[8] STRAINS CIRCULATING PRE- AND POST ROTATEQ™ VACCINE INTRODUCTION IN RWANDA**
	08h50-09h05	Presenter: <u>Sebotsana Rasebotsa</u> **Authors**: S Rasebotsa, PN Mwangi, MT Mogotsi, S Sabiu, LP Mosime, NB Magagula, K Rakau, J Uwimana, L Mutesa, N Muganga, D Murenzi, L Tuyisenge, MJ Mphahlele, LM Seheri, JM Mwenda, MM Nyaga **Department**: Next Generation Sequencing Unit, Division of Virology

Session 9	**KINE 2**	**LR17 MULTI-DRUG RESISTANT PROFILES AND CARBAPENEMASE DETERMINANTS OF ACINETOBACTER BAUMANNII ISOLATES FROM THE UNIVERSITAS ACADEMIC HOSPITAL, FREE STATE**
	09h05-09h20	Presenter: <u>Anneke van der Spoel van Dijk</u> **Authors**: A Pather*, Y Coovadia[+], A Van Der Spoel Van Dijk[+] **Department**: Universitas Academic Laboratory, National Health Laboratory Service[+], Department of Medical Microbiology, UFS*

Session 9	**KINE 2**	**LR18 MYCOBACTERIUM TUBERCULOSIS IN CHILDREN (0-9 YEARS) IN THE FREE STATE PROVINCE OF SOUTH AFRICA: JUNE 2016 – JULY 2018**
	09h20-09h35	Presenter: <u>Corne Thuynsma</u> **Authors**: C Thuynsma[+], Y Coovadia*, A Van der Spoel van Dijk* **Department**: Department of Medical Microbiology, Faculty of Health Sciences, UFS[+] Universitas Academic Laboratory, National Health Laboratory Service, Department of Medical Microbiology, UFS*

Session 9	**KINE 2**	**LR19 DESIGN, MANUFACTURE AND INVESTIGATION OF A PROTOTYPE RIGID TRILEAFLET HEART VALVE**
	09h35-09h50	Presenter: <u>Elsmari Wium</u> **Authors**: Elsmari Wium **Department**: Cardiothoracic Surgery

Session 9	**KINE 2**	**LR20 TISSUE ENGINEERING OF BOVINE PERICARDIAL TISSUE IN THE CIRCULATORY SYSTEM OF A YOUNG OVINE MODEL: COMMERCIAL VERSUS IN-HOUSE DECELLULARIZATION**
	09h50-10h05	Presenter: <u>Hans van den Heever</u> **Authors**: Botes L[+], JJ van den Heever*, L Laker*, PM Dohmen*[#], D Bester*, FE Smit* **Department**: Department of Health Sciences, CUT[+]; Department of Cardiothoracic Surgery, UFS*; Department of Cardiovascular Surgery, Rostock University, Germany[#]

Session 10	**KINE 2**	**LR21 MOLECULAR SUITABILITY OF THE CHACMA BABOON MODEL OF ACQUIRED THROMBOTIC THROMBOCYTOPENIC PURPURA WHEN EVALUATING ANTI-VWF AGENTS**
	10h25-10h40	Presenter: <u>Walter Janse van Rensburg</u> **Authors**: Walter Janse van Rensburg **Department**: Human Molecular Biology Unit

Session 10	**KINE 2**	**LR22 DOSE AND IMAGE OPTIMIZATION IN CT FOR ADULT PATIENTS**
	10h40-10h55	Presenter: <u>Monique Nel</u> **Authors**: M Nel **Department**: Medical Physics

Session 10	**KINE 2**	**LR23 DOSE- AND IMAGE OPTIMIZATION IN COMPUTED TOMOGRAPHY CHEST EXAMINATIONS FOR ADULT PATIENTS USING THE TAGUCHI ANALYSIS**
	10h55-11h10	Presenter: <u>Hané Pieters</u> **Authors**: H Pieters **Department**: Medical Physics

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 5 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 on the landing at the Kines, 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 Stephen Brown
Chairperson: Organising Committee

CLINICAL PAPERS

CR -1

Title: **FACTORS INFLUENCING INFRAINGUINAL REVERSE VEIN BYPASS PATENCY AT UNIVERSITAS ACADEMIC HOSPITAL**
Authors: LM Khambule, A Malan
Departments: Surgery
Presenter: Lucky Khambule

Introduction and Aim: Peripheral arterial disease is a global healthcare problem with some patients requiring bypass surgery for critical limb ischaemia. Several factors affect patency of a bypass procedure, but the literature in our patient population is lacking.
Methods: This was a retrospective review of infrainguinal reverse vein bypasses performed at Universitas Academic Hospital between January 2012 and December 2016. 219 patients were included (227 procedures). Factors affecting graft patency were assessed in 132 patients (86 [37.89%] lost to follow-up, 2 [0.88%] demised).
Results: Of the total of 219 patients included in the study, 163 (74.43%) were males and 56 (25.57%) were females. The median age was 61years. 170 (77.63%) patients had hypertension while only 72 (32.88%) had diabetes mellitus and 24(10.96%) had renal impairment. In the majority the proximal anastomosis were performed from the common femoral artery (n=105, 47.95%) and the distal anastomosis to the tibialis posterior artery 61 (27.85%). Most patients (n=41, 29.71%) had a single vessel runoff. All 219 (100%) patients had rest pain, while the majority (182 (83.11%) had some evidence of tissue loss. The median diameter of greater saphenous vein (GSV) utilised was 2.7mm. 36 (25.90%) patients had graft patency for <30 days, 31(22.30%) for 1-6months, 8 (5.76%) for 6-12months and 64(46.04%) for >12 months. Age, race, hypertension, diabetes, the presence of tissue loss, level of the proximal and distal anastomoses and number of runoff vessels had no significant effect on graft patency. Male gender, smoking and GSV diameter on the other hand, had a significant effect on graft patency.
Conclusions: In contrast to known literature, male gender is associated with improved graft patency (p-value 0.027). Unexpectedly, patients who smoke have a statistically significant increase in graft patency (p-value 0.0335). As evident from previous literature an increased GSV diameter had a statistically significant effect on graft patency. (p-value 0.0053).

CR -2
Title: **NEURODEVELOPMENTAL EVALUATION AND REFERRAL PRACTICES IN CHILDREN WITH CONGENITAL HEART DISEASE IN CENTRAL SOUTH AFRICA**
Authors: R Smith[+], H Nel[+], C Marais[+], R Kraaij[+], H Le Roux[+], E Scholtz[+], R Steenekamp[+], T van Eeden[+], M van Wyk[+], C van Rooyen[*], SC Brown[#]
Departments: Department of Physiotherapy, University of the Free State[+]; Department of Biostatistics, University of Free State[*]; Department of Paediatrics and Child Health, University of Free State[#]
Presenter: Robyn Smith

Introduction: Children with congenital heart disease are at higher risk for developmental delays than the general population. The American Heart Association published a guideline in 2012 to address these concerns. This study determined the neurodevelopmental evaluation and referral practices of practitioners in central South Africa, and practitioners' awareness of the 2012 American Heart Association guideline.
Methodology: An online survey was administered to practitioners (n=45) including paediatric cardiologists (n=4), cardiothoracic surgeons (n=4) and general paediatricians (n=37). Information on practitioner characteristics, awareness of the 2012 American Heart Association guideline; and neurodevelopmental evaluation and referral practices was collected. The survey was open for six weeks and e-mail reminders were sent out to non-respondents.
Results: Twenty-one practitioners responded, including paediatric cardiologists (n=4), cardiothoracic surgeons (n=2) and paediatricians (n=15). Data for 20 practitioners was included. Despite most practitioners (n=18) indicating guidelines for the management of development were important, the majority (n=16; 80%) were unaware of the 2012 American Heart Association guideline. Most practitioners performed developmental surveillance (n=15; 75%) and referred children for developmental screening (n=13; 65%). A single (5%) practitioner made use of web-based applications for developmental screening. Most practitioners (n=18; 90%) failed to risk stratify children to identify those to be evaluated. Children with developmental difficulties were referred to allied health services (n=15; 75%) and medical specialists (n=11; 55%) for formal developmental evaluation. Four practitioners (20%) referred children to an interdisciplinary clinic for developmental evaluation. Only eight practitioners' (40%) referrals were based on abnormal developmental screening test results. Children with developmental delays were referred to occupational therapy (100%), physiotherapy (75%) and speech therapy (70%).
Conclusion: Most practitioners are unaware of the 2012 American Heart Association guideline. Awareness of the developmental risks associated with congenital heart disease and implementation of the guideline could promote early identification of developmental delays with referral to intervention therapies.

CR -3

Title: **A RETROSPECTIVE REVIEW OF PATIENTS WITH STAGE 3 CERVICAL CANCER TREATED WITH RADICAL RADIOTHERAPY AT UNIVERSITAS HOSPITAL ANNEX FROM 2001 TO 2010**.

Authors: M Rothman, H Napo
Departments: Oncology
Presenter: Mariette Rothman

Background: Cervix cancer is one of the most common cancers amongst females in South Africa. The majority of our patients present with locally advanced disease. Concurrent chemoradiation remains the standard of care for these patients.

Aim: To determine the disease-free survival and the overall survival in patients with stage 3 cervical cancer treated with concurrent chemoradiation.

Method: A retrospective analytical cohort study was conducted. We reviewed the files of 393 patients with stage 3 cervix cancer who was treated at the Universitas Hospital Annex between 2001 and 2010. Data collected included total dose of external beam radiation and brachytherapy, the total number of concurrent chemotherapy cycles, the performance status, the HIV status and CD4 counts.

Results: The 5-year survival was 86,4% and the 5-year disease free survival was 66,3%. The total radiation dose (EQD2) did not make a significant difference to the overall survival (p=0.48; HR 0.98) or the disease-free survival (p=0.19; HR 0.98). Concurrent chemotherapy did not affect the overall survival (p=0.99) but did have a significant impact on the disease-free survival (p=0.03). The number of chemo cycles also impacted the disease-free survival (p=0.03; HR 0.73).

Conclusion: Whether the patients received chemotherapy and the number of chemotherapy cycles had a statistically significant impact on the disease-free survival but not on the overall survival. The total dose of radiotherapy (EQD2) did not have a significant impact on either disease-free or overall survival.

CR -4

Title: **OUTCOMES OF PATIENTS RECEIVING RADICAL RADIATION WITH CONCURRENT CHEMOTHERAPY FOR VULVA CANCER AT UNIVERSITAS HOSPITAL ONCOLOGY DEPARTMENT, FREE STATE, SOUTH AFRICA**

Authors: C Fourie, A Sherriff
Departments: Oncology
Presenter: Carika Fourie

Introduction and aim:
Although cancer of the vulva is rare in the developed world, incidence is increasing worldwide. In South Africa, increased incidence is accompanied by a decrease in age at diagnosis. Whereas patients in developed countries are often operable and undergo surgery, limited resources and the extent of presenting disease in our setting lead to an approach aiming for cure with primary radiotherapy and concurrent chemotherapy. Even when curable, the morbidity and mortality in these patients are high. This study aimed to measure survival outcomes in this group of patients.

Methods: This is a retrospective, descriptive cohort study of vulva carcinoma patients receiving radical treatment from 2006 to 2010. We collected demographic, treatment and follow-up data, and date of death where available.

Results: A total of 55 patients presented in the trial period, of which 30 met the inclusion criteria. The study population had a mean age 50 years, and 52% were HIV positive, of which 17% on HAART. Of these participants, most had a CD4 count above 400. Most patients had stage 3, moderately differentiated disease. The mean radiation dose received was 66.3 Gy, and most patients completed concurrent chemotherapy. Adequate follow up data was only available for 7 participants, and date of death only for four. Survival parameters could thus not be calculated.

Conclusion: Compared to departmental numbers from 2016 and 2017, the size of our cohort was small, which gives the impression that the incidence is increasing. We concluded that our population is not comparable to international populations, which prompts interest in finding individualized treatment. However, more studies are needed to investigate survival of these patients receiving definitive chemoradiation.

CR -5

Title: **THE EMOTIONAL IMPACT OF A DEATH ON THE THEATRE TABLE ON THE ANAESTHETIST IN SOUTH AFRICA**

Authors: JJS van Niekerk, J Lemmer-Malherbe
Departments: Department of Anaesthesiology
Presenter: Johannes van Niekerk

Introduction: Perioperative deaths in developing countries are a common occurrence, thus an anaesthetist in South Africa is likely to experience at least one death on the table during his career. It affects the anaesthetist emotionally and can lead to a variety of disorders like anxiety, depression, substance abuse and most commonly post-traumatic stress disorder (PTSD). Certain interventions, like debriefings, have been proposed in order to mitigate the impact of a death on the table, but are not done regularly. The aim of this study was to determine the emotional impact that a death on the theatre table has on anaesthetists. We determined whether the anaesthetist was debriefed, had time off after the death and measured the prevalence of subsequent PTSD.

Methods: The study followed a quantitative observational, cross-sectional design with convenient sampling using an online questionnaire. The impact of Events Scale-Revised was used to measure the likelihood of PTSD. The study population was anaesthetists (consultants and registrars) registered with SASA who has experienced a death on the table.

Results: The analysis included 375 completed questionnaires. A total of 28.8% (CI 24.4%-33.6%) had a probable diagnosis of PTSD. Age, years of experience and level of qualification did not affect the likelihood of developing PTSD. 82.7% of respondents would have wanted a debriefing, however, only 15.5% of respondents were debriefed. Of the respondents with probable PTSD, 93% would have wanted debriefing, 85% would have liked time off and 82% felt the event influenced their work decisions. Correlating figures in those without PTSD was lower (78%, 61% and 67% respectively).

Conclusion: The prevalence of PTSD following a death on the table was high and debriefings were not done in most cases. The authors recommend the development of departmental protocols to help an anaesthetist deal with a death on the table.

CR -6

Title: **OVERWEIGHT, OBESITY AND THE PREVALENCE OF LIFESTYLE DISEASES AT THE AIR FORCE BASE BLOEMSPRUIT**

Authors: C Haasbroek, R Lategan-Potgieter, M Jordaan
Departments: Department of Nutrition and Dietetics
Presenter: Carina Haasbroek

Introduction and aim: In 2016 the WHO indicated that more than 1.9 billion adults were overweight and more than 650 million adults were obese. Socio-demographic risk factors, such as age, gender, ethnicity, income, marital status and educational attainment are often linked to the development of overweight and obesity. The prevalence of chronic diseases have been found to be higher in obese individuals than amongst those who are overweight or have a normal weight The study aim was to determine the prevalence of overweight and obesity of military members employed at Air Force Base (AFB), Bloemspruit; the associated socio-demographic determinants and the prevalence of self-reported health conditions associated with overweight and obesity.

Methology: A cross-sectional descriptive study was performed on 166 uniformed, active duty volunteers aged between 18-60 years from AFB Bloemspruit. Anthropometric data were collected and a structured questionnaire was used to collect socio-demographic and health information.

Results: A high prevalence of overweight (38.5%) and obesity (36.1%) was observed in this sample. An unhealthy waist circumference was identified as a prevalent risk factor for the development of metabolic complications, with 42.9% of overweight women at risk and 28.6% at high risk, 30.4% of obese men at moderate risk and 58.7% at high risk; and 14.3% of obese women at risk and 78.6% at high risk. Despite the high prevalence of overweight/obesity, relatively low levels of lifestyle diseases were reported in this sample. The highest disease prevalence was reported for hypertension (23.3%) with no association found between overweight/obesity and reported lifestyle diseases. No significant associations were found between socio-demographic factors and overweight/obesity.

Conclusion: The high prevalence of overweight and obesity in the study population is concerning. No associations were found between socio-demographic factors or the prevalence of lifestyle diseases and overweight and obesity, possibly due to the young age of participants.

CR -7

Title: **MULTIPLE RISK FACTORS AND INFLAMMATORY MARKERS FOR CHRONIC DISEASES OF LIFESTYLE IN URBAN AND RURAL COMMUNITIES IN THE FREE STATE**

Authors: S van Zyl, C M Walsh, FC van Rooyen, G Joubert.

Departments: Basic Medical Sciences, Nutrition and Dietetics, Biostatistics

Presenter: Sanet van Zyl

Introduction and aim: The escalating lifestyle related prevalence of Non-Communicable Diseases (NCDs) worldwide places a significant burden on health care systems. Behavioral risk factors give rise to biological risks, leading to key physiological changes that can result in various chronic diseases of lifestyle (CDL). The main aim of this study was to determine the prevalence of CDL risk factors and inflammatory markers in different communities in central South Africa.

Methodology: This cross-sectional study included adults aged 25 – 64 years in rural Southern Free State and urban Mangaung. Socio-demographic factors, four behavioural and six metabolic risk factors as well as inflammatory biomarkers for CDL were determined.

Results: A total number of 575 rural (median age: 49 years; 71% female) and 429 urban (median age: 47 years; 76% female) participants participated in the study. 59.9% of rural and 52.1% of urban participants had five or more behavioural and metabolic risk factors present. Hypertension and diabetes were more prevalent amongst rural participants. Insufficient intake of fruit and vegetable, alcohol use and high blood pressure were ranked amongst the top five risk factors in both communities. Physical inactivity was amongst the top two reported risk factors in the urban community. Alcohol and tobacco use were significantly higher in the rural community. hsCRP, only available for rural participants, was alarmingly high with increased levels observed in more than 80% of participants. Fibrinogen was the most prevalent inflammatory marker in both communities.

Conclusion: This study illustrated the high prevalence of multiple risk factors and differences in the CDL risk profiles in the rural and urban communities in central South Africa. This multifactorial aetiology of CDL must be considered in the development of focused, tailor made community-orientated primary care prevention and health promotion programmes.

CR -8

Title: **DOCTOR MOTHERS: INFANT FEEDING INTENTIONS AND BEHAVIOURS**

Authors: CC van der Bijl, WJS Steinberg, TK Kellerman, C van Rooyen

Departments: Family Medicine, Biostatistics

Presenter: Chantelle van der Bijl

Introduction and aim: Doctor mothers are considered a high-risk group with regards to duration of breastfeeding. The aim of this study was to describe the infant feeding intentions and behaviour of female doctors in Bloemfontein, South Africa.

Methodology: This was a descriptive cross-sectional study. The target population included female doctors in Bloemfontein, with a biological child/children below the age of 5 years. Respondents completed an electronic questionnaire, that had various sections that could be completed for each of their children under five years. Statistical analysis was done by the Department of Biostatistics at the UFS.

Results: There were 104 respondents answering questions for 131 of their children. The median intended duration of exclusive breastfeeding for Child 1 was 6 months and for Child 2 was 6.5 months, but the eventual median duration was 3 months shorter in both cases. The intention for expression of breast milk at work was 67.7% for Child 1 and 57.7% for Child 2, but the eventual outcome was less than half of the intention. Most respondents (71%) indicated there was no dedicated room for expressing breast milk at their work facility.

Conclusion: Doctor mothers in Bloemfontein are at high risk for early cessation of exclusive breastfeeding. The intention to exclusively breastfeed is quite high, but the eventual median duration is 3 months shorter. The eventual percentage of doctor mothers that expressed breast milk at work, was less than half of those that initially intended to express at the birth of their child. Breastfeeding female doctors need more support in the post-partum period, and especially when returning to work after maternity leave.

CR -9

Title: **THE PROFILE OF PATIENTS TREATED FOR TTP IN THE WESTERN CAPE:2010 TO 2017**
Authors: M Mohale[+], W Janse van Rensburg[*], C Hilton[#], N Mundey[#], C van Rooyen[++], C Barrett[+]
Departments: Department of Internal Medicine[+], University of the Free State. Human Molecular Biology Unit, University of the Free State[*]. Western Cape Blood Service[#]. Department of Biostatistics, University of the Free State[++]
Presenter: Malekhetho Mohale

Introduction: Thrombotic thrombocytopenic purpura (TTP) is a rare life-threatening disease caused by reduced ADAMTS13 activity, an enzyme that processes ultra-large Von Willebrand factor (VWF) multimers. Differences in VWF and ADAMTS13 levels have been described in different blood groups. TTP is associated with advanced HIV. TTP is treated with transfusion of fresh frozen plasma (FFP) or plasmaphaeresis. We aimed to describe the profile of patients treated for TTP in the Western Cape.

Methodology: A retrospective descriptive study was performed. Permission from the Health Sciences Research Ethics Committee of the University of the Free State (HSREC), and the Western Cape Blood Service (WCBS) ethics committee was obtained. Data from all patients older than 18 years for whom fresh frozen plasma (including cryosupernatant) was issued by WCBS for "TTP" or "haemolytic uraemic syndrome" (HUS) in the period 01 January 2010 to 31 December 2017 was included.

Results: In the seven-year study period, 341 patients (median age 34) were included of which 71.76% were female (244). Diagnoses were: TTP, possible TTP and HUS (294, 45 and 1 patients respectively). The number of patients declined over the study period. Compared to national population statistics, there were no significant differences in ABO blood groups, however fewer Rh(D) negative cases were noted. A mean of 9 units (range 1-169) of FFP and a mean of 18 units (range 2-260) of cryosupernatant were issued to 287 and 191 patients respectively.

Conclusion: TTP prevalence is higher in females, however, the frequency in this study is higher than published reports. The rate of newly diagnosed TTP patients in the Western Cape has decreased corresponding with roll-out of anti-retroviral therapy. Rh(D) negative state may be protective against TTP.

CR -10

Title: **PHYSICAL AND PHYSIOLOGICAL PROFILE OF U18, U19, U21 AND SENIOR ELITE NETBALL PLAYERS**
Authors: CJ Sinclair, FF Coetzee, R Schall
Departments: Department of Exercise and Sport Sciences; Department of Mathematical Statistics and Actuarial Science
Presenter: Colleen Sinclair

Introduction and aim: Comparative physical and physiological profile data for elite netball players are limited. Information on potential fitness deficits to inform specific conditioning and technique training is required. The aim of this study was to determine the physical and physiological profiles of U18, U19, U21 and senior level elite netball players in the Free State Province, South Africa; to assess differences in those profiles between the age groups and playing positions; and to compare the fitness profiles of players in our study with fitness norms for South African and New Zealand netball.

Methodology: This cross-sectional study enrolled 77 netball players. Anthropometric and somatotype measurements were performed according to the International Standards for Anthropometric Assessment (ISAA). Fitness tests included the Star Execution Balance Test (SEBT), long jump, double- and single-leg vertical jump, the yo-yo aerobic test, sprints over 5 m, 10 m and 40 m, horizontal pull-ups and press-ups, the prone bridge test and octorepeater anaerobic fitness tests with 10 m and 20 m repeated shuttle sprints.

Results: The netball players did not meet national and international norms for the press-ups test. Furthermore, the other fitness areas were only partially met. The majority of players (80% or more) in the two younger age groups met the minimum standards with the horizontal pull-ups, long jump and vertical jump (double and single leg jump tests). In contrast, notably fewer of senior and U21 players met the standards for these tests – generally below 50%. However, the biggest weakness was the minimum speed requirements for 5 and 10m sprints, but no significant differences were observed between the age groups for the various fitness components.

Conclusion: Emphasis on the fitness areas showing deficits among netball players in the present study is recommended. Strength and conditioning coaches should develop specific conditioning programmes to incorporate the identified components into netball players' training.

CR -11

Title: **PATIENT AND TUMOUR FACTORS AFFECTING THE HISTOLOGY OF SENTINEL LYMPH NODE BIOPSY IN BREAST CANCER PATIENTS AT UNIVERSITAS HOSPITAL, BLOEMFONTIEN**
Authors: RS Letsoara, NE Pearce
Departments: General Surgery
Presenter: Sam Letsoara

Introduction: Sentinel lymph node biopsy is an accepted management in clinically node negative breast cancer patients (T1-T3) for deciding whether axillary dissection should be done or not.

Aim(s): Primary aim was to determine factors affecting histology of sentinel lymph node biopsy. Secondary was to determine the histological characteristics of the sentinel lymph node and final histological status of the axilla if sentinel lymph node was positive.

Methods: Retrospective analytical study of patients who underwent mastectomy/lumpectomy with sentinel lymph nodes biopsy between 2007 to 2016 (n=60) at Universitas academic hospital except on exclusion criteria.

*Results: **Demographics**:* Age ranged from 36 to 90 years and its association with sentinel lymph node histology was statistically significant (p-value 0.0242).

Tumour factors: Location of the tumour, type of tumor, size of tumour all with p-value of 1.000, histological type (p-value 0.7464), grade (p-value 0.6244), lymphovascular infiltration (p-value 1.000) and hormone receptors (ER-positive p value 0.6434, PR-positive p-value 0.7290, HER-positive p-value 0.2341 and ER/PR/HER-positive p value 1.000) did not have statistically significant association with sentinel lymph node histology. There was a statistically significant association between histology of sentinel lymph node biopsy and other nodes in the axilla (p-value <0.001).

Conclusion: The study did not prove our hypothesis that- tumour size, site, grade, lymphovascular infiltration and hormone receptors will affect histology of sentinel lymph node biopsy. Age affected histology of sentinel lymph node biopsy- which was not predicted. Sample size and incomplete lymphovascular infiltration reporting might have affected results. Histology of sentinel lymph node biopsy predicted histology of the axilla.

CR -12

Title: **THE IMPACT OF A FERMENTED MILK AND PHYSICAL ACTIVITY INTERVENTION ON INDICATORS OF FRAILTY AND MALNUTRITION IN THE ELDERLY IN LESOTHO**
Authors: R Kokui D Turkson[+], JO Ngounda[+], M Nel*, C M Walsh[+]
Departments: Department of Nutrition and Dietetics[+], Department of Biostatistics*
Presenter: Corinna May Walsh

Introduction: Many studies have reported on the impact of interventions on frailty in the elderly from developed countries, but evidence from developing countries is lacking.

Methodology: A pre-test–post-test study design was applied in the Maseru District of Lesotho. At baseline, level of frailty and malnutrition were determined in 300 elderly participants. 120 that were classified as pre-frail, frail and/or malnourished participated in the twelve week intervention phase of the study. Socio-demography, nutritional status (Mini Nutritional Assessment), and frailty (Rockwood scale) were determined before and after three months of intervention.

Results: In three groups of 40 each, Group 1 received the fermented milk and exercise intervention; Group 2 only the fermented milk and Group 3 comprised the control group. The physical activity intervention consisted of sessions lasting for 1 hour a day on three days/ week, while fermented milk was delivered every second day.

Two thirds were female, with a median age of between 74.4-76.1 years (range 64.3-94 years). More than 60% were widowed and had only attended primary school. More than 80% lived in brick houses, and used pit latrines.

At baseline only 4.9% of participants in the milk and exercise group, 17.8% in the milk group and 12.8% in the control group were classified as well-nourished, while 12.5% in the milk and exercise group, 28.9% in the milk group and 28.9% in the control group were categorised as pre-frail and frail. After twelve weeks of intervention, no significant improvements in any indicators of frailty or malnutrition were observed in any of the groups.

Conclusion: The amount of fermented milk was probably not enough to impact on measures of frailty and malnutrition. The food security situation of the elderly in Lesotho resulted in sharing of the milk. Research related to the unique nutrition situation and relevant nutrition interventions are urgently required.

CR -13

Title: **BREAKFAST AND LUNCHBOXES FOR FOUNDATION PHASE LEARNERS: DO KNOWLEDGE AND INTENT REFLECT IN PRACTICES OF CAREGIVERS?**
Authors: T Hansen, E du Toit, R Lategan-Potgieter, C van Rooyen
Departments: Department of Nutrition and Dietetics, University of the Free State, Bloemfontein, South Africa
Presenter: Thelma Hansen

Introduction and aim: The caregivers of a child decide what, when and where the child eats. It is, therefore, important to know whether caregivers' nutritional knowledge regarding healthy foods reflects their practices. This study examined caregivers' knowledge, attitudes and practices (KAP) regarding healthy breakfasts and school lunchboxes.
Methodology: A total of 1284 caregivers of learners, aged 6 – 12 years, from 15 government and independent Quintile 5 schools, were included in the study. A cross-sectional descriptive study using questionnaires to evaluate the KAP of the caregivers of learners regarding breakfasts and lunchboxes was implemented.
Results: The caregivers' median score for knowledge regarding breakfast and lunchboxes was 55.6% and 73.1% respectively. Knowledge regarding foods that are appropriate for breakfast and lunchboxes were higher for caregivers >35 years (median=55.6, P=0.0479; median=76.9, P<0.0001 respectively) and caregivers with a tertiary qualification (median=55.6, P=0.0009 and median=76.9, P<0.0001 respectively), than for caregivers $\leq$35 years and caregivers without a tertiary qualification. Caregivers' attitudes were generally positive towards providing healthy breakfast and lunchbox foods (median=71.4% and 82.5% respectively), except for caregivers with an income of $\leq$R20000 ($\pm$\$US1 380)/month that had a lower attitude score towards providing lunchboxes (P=0.0086). For most caregivers' the primary objective when providing a lunchbox, was health considerations (n=658, 54.2%) followed by the food being filling (n=277, 22.8%). The median survey practices score to indicate the provision of healthy foods for breakfast was 26.7%, and for lunchboxes, 35.6%. Even though the survey practice scores were low, caregivers with a tertiary qualification provided healthier breakfast (P=0.0013) and lunchbox foods (P=0.0001).
Conclusions: Although the majority of caregivers had a positive attitude towards providing their child with healthy breakfasts and lunchboxes, caregivers >35 years and caregivers with a tertiary qualification had a higher level of nutritional knowledge and tended to provide their children with healthier foods.

CR -14

Title: **DO ATTITUDES OF CAREGIVERS TOWARDS HEALTHY EATING REFLECT IN PROVIDING HEALTHY BREAKFAST AND LUNCHBOXES TO CHILDREN?**
Authors: T Hansen, E du Toit, R Lategan-Potgieter, C van Rooyen
Departments: Department of Nutrition and Dietetics, University of the Free State, Bloemfontein, South Africa
Presenter: Thelma Hansen

Introduction and aim: Caregivers play a pivotal role to provide and influence the intake of healthy food by children. Children also mimic and learn food practices (both healthy and unhealthy) from caregivers. This impact of caregivers on children's eating habits, emphasises the importance of a positive caregiver attitude towards healthy eating practices. This study investigated if caregivers' attitudes towards healthy eating reflected in the types of foods provided for breakfasts and school lunchboxes.
Methodology: Caregivers (N=1286) of learners aged 6 – 12 years, from independent and Quintile 5 public schools in Bloemfontein were surveyed. A cross-sectional, descriptive study using self-reported questionnaires was implemented to investigate the attitudes and practices of caregivers of learners in the foundation phase, regarding healthy foods for breakfasts and lunchboxes.
Results: Caregivers with an income >R20000 ($\pm$\$US 1380)/month more often provided breakfast daily (P=0.0014) but ate breakfast less often with their children (P=0.0296), than caregivers with a income $\leq$R20000 ($\pm$\$US 1380)/month. Caregivers with a higher qualification also more often provided a daily breakfast (P=0.0011) and fruit/vegetables in the lunchbox than those with only a secondary qualification (P<0.0001 and P=0.0027 respectively). Caregivers with lower income more often provided tuck shop money (P<0.0001) and fast foods (P=0.0006) than those with a higher income, and were less positive towards healthy eating habits (P=0.0089). Caregivers with higher income and those living with a life partner were more likely to perceive healthy food as being more expensive than less healthy food (P=0.0003 and P=0.0045 respectively) and were of the opinion that preparing lunchbox increased their workload (P=0.0027 and P=0.003 respectively).
Conclusions: Caregivers mostly had a positive attitude towards providing healthy breakfast and lunchbox foods. Caregivers with more income and higher qualifications were more likely to provide healthier breakfasts and lunchboxes, on a more regular basis.

CR -15

Title: **SINGLE NUCLEOTIDE POLYMORPHISMS IN FOUR SELECTED GENES AND EARLY OUTCOMES OF ALCOHOL DETOXIFICATION AND REHABILITATION**

Authors: PM van Zyl, G Marx, G Joubert

Departments: Department of Pharmacology, UFS, Department of Genetics, UFS, Department of Biostatistics, UFS

Presenter: Paulina van Zyl

Introduction and aim: Adult neurogenesis accelerates after alcohol withdrawal in alcohol dependent persons. We postulated that poor treatment outcomes might be the result of deficient neuronal recovery processes and that the ability to recover from neuronal insults caused by excessive alcohol intake might be genetically determined. The aim of this study was to investigate whether polymorphisms in selected genes, known to play a role in the development of alcohol dependence and/or adult neurogenesis or neuronal recovery, contribute to the ability of alcoholics to recover after detoxification. We present the results of four of these genes here: two neurotrophins: nerve growth factor (NGF) and brain derived neurotrophic factor (BDNF); ARAP2, which is associated with remodelling of the actin skeleton of neurons; and ADHB1, associated with the risk for development of alcohol dependence.

Methodology: DNA samples (n=21) from alcohol dependent individuals who underwent standard detoxification, 21 days of in-patient rehabilitation and followed up telephonically for 12 weeks, were analysed for single nucleotide polymorphisms (SNPs) by Axiom Array analysis. Genotyping data analysis was performed using Axiom Analysis Suite 3.1. The results of participants who remained abstinent (Dry group; n=10) was compared with the results of those who recommenced drinking within 12 weeks (Not dry group; n=11).

Results: A total of 120 SNPs in the BDNF gene; 317 SNPs in the NGF gene; 484 SNPs in the ARAP2 gene and 14 SNPs in the ADHB1 gene were analysed. Among these, 11 SNPs in the NGF gene and 12 SNPs in the ARAP2 gene had statistically significant ($p \leq 0.05$) differences between the two groups. There were no SNPs with statistically significant differences between the two groups for BDNF or ADHB1.

Conclusion: The results indicate that genetic differences in NGF and ARAP2 might play a role in early recovery of alcohol dependent persons.

CR -16

Title: **PREVALENCE OF DRY EYE DISEASE AMONG PATIENTS AT THE EYE CLINIC IN NELSON MANDELA ACADEMIC HOSPITAL**

Authors: DM Nonkula, TA Rasengane, Dr Adamjee

Departments: Optometry, Optometry, Ophthalmology

Presenter: Monwabisi Nonkula

Introduction: Dry eye disease (DED) is a multi-factorial disease of the tears and ocular surface that results in ocular discomfort, visual disturbance, and tear-film instability with potential damage to the ocular surface. The aim of the study was to determine the prevalence of dry eye disease among patients at the Eye Clinic in Nelson Mandela Academic Hospital (NMAH) in Mthatha.

Method: This was an observational descriptive study and the Dry eye disease was assessed using the Ocular Surface Disease Index (OSDI) questionnaire, Tear-Break Up-Time (TBUT) and Schirmer 2 Test.

Results: One hundred and fifty participants took part in the study, and 72% of the participants were females. The median age of the participants was 58.5 years with a range from 20 to 87 years. The prevalence of dry eye disease was determined to be 92.00% when using the OSDI. Among those who had dry eye disease according to the OSDI, 10% had mild, 17.33% had moderate and 64.67% had severe dry eye disease. The Tear Break-Up Time (TBUT) and Schirmer's 2 test determined the prevalence of dry eye disease to be 64.67% and 62.67% respectively.

Conclusion: There was high prevalence of DED among patients at the Eye clinic in NMAH. Eye care personnel, such as Ophthalmic nurses, Optometrists and Ophthalmologists should be made aware of the seriousness of the disease and its prevalence in order to institute a comprehensive management for this condition. The inclusion of tear osmolarity testing as a tool in assisting with the diagnosis of dry eye disease is recommended for future studies.

CR -17

Title: **THE IMPACT OF RACE AND GENDER ON CLINICAL OUTCOMES IN PATIENTS UNDERGOING CORONARY ARTERY BYPASS GRAFT SURGERY**

Authors: TJ De-Huis, JC Diedericks, FE Smit, L Botes
Departments: Cardiothoracic surgery
Presenter: Thabo De-Huis

Introduction and aim: Despite world-wide interest and studies into gender and race based risk factors for the development of coronary artery disease as well as surgical outcomes after coronary artery bypass surgery(CABG) , no data exist for the central South African population. The aim of this study was to compare the surgical outcomes after CABG between gender and race cohorts.

Methodology: A retrospective analytical cohort study was performed on 715 patient who underwent CABG between 2007 and 2016. Demographic data, risk factors, intra-operative data, complications and mortality were analysed. Firstly male and female patients were compared and thereafter   race groups (white, black, coloured and Asian). Data was recorded in frequency tables.

Results: 550 male patients were compared to 165 female patients. Median age of males were 59 yrs and females 63 yrs. Body Mass Index (BMI) were 29 in both groups,. Diabetes incidence male 74% vs 49%, others risk factors were similar.

Comparing race; Black and Asian patients had higher incidence of diabetes, 88% of coloured patients smoked and 88%of black patients and 90 % of coloured patients were hypertensive.

EuroScore II was higher in females (6,5%) and in black patients (7,1%). Number of grafts, clamp; time and by-pass time were similar in all groups. Postoperative complications were similar in all groups , but females patients (6%) and black patients (8%) had higher mortality rates compared to males and other race groups.

Conclusion: Pre-operative risk factors correlated with surgical outcomes and mortalities. Female gender is a higher risk. Race did not impact on surgical outcomes.

CR -18

Title: **INFECTIVE ENDOCARDITIS IN CENTRAL SOUTH AFRICA IN THE HIV ERA – A SURGICAL PERSPECTIVE**

Authors: T Gwila, FE Smit, M Jansen van Vuuren, M Hanekom, L Botes, C A Mestres
Departments: Cardiothoracic surgery
Presenter: Taha Gwila

Infective endocarditis (IE) remains an evolving and devastating disease with a persistently high mortality and morbidity, in Africa it's a disease of the young and rheumatic heart disease is the main predisposing factor.

The prevalence of HIV in SA is 7.2 million in 2017 and the impact of this disease on the prevalence, surgical outcome of patients with infective endocarditis is yet not clear, the clinical features and natural history of IE in HIV patients has relied largely on small, uncontrolled, outdated studies. Therefore, the aim of the study is to evaluate the current prevalence and outcomes of infective endocarditis in the in Central South Africa.

We conducted a study over 10 years period where we looked at all patients presented with infective endocarditis between 2009-2019 who received surgical treatment in Universitas academic hospital in Bloemfontein.

Methodology: It is retrospective descriptive study that included 141 patients with IE who underwent surgical treatment between 2009-2019, of which 105 were tested for HIV and divided according to HIV status and described in frequency tables.

Demographics, preoperative presentation, intra and post-operative outcomes and survival comparing both groups. Data recorded in frequency tables.

Results: The results showed that HIV status did not influence operative mortality.

Both groups presented with similar high incidence of heart failure and risks of developing infective endocarditis.

More than 50 % of patients required urgent or emergency surgery.

More than 80% of patients had Rheumatic Heart Disease.

Conclusion: HIV did not influence the perioperative outcomes of patients with IE.

The need for multicenter studies in South Africa in order to enlarge the study groups to facilitate accurate and reliable statistical analyses is recommended.

CR -19

Title: **STANDARDISATION OF 16S RRNA GENE SEQUENCING ASSAY FOR THE IDENTIFICATION OF BORDETELLA PERTUSSIS AND VALIDATION USING SAMPLES OF A SURVEILLANCE STUDY IN PAEDIATRIC CASES IN BLOEMFONTEIN**

Authors: C van der Westhuizen, A van der Spoel van Dijk, M Nyaga, U Hallbauer, J Musoke
Departments: Medical Microbiology
Presenter: Cornelius van der Westhuizen

Introduction and Aim: Bordetella pertussis and Bordetella parapertussis are the causative agents of whooping cough in infants. Culture remains the gold standard method for diagnosing Bordetella spp. However, due to its fastidious nature, diagnostics shifted more towards molecular methods. This study aimed to determine the incidence of B. pertussis and B. parapertussis in patients from the Universitas- and Pelonomi Academic Hospitals between January 2017 - October 2018. In addition, we aimed to establish a molecular diagnostic setting using species specific and 16s rRNA primers.

Methodology: Nasopharyngeal swabs were collected from patients from three hospitals providing paediatric services. Clinical and vaccination information was collected from each child. DNA was extracted from nasopharyngeal swabs and separate conventional PCRs were performed using 16S rRNA universal primers and Bordetella spp. specific primers targeting the IS481 and pIS1001 genes. Next Generation Sequencing (NGS) were performed on nine 16s rRNA detectable samples.

Results: A total of 46 out of 257 samples (17.9%) testing positive for B. pertussis (31/46) or B. parapertussis (15/46) were collected. Forty-one percent of positive samples originated from infants less than 6 months of age. 16s rRNA primers and Bordetella specific primers were able to detect 95% and 79% of positive samples, respectively. Three out of nine samples sent for NGS were largely comprised of the genus Bordetella spp, with Klebsiella spp., Moraxella spp. and Haemophilus spp. dominating the remainder sample compositions.

Conclusion: This study shows a significant increase in B. parapertussis infections. Though young infants are affected the most, maternal vaccination during pregnancy will likely decrease the burden. Whooping cough diagnosis should not solely be based on clinical suspicion as this study shows a lack of distinct clinical symptoms from patients that tested positive for Bordetella spp. Specific primers for B. pertussis and B. parapertussis were able to detect both species, however, further optimisation is required to increase the sensitivity of the assay.

CR -20

Title: **LOCO-REGIONAL CONTROL WITH HYPO FRACTIONATED SPLIT COURSE RADIOTHERAPY IN PATIENTS WITH LOCAL ADVANCED SQUAMOUS CELL CARCINOMAS OF THE HEAD AND NECK, TREATED AT UNIVERSITAS ACADEMIC HOSPITAL, BLOEMFONTEIN.**

Authors: S Mhlongo
Departments: Oncology
Presenter: Sthenjiswa Mhlongo

Introduction and aims: The aim of this study was to evaluate local tumour responses and quality of life following hypofractionated radiotherapy for HNSCC who are unsuitable for radical treatment. Settings and Design: Data from patients with squamous cell cancer of the head and neck, who received hypofractionated (n=123) radiotherapy, with or without chemotherapy, between January 2001 to December 2010.

Methods: A retrospective evaluation of loco regional disease control and long term toxicities of hypofractionated split course radiotherapy with or without concurrent chemotherapy for patients who had histologically proven, inoperable HNSCC. Patients received a total of 60 Gy in 20 fractions with 3D conformal. The radiation schedule was 3Gy per fraction once daily for 10 fraction, duration of 2 weeks. Patients the rested two (2) weeks, then commenced radiation again at 3Gy per fraction once daily for duration of 2 weeks again. Responses were retrospectively collected form patient records. Documentation of occurrence of side effect, severity of symptom, and disease course was noted during the subsequent follow up visits.

Results: The study population consisted of 123 patients, 108 males and 15 females. Mean age was 59 years (ranges 24 – 87 years). 73% of the study population consisted of black patients, 19% coloured patients and 8% white patients. T4 tumours made up the bulk of tumours seen (76%), whilst T1 1%, T2 7% and T3 16%. At 1 month follow up, 26 (34%) patients achieved CR; 42 (53%) patients achieved PR and 10 (13%) patients had SD. None of the evaluated patients showed disease progression at 1 month follow. Responses at last follow up showed that 32 (33%) patients had a CR, 35 (36%) patients had PR, 6 (6%) had SC and 23 (34%) of patients had disease progression. Of these 23 patients that has PD, 65 % was local progression, 17% nodal progression, and local/ & nodal disease progression showed in 17% of patients. Xerostomia was noted in 34 (27%) patients. 71 % of affected patients developed grade 1 xerostomia, and grade 2 xerostomia was noted in 29 % of patients. Grade 1 & 2 post radiation fibrosis was noted in 40 patients in the study. Grade 3 fibrosis was noted in only 5% of the affected patients. 31% of patients required opioids at some point after treatment for the management of severe pain. Of the 123 patients, only 4 patients (3%) of patients required feeding tube post radiation. In our study 5% of patients developed osteoradionecrosis during the course of their follow visits. 23 patients (19%) of patients developed relapse or progression. Local recurrence were common and contributed 66% of the total recurrence rates. The median follow up was 98 days (ranging from 0 days to 239 days). Maximum recorded survival was 4322. 5 year overall survival was 56 % (95% CI), while 5 year progression free survival being 46% (95% CI). Poor compliance to follow ups was a major problem in this study.

Conclusion: In patients with locally advanced HNSCC that are not suitable candidates for definitive curative chemo

radiation, split course radiotherapy may be an alternative to obtain durable response and symptom control. Keeping BED close to definitive radiation doses will increase rates of tumour responses.

CLINICAL POSTERS

CP -1

Title: **FUNDAMENTAL MOVEMENT SKILLS AND ACADEMIC PERFORMANCE OF 5-TO 6-YEAR-OLD PRE-SCHOOLERS**
Authors: E de Waal
Departments: Department of Exercise and Sport Sciences, School of Allied Health Professions, Faculty of Health Sciences, University of the Free State
Presenter: Elna de Waal

Introduction and aim: Fundamental movement skills (FMS) are foundational and therefore play an important role in the overall development, sport specific skills and academic achievement of children. The aim of the study was to determine if a correlation exists between FMS and the academic performance of 5- to 6-year-old preschoolers.
Methodology: An empirical study including one pre-primary school in Bloemfontein, South Africa, was conducted. Five-to six-year-old learners (N = 69) with an average age of 6.10 years $\pm$ 0.37) were assessed with the Kinderkinetics Screening Assessment to determine their FMS abilities. Academic reports, provided by the school, were used to analyse academic performance within three academic learning areas. Statistical analysis (SAS version 9.2.) included descriptive statistics, Pearson correlation analyses and associated p values ($\leq$.05), while the following correlation coefficient cut off values were used: $r \approx .1$ (small), $r \approx .3$ (moderate) and $r \geq .5$ (large).
Results: The results indicated that static and dynamic balancing skills correlated with all three learning areas, while these correlations were moderate to large and also statistically significant. Furthermore, it became evident that gliding, skipping and star jumps correlated especially with maths, but also with Home Language and Life Orientation. Of all the learning areas included, Mathematics revealed the most and largest significant correlations with FMS in general.
Conclusion: In conclusion, FMS, especially dynamic and static balance skills, of 5- to 6-year-old preschoolers correlate significantly with their academic performance. Children in the fundamental movement stage should be exposed to activities including balancing, vestibular stimulation, bilateral integration, rhythm and spatial orientation.

CP-2

Title: **CLINICAL FEATURES OF HEREDITARY HAEMORRHAGIC TELANGIECTASIA (HHT) PATIENTS IN CENTRAL SOUTH AFRICA, A PRELIMINARY REPORT**
Authors: TT Mutize[+], MJ Coetzee[+], RY Seedat[*], SC Brown[#], F Gebremariam[++], HJ Mager[**], HK Ploos van Amstel[**]
Departments: Haematology and Cell Biology UFS[+], Otorhinolaryngology UFS[*], Paediatric Cardiology UFS[#], Clinical Imaging Sciences[++], Dutch Centre of Excellence for HHT, St Antonius Ziekenhuis, Utrecht[**]
Presenter: Terence Mutize

Introduction and aim: Hereditary haemorrhagic telangiectasia (HHT) is an autosomal dominantly inherited disease with telangiectasia and arteriovenous malformations. It is supposed to have a prevalence of 1:5000-10000. There is limited information on the clinical presentation and causative mutations of HHT patients in South Africa. The aim of our study is to describe the clinical features of HHT in patients in central South Africa, using international guidelines.
Methodology: Patients with HHT seen at the Bleeding Disorders Clinics in Bloemfontein and Kimberley were included, and family members were recruited. The diagnosis was confirmed using the Curaçao criteria. A clinical and family history was obtained, and a physical examination, including capillaroscopy and rhinoscopy, was done. Transthoracic echocardiography with agitated saline contrast, brain MRI and chest and liver CT were done to document arteriovenous malformations (AVMs).
Results: Thirteen patients (average age 44 years, range 17-66) satisfied the Curaçao criteria. Six were female and seven male. Six families were identified, with seven of the patients coming from one family. All patients had intractable epistaxis with nasal telangiectasia, and all except one had oral telangiectasia. Pulmonary AVMs were confirmed 70% of patients, but only one has been treated. One patient has liver AVMs and two have had strokes. All patients had iron deficiency anaemia. All patients have affected family members, some of whom had apparently died from HHT complications. The identification of the mutations in this group is underway.
Conclusion: This is the first case series in South Africa. Apart from the most common presentation, epistaxis, most patients have pulmonary AVMs. These preliminary results demonstrate that there is a great need for better awareness and better management of HHT.

CP-3

Title: **A PROSPECTIVE STUDY OF AN ALGORITHM USING PHENYLEPHRINE INFUSED THROUGH A NON-ELECTRONIC DEVICE, FOR PREVENTION AND TREATMENT OF HYPOTENSION FOLLOWING SPINAL ANAESTHESIA FOR CAESAREAN SECTION IN A SOUTH AFRICAN TEACHING HOSPITAL.**
Authors: JL Esterhuizen, G Lamacraft
Departments: Anaesthesiology
Presenter: Jovane Esterhuizen

Background: Phenylephrine infusions are recommended for the prevention of hypotension after spinal anaesthesia for Caesarean section (CS), but electronic infusion devices are unavailable in many South African Hospitals. Flow-control devices, which physically control infusion rates, are available but have not been studied for this use. Neither has an algorithm to assist less experienced doctors administer phenylephrine infusions and vasopressor boluses.
This study investigated if an algorithm using phenylephrine through a flow-control device could be safely used to prevent and treat this hypotension.
Methods: A prospective interventional study, performed in a University Teaching hospital, following Ethics approval.
The incidence of hypotension was recorded in consecutive patients for 3 months (n=91) (Group B = baseline), with no change in usual practice of anaesthetists.
An algorithm developed by the authors, to prevent and treat hypotension using phenylephrine infused via a flow control device, was then introduced for use. The incidence of hypotension was then recorded in consecutive patients for the next 3 months (n=99)(Group I = intervention).
Results: There was no difference in incidence of hypotension between Group B and I (p = 0.1427). Fewer patients in Group I needed supplemental phenylephrine boluses (Group B,57% Group I, 35%: p =0.0005).
There were no adverse events directly related to phenylephrine infusion.
Conclusion: Phenylephrine infused through a flow-control device using a simple algorithm can be safely used to prevent and treat hypotension following spinal anaesthesia for caesarean section; this may be useful in resource scarce environments where providers of anaesthesia are less experienced.

CP-4

Title: **THE CLINICAL IMPACT OF THE COMMON AFRIKANER BRCA2 8162delG FOUNDER VARIANT**
Authors: S Louw, M Conradie, BD Henderson, NC van der Merwe
Departments: Department of Human Genetics and Clinical Genetics
Presenter: Susan Louw

Introduction: Hereditary Breast and Ovarian Cancer syndrome (HBOC) is caused by different germline mutations. This condition predisposes to a high risk for breast, ovarian, prostate, pancreatic, colorectal and other cancers. In South Africa, founder mutations in BRCA1 and BRCA2 have been reported for various populations.
The University of the Free State in conjunction with the National Health laboratory service (NHLS) has been performing research and diagnostic testing on the genetic predisposition for HBOC syndrome since 1998. Since the introduction of genetic testing, more than 1800 patients were genotyped or comprehensively screened, of which 152 were found to carry the common Afrikaner founder variant BRCA2 8162delG (c.7934delG).
Methods and aim: Quantitative data was collected on the clinical outcome of persons that tested positive for the BRCA2 8162delG (c.7934delG) pathogenic variant through diagnostic or predictive testing. A research questionnaire was used as a tool to collect data. The questions focussed on: 1) demographic data; 2) family history; 3) genetic counselling related issues; 4) information on previous and recent cancers diagnosed (if any), including management; 5) any risk-reducing treatments utilised. The questionnaire contained mostly closed-ended questions; some open ended questions and graded questions.
Results: The median age of onset of cancer was 46 years, ranging from 21 - 80. At the time of testing, 83 individuals were affected with cancer, 64 underwent predictive testing and were unaffected with cancer and 5 were not indicated. Cancer types included breast, ovarian, prostate, male breast, fallopian tube, pancreatic and skin cancer. The study is ongoing.
Conclusion: The value of the study would be to obtain more detailed information on the clinical and counselling aspects of this Afrikaner founder mutation predisposing to HBOC syndrome in South Africa. This information would help to guide counselling, management and cancer surveillance strategies for people found to have inherited this common pathogenic variant in BRCA2.

CP-5

Title: **CRYOTHERAPY FOR PEDUNCULATED KELOIDS**
Authors: L Makhakhe, N Dlova, A Mosam, F Maruma
Departments: Dermatology, UFS; Nelson R Mandela School of Medicine, University of Kwazulu Natal
Presenter: Lehlohonolo Makhakhe

Background: The high prevalence of keloids in dark skinned individuals and the difficulties surrounding therapy are well documented. Their resistance to therapy and involvement of exposed areas stigmatizes individuals. Although there are many therapeutic options, recurrent rates are notoriously high. Some modalities have sporadically yielded better outcomes, more so when used in combinations. It is therefore important to find treatment that is effective and has reduced chances of recurrence in affected individuals. Intralesional cryotherapy is a treatment for keloid scars in which liquid Nitrogen is used to freeze the scar from inside.

Aim: This study therefore sought to investigate and describe treatment outcomes using intralesional liquid Nitrogen.

Methods: Twelve African patients attending the Dermatology outpatient department at Universitas Hospital in Bloemfontein were prospectively recruited over a seven month period in 2017. Patients were seen at the initial visit, and then followed up at six weeks and six months respectively.

Results: All subjects were Africans, with 58.3% females and 41.7% males. A third of the patients (33.3%) had more than one site of involvement. Significant reduction in the exophytic keloidal mass post deep-freezing, irrespective of the keloid area, duration, gender and cause was observed among eight patients. Two-thirds of the patients were either satisfied or very satisfied with the clinical outcome of the scar at six months. Common complications that we looked for included infection, bleeding, and pigment changes.

Conclusion: The use of intralesional cryotherapy was shown to have a significant effect on the treatment and size reduction of exophytic keloids, with minimal side effects and great patient tolerability.

Limitations: Our study limitations were a small sample size, relatively high rate of patients lost to follow up (33.3%) as well as some unanticipated technical difficulties.

Conflict of interest: None declared Funding source: None

LABORATORY PAPERS

LR -1

Title: **CHARACTERISATION OF PHOTON MULTILEAF COLLIMATED ELECTRON BEAMS FOR ELEKTA SYNERGY USING FILM MEASUREMENTS**

Authors: S Mutsakanyi
Departments: Medical Physics
Presenter: Stalyn Mutsakanyi

Introduction and aim: The use of photon multileaf collimator (pMLC) to collimate therapeutic electron beam without following the standard method of applicators and cut outs has been previously shown to be feasible. This technique is yet to be implemented clinically as more data is still to be acquired to characterise the electron beams shaped through the use of pMLC. Therefore the aim of this study was the dosimetric characterisation of electron beams collimated by pMLCs of an Elekta Synergy linear accelerator (linac).

Methodology: The study investigated six electron beams energies 4, 6, 8 , 10 , 12 , and 15 MeV produce by an Elekta Synergy and eight regular fields ranging from 1 x 1 to 20 x 20 cm^2 to reflect those fields used in electron beam therapy. Two source to surface distances (SSD) 60 and 70 cm SSD were investigated. The percent depth doses (PDDs), in-plane and cross-plane beam profiles and output factors (OFs) were measured and dose parameters were extracted. The measurements were performed using EBT3 Gafchromic films which were inserted in water equivalent phantoms.

Results and Conclusion: The results show that the PDDs, dose profiles and OFs produced when using pMLCs for electron beams had similar characteristics as those produced using applicators and cut outs. Shorter SSD of 60 cm produced beams with smaller penumbra width which could be suitable for advanced radiation treatment techniques such as intensity modulated radiation therapy (IMRT).

LR -2

Title: **HIV DRUG RESISTANCE IN SAMPLES FROM THE ROUTINE EARLY INFANT DIAGNOSIS PROGRAMME**

Authors: I Barakzai, PA Bester, J Frater, D Goedhals
Departments: Division of Virology, Faculty of Health Sciences, University of the Free State/NHLS; Nuffield Department of Clinical Medicine, University of Oxford
Presenter: Iqra Barakzai

Introduction and aim: South Africa has approximately 260,000 HIV-exposed infants born annually. Consequently, the prevention of mother-to-child transmission (PMTCT) remains a national priority. Previous studies have identified high levels of resistance to non-nucleoside reverse transcriptase inhibitors (NNRTIs) in infants exposed to PMTCT regimens, however, no information is available regarding current regimens in the Free State province. The aim of the study was to detect drug resistance mutations in samples testing positive on the routine early infant diagnosis (EID) platform.

Methodology: Dried blood spot samples from infants less than 18 months of age, which tested positive by qualitative HIV PCR, underwent nucleic acid extraction using the EasyMag system, followed by an in-house nested PCR assay and Sanger sequencing. The nested PCR amplified a portion of the HIV pol gene including protease and reverse transcriptase.

Results: A total of 367 samples were collected from the EID platform. Amplification and sequencing was successful in 55% (201/367) of samples. 32% (65/201) of infants were less than 1 month of age. Only 26% (53/201) of the samples were fully susceptible, with NNRTI resistance detected in 73% (147/201) of the infants. Dual resistance to NNRTIs and nucleoside reverse transcriptase inhibitors (NRTIs) was detected in 12% (25/201) of infants. Protease inhibitor (PI) resistance was detected in only 3 infants (1.5%), of which one had dual resistance (PI+NNRTI) and one had triple class resistance (PI+NNRTI+NRTI). The most prevalent drug resistance mutation found among the NNRTIs was K103N at 67% (99/147). With NRTIs, the most prevalent drug resistance mutation was M184V at 56% (14/25).

Conclusion: The results correlate with previous studies indicating high level resistance to NNRTIs among infants on the PMTCT programme. While the presence of M184V mutations indicate likely transmitted resistance, PI resistance was uncommon, indicating continued efficacy of the current first line regimen in infants exposed to PMTCT.

LR -3

Title: **CHARACTERIZATION OF T CELL RESPONSES TO THE NON-STRUCTURAL PROTEINS OF THE M-SEGMENT IN SURVIVORS OF CRIMEAN- CONGO HAEMORRHAGIC FEVER**

Authors: MG Maotoana[+], WJ Janse van Rensburg[*], LW Murray[#], FJ Burt[+,++],D Goedhals[+,++]

Departments: Division of Virology, UFS[+] Human Molecular Biology Unit, Department of Haematology and Cell Biology, UFS[*] Department of Internal Medicine, University of the Witwatersrand[#] Division of Virology, National Health Laboratory Service[++]

Presenter: MG Maotoana

Introduction and aim: Crimean-Congo haemorrhagic fever orthonairovirus (CCHFV) causes a severe haemorrhagic disease known as Crimean-Congo haemorrhagic fever (CCHF). Cases of CCHF are reported globally, and the incidence continues to increase as the disease emerges and re-emerges across the globe. There is currently no approved vaccine available for CCHF. Research has observed that both arms of the immune system are essential for protection in mice, however there is limited information with regards to immunity in patients following natural infection with CCHFV. The current research aimed to identify T cell epitopes in the NSM, GP38 and highly variable mucin-like domain of CCHFV, and to characterize the T cell responses against the identified epitopes.

Methodology: Twelve participants were recruited for the study. Peripheral blood mononuclear cells were isolated using the Ficoll-Hypaque density gradient technique. An overlapping peptide library was designed consisting of 15 monomers spanning the NSM, GP38 and highly variable mucin-like domain of CCHFV, using an amino acid sequence of a southern African isolate (SPU103/87). An interferon gamma (IFN-γ) enzyme linked immunospot assay was performed to identify T cell epitopes from the peptide library. T cell responses against the identified epitopes were further characterized using a flow cytometry assay.

Results: Nine T cell epitopes were identified; four peptides were located in the NSM region and five peptides were in the GP38 region. Polyfunctional T cells secreting both IFN-γ and tumour necrosis factor alpha (TNF-α) were detected and cytotoxic activity was further confirmed by expression of CD107a. The presence of memory T cell responses were detected when stimulated with the immunogenic T cell epitopes, with cytotoxic CD8+ cells predominantly of the terminally differentiated memory cell (TEMRA) phenotype.

Conclusion: The results suggest the presence of effective long-term T cell activity to the non-structural proteins in survivors of CCHF.

LR - 4

Title: **IMPLEMENTATION AND VERIFICATION OF A MULTIPLEX PCR ASSAY TO DETECT FLT3-ITD AND NPM1 MUTATIONS IN ACUTE MYELOID LEUKAEMIA PATIENTS**

Authors: J Cronjé, A De Kock, J Kloppers

Departments: Department of Haematology and Cell Biology, School of Pathology, Faculty of Health Sciences, UFS / Tissue Typing Laboratory, Haematology and Cell Biology, Universitas Academic Complex, National Health Laboratory Services, Bloemfontein

Presenter: Johané Cronjé

Introduction and aim: Acute Myeloid Leukaemia (AML) is defined as a heterogeneous disorder of the haematopoietic stem cells. The two common mutations associated with AML are the FLT3-ITD and NPM1 mutations which occur in about 25-45% and 50-60% of patients, respectively. The FLT3-ITD mutation is associated with an unfavourable prognostic outcome, while the NPM1 mutation has a better prognostic outcome. Therefore, it is essential to identify the type of mutation associated with AML as it may have a prognostic impact. Currently, the FLT3-ITD and NPM1 mutations are not being screened for in the central South African region, thus, the aim of this study was to implement and verify a FLT3-ITD and NPM1 mutation screening method.

Methodology: External quality assessment (EQA) material with known mutation statuses was used to optimise the multiplex FLT3-ITD and NPM1 PCR assay. Sanger sequencing confirmed the results of the EQA samples as determined by the PCR assay. Thirty-four AML patients were recruited thus far for this study. The multiplex FLT3-ITD and NPM1 PCR assay was used to screen all AML patients. Mutation status for positive patients were confirmed with Sanger sequencing. Ethics (UFS-HSD2018/1174/2711).

Results and discussion: The FLT3-ITD and NPM1 multiplex PCR assay was successfully optimised. The FLT3-ITD mutation was detected in 15% of patients.The NPM1 mutation was not detected. Sanger sequencing was used to confirm the screening results of patients positive for the FLT3-ITD mutation.

Conclusion: A multiplex FLT3-ITD and NPM1 PCR assay was successfully optimised and implemented. The prevalence of the FLT3-ITD mutation was lower than the 25-45% reported in literature. None of the patients had the NPM1 mutation, that is associated with a better prognostic outcome. The small sample size does not allow a conclusion with regards to the prevalence of the mutations, but lays the foundation for AML related genetic research.

LR -5

Title: **IMPROVED BREAST CT IMAGES THROUGH INCORPORATION OF A VIRTUAL BOWTIE FILTER**
Authors: D van Eeden, FCP du Plessis
Departments: Department of Medical Physics
Presenter: Déte van Eeden

Introduction and aim: During breast imaging with computed tomography there is a significant variation in the x-ray intensity reaching the detector. This induces lower image quality due to the detectors' limited dynamic range. A bowtie filter can solve this problem since it modulates the exit beam x-ray intensity to be more uniform before reaching the detector and thus improves image quality. In Monte Carlo studies additional time is needed to simulate the transport of x-rays through the bowtie. This leads to lower variance and currently it is complex to model. In clinical practice a standard shaped bowtie filter is used. In this study a virtual bowtie filter is applied to x-ray beam exit profiles produced in egs_cbct Monte Carlo simulations on breast phantoms to improve image quality.

Methodology: The Breastsimulator software was used to generate breast phantoms in a realistic way to show glands, ducts, Cooper's ligaments, and lesions. These breast phantoms were simulated with egs_cbct and suitable bowtie filters that were modeled using an in-house developed IDL code. Projection images over a 360-degree arc were simulated, and the OSCaR reconstruction software was used for reconstructions using a Shepp-Logan filter. The simulated bowtie filter data was then used to generate virtual bowtie filters for attenuation corrections for breast phantoms with a range of densities. The contrast in the reconstructed images was then analyzed to determine the improvement in image quality.

Results: Results indicated that this method of bowtie design yielded high-quality images and a reduction in the cupping artefacts is seen for the CT under consideration. The attenuation correction can be used for a range of breast densities.

Conclusion: It is a useful method to improve the image quality without the need to incorporate a real bowtie filter during measurements.

LR -6

Title: **IN VITRO IMMUNE RESPONSES TO SINDBIS VIRUS**
Authors: M M Litabe, F J Burt
Departments: Division of Virology, NHLS and UFS
Presenter: Matefo Litabe

Introduction and aim: Sindbis virus (SINV) is an arthritogenic alphavirus being spread worldwide by mosquitoes. The mechanism by which SINV causes chronic arthritis is poorly understood but macrophages have been implicated as one of the main target for viral replication, resulting in secretion of inflammatory mediators which may play a major role in arthritogenic pathogenesis. The aim of the study was to investigate the innate immune response to infection with SINV.

Methodology: Peripheral blood mononuclear cells were isolated from ten healthy individuals with no previous exposure to SINV, and differentiated into macrophages. A portion of macrophages were infected in vitro with SINV at a multiplicity of infection of 0.1. The remaining portion was pre-treated with an interferon (IFN) inhibitor, ruxolitinib, prior to infection with SINV. RNA was extracted from culture supernatant collected at different time intervals from 1 hour (H) to 48H post infection and reverse transcribed to cDNA. cDNA was used as a template for quantitative PCR. This was used to determine viral replication in the infected macrophages and to measure viral loads.

Results: Viral replication was demonstrated by increase in viral load in macrophages from 3/10 participants. Viral concentration was the highest at 12H post-infection. Inhibition of IFN resulted in viral replication in macrophages from 7/10 participants, with viral titers at 1H post infection being a 100 fold higher compared to those of untreated macrophages.

Conclusion: In the absence of IFN inhibitor, macrophages from 3/10 participants were susceptible to infection. However IFN inhibition resulted in macrophages from 7/10 participants being susceptible to infection. These results show that not all macrophages are susceptible to SINV infection and IFN is critical for protection against SINV, since inhibition rendered more macrophages susceptible to infection.

LR -7

Title: **LIKELIHOOD OF BRCA2 P3293L TO CAUSE DISEASE**
Authors: J Oosthuizen, K Ntaita, D Notani, P Kgoare, NC van der Merwe, M Theron
Departments: Division of Human Genetics, UFS & NHLS, Bloemfontein
Presenter: Jaco Oosthuizen

Introduction and aim: The function of BRCA2 in homologous recombination is to allow genome protection through mediation of the RAD51 recombinant. BRCA2 plays a pivotal role in controlling the function and localization of RAD51 during HR using its BRC repeats. An additional RAD51 binding motif located at the C-terminus of BRCA2 stabilizes this filament during repair. BRCA2 P3292L was identified in various South African (SA) breast cancer (BC) patients. It is located in exon 27, immediately adjacent to the RAD51 binding motif. Dephosphorylation of BRCA2 at S3291 enables RAD51 binding to the BRC repeats and the subsequent binding to double-stranded DNA. The presence of P3292L next to this binding site could impair DNA repair and cause disease.

Methods: A total of 839 BC and/or ovarian cancer (OVC) patients was screened for pathogenic variants in BRCA2 using HRMA in conjunction with Sanger sequencing or NGS.

Results: BRCA2 Pro3292 was detected for 14 patients (1.6%). Twelve patients were affected with BC (including two bilateral cases), with one diagnosed with OVC. P3292L was also present in an African male (dx 70) affected with BC and prostate cancer. Female age at onset varied from 27-65 years, with an average of 45.2. Sequencing did not reveal a secondary co-segregating pathogenic variant for this cohort. The majority (71%) of patients reported a positive family history of the disease.

Conclusion: Variant classification of P3292L is inconsistent in literature, ranging from a variant of unknown clinical significance (VUS) to likely benign. As the variant is extremely rare (GMAF = 0.00020) and in silico analyses indicate deleterious effects, in depth investigation by Krassowski et al. (2017) concluded that P3292L will abrogate the ability of BRCA2 to safeguard genomic stability by inhibiting interaction between BRCA2 and RAD51 nucleofilament. The current association of P3292L with BC and OVC in SA substantiate this.

LR -8

Title: **A NOVEL ELECTRON BEAM CHARACTERIZATION MODEL FOR TOTAL SKIN IRRADIATION**
Authors: K Sachse, LJ Strauss, W Shaw
Departments: Medical Physics
Presenter: Karl Sachse

Introduction and aim: Total skin electron irradiation (TSEI) is a standard treatment for Mycosis Fungoides. We have developed an electron beam characterization model to perform patient specific treatment planning since no commercial treatment planning systems exist for TSEI.

Methodology: A poly-energetic electron beam model was constructed for a clinical linear accelerator using the DOSXYZnrc Monte Carlo (MC) code. Fluence profiles for a 4-, 6- and 8 MeV electron beam were independently modelled to dosimetrically match measured off-axis ratios. All beam characteristics were verified for source-to-skin distances (SSDs) ranging between 100-200 cm. As a clinical test case, an in-house realistic full-body phantom was made and CT-scanned, onto which discrete beam arcs at 180 cm SSD were simulated. This included 4 different beam planes located from head-to-toe. Various beam angles were investigated. After converting MC 3D dose data to DICOM format, dose evaluation was performed on ProSomaCore and compared to in-vivo measurements.

Results: The beam characterization model results fitted the measured beam parameters to within 2% with 1% uncertainty. Improved dose uniformity at the depth of maximum dose in the full-body phantom was observed when the number of beam angles were increased. Due to the variation in phantom contours, hot-and-cold spot formations across the phantom were identified and consequently beam weighting could be optimized to improve the total dose uniformity.

Conclusion: The MC beam model reproduced the measured data to within 2% difference. Increasing the number of beam angles for TSEI improves dose uniformity, especially in large-diameter treatment regions. Dose visualization and analysis allowed beam weight optimization for a beam model that can be used for patient specific treatment planning.

LR -9

Title: THE IMPACT OF MOTHERLESS TESTING ON THE OUTCOME OF PATERNITY RESULTS

Authors: A De Kock, JF Kloppers
Departments: Department of Haematology and Cell Biology
Presenter: André De Kock

Introduction and Aim: Paternity testing plays an important role in the outcome of judicial and home affairs cases. Our facility at NHLS Universitas has seen a 10 fold increase in cases over the past five years. Preferably, a paternity investigation consists of a trio of the mother, child and putative father. Cost-implications has led to the demand of motherless testing with disputes in results occurring between testing facilities. Cases have been reported where the mother and the putative father shares coincidental genetic markers. The aim of this study was to investigate what the effect of motherless paternity testing would have been on the outcome of paternity results.

Methodology: Trio paternity cases conducted at our facility between 2003 and 2018 were investigated. The total number of trio cases where the putative father was excluded was counted. A scenario was created where the mother was eliminated from the trio case to determine the effect on the outcome of the results. HSREC: UFS-HSD2019/0545/2805.

Results and Discussion: There were 6182 trio paternity cases conducted at our facility between 2003 and 2018. The putative father was excluded in 27.1% of all cases counted. Motherless testing would have caused wrongful inclusion of the father in 2.5% of cases due to coincidental loci shared between parents. Only in 10.7% of cases the total number of exclusion loci would have remained the same should the mother not have been tested.

Conclusion: Paternity testing is expensive and there is a demand to conduct motherless testing. The outcome of this study indicates the importance of including the mother due to coincidental genetic markers shared between the parents. Motherless testing could lead to wrongfully inclusion of putative fathers and only in special circumstances such as when the mother is deceased can motherless testing be conducted.

LR -10

Title: SIMPLE METHOD TO PREPARE A POSITIVE CONTROL FOR DIFFERENTIATING A TRUE POSITIVE FROM A LABORATORY CONTAMINATION

Authors: M Dimaculangan, SC Wiid, PA Bester, TR Sekee, FJ Burt
Departments: Division of Virology, Faculty of the Health Sciences, UFS and NHLS
Presenter: Micah Dimaculangan

Introduction and aim: Sindbis virus (SINV), a mosquito-borne virus belonging to the genus Alphavirus (family Togaviridae), is an RNA virus causing outbreaks in South Africa. Reverse transcription-polymerase chain reaction (RT-PCR) is used for surveillance and diagnosis of infections. A disadvantage of RT-PCR assays, especially nested assays, is the potential for false-positive results caused by laboratory contamination from positive controls. Thus, the aim of the study was to prepare a positive control, which produced an amplicon larger than the wild-type amplicon, to differentiate between a true positive and laboratory contamination.

Methodology: A positive control was prepared by transcribing RNA from template DNA that had 65 non-SINV nucleic acids inserted into the DNA. Modified primers were used to amplify the partial nsP2 gene in pGEM®T-easy vector. The PCR product, elongated at the 5' and 3' ends by the modified primers, was circularised, resulting in a pGEM®T-easy SINV construct with non-SINV bases inserted into the partial nsP2 gene. RNA was transcribed using the SP6 promotor site on the construct. Transcribed RNA was used as template in a conventional RT-PCR, and subsequently in a real-time SYBR®Green RT-PCR assay.

Results: Sequencing confirmed the 65 non-SINV nucleotides within the nsP2 gene. RT-PCR amplicons using the same primer pair were compared. A 344 bp amplicon was obtained from transcribed RNA and a readily distinguishable PCR product of 279 bp from wild-type RNA. To determine if transcribed RNA would have application in a SYBR®Green assay, a real time RT-PCR was performed using a Roche Lightcycler. The assay yielded two distinct melt curves. The transcribed RNA had a melting peak of approximately 86°C and the wild-type RNA had a melting peak of 87°C.

Conclusion: This study demonstrates how recombinant technology can be used to produce a positive control that has application in the laboratory for future surveillance studies.

LR -11

Title: **A PILOT STUDY INVESTIGATING THE INCIDENCE OF MISLABELLING IN PROCESSED MEAT PRODUCTS SOLD IN SOUTH AFRICA**
Authors: S Sreenivasan Tantuan, C Booysen, CD Viljoen
Departments: Human Molecular Biology Unit, School of Biomedical Sciences
Presenter: S Sreenivasan Tantuan

Introduction and aim: Processed meat products are popular in South Africa and comprise almost one third of the total food expenditure of a household. Labelling regulations in South Africa require that all ingredients in a food product must be indicated on the product label. Discerning consumers who want to avoid certain animal species in food due to religious, lifestyle or health reasons, rely on accurate product labelling. Several incidents of undeclared pork, beef and chicken in processed foods have been documented in recent years. The aim of this study was to investigate the incidence of mislabelling in processed meat products sold in South Africa.
Methodology: A total of 31 processed meat products including nine viennas and 22 canned meats were tested for the presence of beef, chicken, sheep and horse/donkey using Real-time polymerase chain reaction.
Results: Undeclared animal species were detected in 29% of the products, of which pork and chicken were most common. Of these, two products contained pork despite claiming to be "pork-free". It is also notable that for some products, the ingredient list indicated several possible animal species that were not detected in the product.
Conclusion: This study has determined that 29% of processed meats investigated contained undeclared animal species. Furthermore, some products did not contain the animal species indicated on the ingredient list. This is the first pilot study to investigate the presence of undeclared animal species in viennas and canned meats.

LR -12

Title: **DNA EXTRACTION FROM ULTRA-PROCESSED FOOD PRODUCTS: #ULTRADIFFICULT**
Authors: C Booysen, S Sreenivasan Tantuan, CD Viljoen
Departments: Human Molecular Biology Unit
Presenter: Chantelle Booysen

Introduction and aim: Discerning consumers may want to avoid specific animal species in food products for health, lifestyle and/or religious reasons. The detection of animal species in food depends on successful DNA extraction. However, the extraction of DNA from processed food is challenging due to the presence of degraded DNA and chemical inhibitors. Specific methods have been developed to extract DNA from processed food with modifications, where necessary, to enhance the extraction efficiency. The aim of this study was to determine the efficiency of 20 methods (including modifications) to extract DNA from six food matrices representing different levels of ultra-processing.
Methodology: DNA was extracted from six ultra-processed food matrices (vienna, corned beef, jelly powder, jelly baby and marshmallow) using 20 DNA extraction methods. The concentration of extracted DNA was determined using fluorometry. The target animal species was detected using Real-time PCR.
Results: All 20 methods extracted PCR amplifiable DNA from vienna and corned beef. Eight methods extracted PCR amplifiable DNA from baby food and jelly powder. Only one method extracted PCR amplifiable DNA from marshmallow. No amplifiable DNA was extracted from jelly baby. The best performing methods (CTAB and Gelatin*Extractor*) extracted PCR amplifiable DNA from four of the six matrices. An increased amount of sample, or enrichment thereof, did not necessarily improve DNA extraction efficiency and/or PCR amplifiability.
Conclusions: The amount of extracted DNA per matrix proved highly variable for the different extraction methods. Of the 20 methods, only two were able to extract DNA from four of the six matrices. Using an increased amount of input material or sample enrichment did not improve DNA yield or PCR amplifiability. The results of this study suggest that the food matrix as well as the percentage presence of target species has the greatest impact on DNA extraction efficiency.

LR -13

Title: **COMPARISON OF MATCH-RELATED PERFORMANCE INDICATORS BETWEEN MAJOR PROFESSIONAL RUGBY COMPETITIONS**

Authors: R Schoeman, R Schall
Departments: Exercise and Sport Sciences
Presenter: Riaan Schoeman

Introduction and aim: The study compared performance indicators of four major international rugby union competitions, namely Super Rugby, Aviva Premiership, Guinness Pro 12 and French Top 14. Most performance indicators of Aviva Premiership and Guinness Pro 12 rugby competitions were similar but distinctive from French Top 14 and Super Rugby competitions, which in turn were generally similar.

Methodology: Retrospective data of 1162 matches were provided by the Cheetahs Super Rugby Franchise, Bloemfontein, South Africa, and analysed using the Verusco TryMaker Pro. This study used a non-random sample of all 18 participating teams from the 2017 Super Rugby competition; all 12 clubs   represented in the 2016 Aviva Premiership; all 14 teams from the 2016 French Top 14 competition; and all 12 teams from the 2016 Guinness Pro 12.

Results: The Aviva Premiership and Guinness Pro 12 had similar numbers of ball carries, tries, offloads, kicks, tackles, line-outs and scrums that were significantly higher than French Top 14 and Super Rugby. Offloads ($p = .0015$) and tries ($p = .0368$) were significantly higher for Super Rugby than the Guinness Pro 12, but the Guinness Pro 12 had significantly higher counts for carries ($p < .0001$), passes ($p = .0010$) and kicks ($p = .0054$). In contrast, counts of tackle breaks ($p < .0001$) and line breaks were significantly higher for Super Rugby in comparison to the Aviva Premiership ($p = .0057$), Guinness Pro 12 ($p = .0064$) and French Top 14 ($p < .0001$).

Conclusion: All competitions showed areas of weakness and strength, which could be due to specific game plans followed in the unique pitch and weather conditions during competition. Coaches need to gain knowledge on playing styles of the different competitions to adjust from one competition to the next.

LR -14

Title: **WHOLE GENOME CHARACTERIZATION OF ZAMBIAN ROTAVIRUS STRAINS REVEALS REMARKABLE CHANGES POST-ROTAVIRUS VACCINE INTRODUCTION**

Authors: P Mwangi, MT Mogotsi, SP Rasebotsa, S Sabiu, J Simwaka, M Monze, EM Mpabalwani, B Matapo, NB Magagula, K Rakau, ML Seheri, MJ Mphalele, JM Mwenda, MM Nyaga
Departments: University of the Free State-Next Generation Sequencing Unit (UFS-NGS), Division of Virology
Presenter: Peter Mwangi

Introduction and aim: Rotavirus (RV) is the key viral etiological agent of acute gastroenteritis in children less than five years of age. To monitor the impact of RV vaccination in Africa beyond conventional G and P- typing, the WHO/AFRO is supporting whole genome characterization in partnership with the UFS-NGS Unit. Rotavirus strains circulating in Zambia from 2009-2016 pre- and post-rotavirus vaccine introduction were analyzed.

Methods: Samples (n=126; 37 pre and 89 post-vaccine) were subjected to cDNA synthesis using the Maxima H Minus Double-Stranded cDNA Synthesis Kit. The Nextera XT DNA Library Preparation Kit was used to prepare the DNA libraries and then MiSeq sequencing was performed for 600 cycles (301 x 2 paired-end reads) to generate data in fastq format files. Raw sequence data was processed using Geneious software and determination of genome constellations was performed using RotaC.

Results: There was stability in predominating genome constellations pre- and post-vaccine introduction. However, five reassortant strains were identified post-vaccination whereby three of the post-vaccine reassortant strains were mono-reassortants. Their NSP2 gene segment was genotype N2 within a Wa-like backbone for two Wa-like strains (RVA/Human-wt/ZAM/UFS-NGS:MRC-DPRU13232/2016/G1P[8] and RVA/Human-wt/ZAM/UFS-NGS:MRC-DPRU13541/2016/G1P[8]) and genotype N1 within a DS-1-like backbone for the other strain (RVA/Human-wt/ZAM/UFS-NGS:MRC-DPRU13327/2016/G2P[4]). Additionally, two uncommon strains, a G5P[6] exhibited genotype A8 in its NSPI and a unique G2P[8] within a pure DS-1-like backbone. The detection of reassortant strains post-vaccine introduction is indicative of RV evolution mechanisms to escape vaccine protection.

Conclusions: While the cyclical changes in circulating RV genome constellations might be attributable to natural annual RV evolution mechanisms, immunological pressure posed by the vaccine cannot be ruled out.The detection of the five reassortant strains post-vaccination in this study reignites the debate on strain changes due to vaccine pressure. There is need to maintain long-term surveillance and promote use of whole genome sequencing to address this phenomenon.

LR -15

Title: **PREDICTIVE VALUE OF DNA CONCENTRATIONS DETERMINED USING SPECTROPHOTOMETRY COMPARED TO FLUOROMETRY FOR APPLICATIONS IN MOLECULAR BIOLOGY**
Authors: CD Viljoen, C Booysen, S Sreenivasan Tantuan
Departments: Human Molecular Biology Unit
Presenter: Chris Viljoen

Introduction and aim: Determining the concentration and purity of extracted DNA is an international recommendation for applications in Molecular Biology. DNA concentration is determined using UV spectrophotometry or fluorometry. Several studies have reported on the discrepancy between these methods. The aim of this study was to compare two spectrophotometric methods to fluorometry to determine their predictive value in terms of PCR amplifiability.

Methodology: DNA was extracted using 20 methods from commercial DNA and six different food products. DNA extractions were performed in duplicate and each extraction batch included an environmental control containing no DNA. The concentration of DNA was determined using Real-time PCR, the BioDrop μLITE and the NanoDrop 1000 spectrophotometers, and the Qubit fluorometer.

Results: There was a positive correlation between the DNA concentration, as determined by Real-time PCR, spectrophotometry and fluorometry, for the commercial DNA. However, the correlation for DNA concentrations below 10 ng/uL was poor for spectrophotometry compared to fluorometry. The environmental control produced false positive DNA concentrations of up to 10.05 ng/uL for spectrophotometric methods despite containing no DNA. For spectrophotometry, using the environmental control as blank improved the accuracy of DNA concentrations. Purity ratios determined by the spectrophotometer did not have any predictive value in terms of PCR amplifiability.

Conclusion: The fluorometric method proved to be more accurate in determining the concentration of DNA, especially below 10 ng/uL compared to spectrophotometry. Using the environmental control to blank the spectrophotometer reduced the error in estimating the concentration of DNA. Purity ratios did not have any predictive value in terms of PCR amplifiability and thus its use in Molecular Biology applications is questionable. The data from this study suggests that Real-time PCR and fluorometry are more predictive of DNA concentration compared to spectrophotometry.

LR -16

Title: **WHOLE GENOME ANALYSES OF ROTAVIRUS G1P[8] STRAINS CIRCULATING PRE- AND POST ROTATEQ™ VACCINE INTRODUCTION IN RWANDA.**
Authors: S Rasebotsa, PN Mwangi, MT Mogotsi, S Sabiu, LP Mosime, NB Magagula, K Rakau, J Uwimana, L Mutesa, N Muganga, D Murenzi, L Tuyisenge, MJ Mphahlele, LM Seheri, JM Mwenda, MM Nyaga
Departments: Next Generation Sequencing Unit, Division of Virology
Presenter: Sebotsana Rasebotsa

Introduction and aim: Rwanda was the first African country to introduce RotaTeq™ vaccine into its Expanded Program of Immunization (EPI) in May 2012 but switched to Rotarix™ in April 2017. The WHO/AFRO in collaboration with UFS-NGS Unit has introduced whole genome sequencing of rotaviruses from the African rotavirus network. The aim of the study was to analyze G1P[8] strains pre- and post-vaccination to determine any incidence of atypical Wa-like constellations as evidenced in some countries that introduced Rotarix™ vaccine in their EPI.

Methodology: Samples (n=36) were conventionally genotyped and whole genome sequenced using MiSeq Illumina platform. Assembly of raw sequence reads were assembled and aligned using Geneious and further analyzed by MEGA6 software.

Results: Thirty five Rwandan G1P[8] strains had a pure Wa-like genome constellation, while one strain, RVA/Human-wt/ RWA/UFS-NGS-MRC-DPRU442/2012/G1P[8, had a genome constellation characteristic of G1-P[8]-I2-R2-C2-M2-A3-N2-T6-E2-H3, which was consistent with a vaccine derived reassortant strain previously reported in USA in 2010 and Australia in 2012. The single vaccine derived reassortant strain shared closer genetic similarities in all gene segments when compared to RotaTeq™ 99.0 – 100% (nt) and 98.5-100% (aa) than to gene segments of Rotarix™ 65.3-93.4% (nt) and 57.5-92.6% (aa).

Conclusion: Although some countries that introduced Rotarix™ vaccine have detected atypical Wa-like constellations, post vaccination, this was not the case in this study where RotaTeq™ vaccine was used for 5 years before switching to Rotarix™. Interestingly, the detection of the G1P[8] vaccine-derived strain, circulating amongst wild type strains with atypical genotype 2 for proteins I, R, C, M, N and E in addition to genotype 3, 6 and 3 for A, T and H, respectively, poses questions on whether genetic recombination is occurring between the vaccine and the wild type strains that may affect effectiveness of the current rotavirus vaccine.

LR -17

Title: **MULTI-DRUG RESISTANT PROFILES AND CARBAPENEMASE DETERMINANTS OF ACINETOBACTER BAUMANNII ISOLATES FROM THE UNIVERSITAS ACADEMIC HOSPITAL, FREE STATE**

Authors: A Pather*, Y Coovadia[+], A Van Der Spoel Van Dijk[+]
Departments: Universitas Academic Laboratory, National Health Laboratory Service[+], Department of Medical Microbiology, UFS*
Presenter: Anneke van der Spoel van Dijk

Introduction and aim: Hospital-acquired infections are of global concern and Acinetobacter baumannii has been implicated as a common cause of these infections worldwide. Recently, overexposure to antibiotics has resulted in this organism developing resistance to most antibiotics, such as cephalosporins and carbapenems. Hence, therapeutic options are now limited. NDM and OXA-48 are two of the most prevalent carbapenemases responsible for resistance worldwide. Within a South African context, and in particular, the Free State, there is limited data available about carbapenem resistance in A. baumannii. The study aimed to describe the antimicrobial resistance determinants, and susceptibility profiles of multi-drug resistant A. baumannii isolates at Universitas academic hospital.

Methodology: Multi-drug resistant A. baumannii isolates (n = 134), detected on the automated Vitek instrument during the period June to November 2018 from the Universitas academic hospital, were included in the susceptibility profile analysis. Detection of carbapenemase-encoding genes blaOXA48; blaOXA-51; blaOXA-58; blaIMP; blaKPC; blaNDM; blaVIM-1 was undertaken on 29 available isolates using a multiplex PCR with published primers and confirmed by sequencing. Experimental data were analysed using Excel and Geneious software.

Results: Of the A. baumannii diagnosed at the Universitas academic hospital 88.7% were MDR, and 86.8% of these were carbapenem (imipenem and meropenem) resistant. Unexpectedly, the most predominant carbapenemase gene detected in this study was blaNDM with 55 % (16/29), as opposed to the commonly reported blaOXA-48 gene. In the remaining 13 isolates only the intrinsic blaOXA-51 gene was detected.

Conclusions: The high prevalence of carbapenem-resistant A. baumannii isolates in the Free State severely limits treatment options at the Universitas academic hospital. To our knowledge, this is the first report of the blaNDM gene in A. baumannii in the Free State. Continued research is required to reduce the spread of A. baumannii in South Africa and on a global scale.

LR -18

Title: **MYCOBACTERIUM TUBERCULOSIS IN CHILDREN (0-9 YEARS) IN THE FREE STATE PROVINCE OF SOUTH AFRICA: JUNE 2016 – JULY 2018**

Authors: C Thuynsma[+], Y Coovadia*, A Van der Spoel van Dijk*
Departments: Department of Medical Microbiology, Faculty of Health Sciences, UFS[+] Universitas Academic Laboratory, National Health Laboratory Service, Department of Medical Microbiology, UFS*
Presenter: Corne Thuynsma

Introduction and aim: Mycobacterium tuberculosis (MTB) consists of five human sensu stricta lineages (L1 – L5). During 2001-2003 the LAM and T families, belonging to L4, dominated in the Free State (FS) with limited presence (6%) of L2 (Beijing). L2 reportedly is associated with drug-resistance and increased transmission of tuberculosis (TB). Baseline studies have shown an increased presence of L2 in the FS, therefore, raising concerns. This study aimed to determine the occurrence of MTB, and L2 strains present amongst FS children between 0 to 9 years with TB tested at the National Health Laboratory service, Universitas.

Methodology: The study analysed data (n=472) of children (0-9 years) tested for tuberculosis (TB) from 2016 (July-December) to 2018 (January-June) to determine occurrence. For MTB strain variation investigation, 41 susceptible- and 13 DR-TB isolates underwent spacer-oligonucleotide typing.

Results: Of all children tested, 8% (n=35) had DR-TB. A high burden of disease was observed in children 0 to 4 years with 49.5% having susceptible-TB and 65.7% having DR-TB compared to children 5 to 9 years old. DR-TB strains (n=35) included ten multidrug-resistant, 23 mono-rifampicin-resistant and two isoniazid-mono-resistant TB strains. Amongst the 54 isolates subjected to strain typing, L4 (families LAM- (n=13), T- (n=10)) and L2 (n=11) were predominant (63%). L4 was the dominating lineage amongst both the susceptible- (73%) and DR-TB (53%) strains. The L2 increased from 6% (5/86) in 2003 to 20.4% (11/54) of strains in the current study, consisting of 14.63% drug-susceptible- and 38.5% DR-TB strains. Except for one strain the DR-TB strains belonged to L4 and L2.

Conclusions: A high DR-TB burden amongst children <4 years old is of concern. The L2 (Beijing), which previously had a low prevalence in the FS, increased specifically in DR-TB cases. This high DR-TB burden is highly significant for the management of TB in children.

LR -19

Title: **DESIGN, MANUFACTURE AND INVESTIGATION OF A PROTOTYPE RIGID TRILEAFLET HEART VALVE**

Authors: Elsmari Wium
Departments: Cardiothoracic Surgery
Presenter: Elsmari Wium

Introduction and aim: Evidence suggests that a rigid trileaflet heart valve exhibits a superior haemodynamic performance compared to a bileaflet heart valve, leading to reduced dependency on anti-coagulation therapy. It is hypothesised that this is mainly due to the closing mechanism of the valve. This is of particular interest in developing countries, where rheumatic heart disease has not yet been eradicated and therefore a need for a durable and more affordable heart valve replacement solution still exists. Although significant research is being conducted worldwide to improve the durability of flexibles valves (using either biological or new synthetic materials), there has not been much development in the field of mechanical valves since the development of the bileaflet heart valve.

Methodology: Prototype rigid trileaflet heart valves were designed following the engineering design process. This involved concept generation based on a systems engineering approach, fluid dynamics and structural design verification using computer aided engineering software (i.e. computational fluid dynamics and finite element analysis), harnessing the power of additive manufacturing to development prototypes rapidly and inexpensively and testing and evaluating the prototypes using experimental and numerical methods.

Results: The systolic and regurgitant performance indicators of the prototype valve are comparable to a similar-sized commercial bileaflet valve. Leaflet dynamics are being analysed to confirm the whether the valve outperforms a bileaflet valve during diastole.

Conclusion: As long as a durable flexible valve does not exist, the mechanical valve remains the best option for younger patients. The rigid trileaflet valve is a potential solution, however further investigation is required particularly regarding diastolic flow.

LR -20

Title: **TISSUE ENGINEERING OF BOVINE PERICARDIAL TISSUE IN THE CIRCULATORY SYSTEM OF A YOUNG OVINE MODEL: COMMERCIAL VERSUS IN-HOUSE DECELLULARIZATION**

Authors: Botes L[+], JJ van den Heever*, L Laker*, PM Dohmen*[#], D Bester*, FE Smit*
Departments: Department of Health Sciences, CUT[+]; Department of Cardiothoracic Surgery, UFS*; Department of Cardiovascular Surgery, Rostock University, Germany[#]
Presenter: Hans van den Heever

Introduction and Aim: Current bioprosthetic valves and vascular reconstruction materials have limited growth and reparative potential,and limited durability of cryopreserved tissue necessitates alternative substitute materials. Requirements include versatility,compatibility and recellularization ability in vivo,resulting in a structure analogous to native tissue.This sparked interest in use of collagen scaffolds and collagen-containing tissue.Aim of study was to compare commercially available bovine pericardial patch with decellularized bovine pericardial tissue processed according to in-house method in circulatory system of young sheep.

Methodology: Commercially available pericardial patch(Group1,Glycar®) were compared with two in-house processed pericardial patches(Group2,decellularized;Group3,decellularized+fixed+capped).In-house decellularization included cycles of hyper-and hypotonic solutions,detergents,washings and sterilization.Tissue in Group3 were additionally fixed with Glutaraldehyde(GA),capped with propylene glycol and both groups stored in propylene oxide.Similar patch size samples were implanted in main pulmonary artery(PA) and descending aorta(Ao) of young wether sheep,and evaluated for calcification,tensile strength(TS),Young's modulus(YM) & biological interaction.

Results: Acellularity of tissues in Group2&3 were confirmed by DAPI stain.All three groups showed decrease in TS & YM when comparing baseline results with explantation results,but the only significant differences recorded was:Group1,TS,$p=0.0004$;YM,$p=0.0027$; Group2,TS,$p=0.0004$; Group3,YM, $p=0.0121$.TS of explanted tissues differ significantly between Group1&2($p=0.0144$),but not the YM ($p=0.0604$).No differences was recorded for TS($p=0,2567$) and YM(0.1442) between Group1&3. Hematoxylin & eosin stain showed significant host cell ingrowth in Group2, with less in Group3 and nothing in Group1. von Kossa stain for calcification was negative for all three groups. Quantitative calcium analysis differ significantly between Group1&2(Ao,$p=0.0067$; Pu,$p= 0.0074$), and Group1&3 (Ao,$p=0.00054$ but not for Pu,$p=0.0866$).

Conclusion: Unfixed decellularized pericardial tissue does not appear inferior to other commercial products regarding mechanical properties after implantation in the circulatory system of young sheep.Uniform host cell ingrowth creates the potential for tissue regeneration,growth potential and reduction in calcification and early degeneration.Elevated calcium levels in explants from group2&3 might be attributed to presence of intracellular calcium in host cell ingrowth.Decrease in YM of explanted tissues indicated that the tissue became more supple.

LR -21

Title: **MOLECULAR SUITABILITY OF THE CHACMA BABOON MODEL OF ACQUIRED THROMBOTIC THROMBOCYTOPENIC PURPURA WHEN EVALUATING ANTI-VWF AGENTS**
Authors: Walter Janse van Rensburg
Departments: Human Molecular Biology Unit
Presenter: Walter Janse van Rensburg

Background: Von Willebrand Factor (VWF) is vital for normal platelet-platelet and platelet-subendothelium interactions and is a popular pharmaceutical target for the prevention and treatment of disorders such as acquired thrombotic thrombocytopenic purpura (aTTP). Due to the physiological similarities between non-human primates (NHPs) and humans, NHPs are commonly used as pre-clinical animal models to study possible anti-VWF agents. We have evaluated numerous possible treatments targeting VWF in the Chacma baboon model of aTTP. However, no data exist regarding the molecular similarity of the Chacma baboon and human VWF protein, resulting in limited translatability of this model to the human clinical setting.
Aim: We aimed to perform a molecular characterisation of the most functionally active part of the VWF gene, namely exon 28, and to subsequently compare it to the human reference VWF gene.
Methods: VWF exon 28 was amplified, and Sanger sequencing was performed with primers specifically designed to contain mismatches between the VWF gene and the pseudogene. The nucleotide and translated amino acid sequences were then compared to the human reference sequence.
Results: A total of 43 single nucleotide changes were detected between the baboon and human, resulting in 18 amino acid changes. Only four radical amino acid changes were found (99.1% similar). No radical amino acid changes were found within the VWF A1 domain, an area frequently targeted by anti-VWF agents. The ADAMTS13 splice site, Tyr1605-Met1606, is also intact; with the nearest radical amino acid change 60 amino acids upstream. Only one radical amino acid change (Met1545Thr) in the A2 domain was found out of the 14 possible glycoprotein Ib binding sites within exon 28.
Conclusion: The most functionally active part of the Chacma baboon VWF gene is similar enough to the human for the model to produce reliable, and translatable pre-clinical results with human targeted anti-VWF agents.

LR -22

Title: **DOSE AND IMAGE OPTIMIZATION IN CT FOR ADULT PATIENTS**
Authors: M Nel
Departments: Medical Physics
Presenter: Monique Nel

Introduction and aim: The purpose of the study is to find an optimization approach to minimize the absorbed dose to adult patients undergoing computed tomography (CT) examination, while maintain the diagnostic image quality.
Methodology: This study was carried out on the GE DiscoveryTM LightSpeed VCT CT, a 64 slice CT scanner and an RSD Opaque PIXY Phantom was used, to find a balance between image quality and image dose. The optimization method that was used is the Taguchi the L9 orthogonal array analysis. Four exposure parameters were identified to be investigated in this study, it included the tube voltage in kilovolts (kV), the tube current (mA), the level of iterative reconstruction and the level of noise. Each of these exposure parameters was assigned to three levels (level -1, level 0, level +1). By applying the Taguchi analysis, a series of 9 sets of experimental images were obtained. The phantom images were evaluated objectively using RadiAnt DICOM Viewer 4.6.9 and statistically. The contrast to noise ratio, noise and total effective dose was calculated for each set of experiments to determine the relationship between optimum dose and acceptable diagnostic image quality. The effective dose was calculating using the imPACT CT Patient Dosimetry Calculator version 1.0.4.
Results: The statistical analysis was applied by calculating the figure of merit for each experiment. The results showed that the higher the contrast to noise ratio is the better is the image quality, because of the reduction in noise. To achieve a high CNR it is sometimes needed to increase the mA and this will cause an increase to patient dose. It also showed that noise is inversely proportional to square root of radiation dose and inversely proportional to tube voltage.
Conclusion: The overall conclusion of the study is that the exposure parameters used clinically are optimized for both image quality and dose.

LR -23

Title: **DOSE- AND IMAGE OPTIMIZATION IN COMPUTED TOMOGRAPHY CHEST EXAMINATIONS FOR ADULT PATIENTS USING THE TAGUCHI ANALYSIS**

Authors: H Pieters
Departments: Medical Physics
Presenter: Hané Pieters

Introduction: Since the clinical use of a CT scanner has considerably increased over the last few years, the aim for this study was to optimize a chest CT protocol by varying parameters such as the kVp-setting, the mA-setting, the level of iterative reconstruction and the type of reconstruction filters used. The optimization should still be in terms of the ALARA-principle. The output factors included noise, contrast-to-noise ratio and dose per scan.

Materials and methods: The study was performed on a GE Lightspeed VCT 64-slicescanner. To obtain the necessary results, an anthropomorphic phantom was used. The experiments for this study was set up according to the L9-Taguchi design. It resulted in nine different experiments, each with different parameters. An additional experiment was added to obtain a scan where the nominal parameters were selected. The analysis of these experiments in terms of image quality, were done by using the RadiAnt program. The dose for each experiment was calculated using the ImPACT CT Patient Dosimetry Calculator. To obtain the optimal parameters, the program Minitab was used.

Results: The maximum and minimum average noise resulted from experiment 2 and experiment 5 respectively. The maximum and minimum CNR-values resulted from experiments 3 and 2 respectively. According to the diagnostic reference level for a chest CT scan, the dose is 30 mSv. Experiment 3 had an effective dose of 35 mSv. The highest effective dose was 96 mSv and it was due to experiment 10.

Conclusion: According to Minitab, the kVp-setting may be reduced from 120 kVp to 100 kVp. The other parameters will not be reduced but will remain the same as the nominal settings.

LABORATORY POSTERS

LP-1

Title: **VALIDATION OF THE CEREBROSPINAL FLUID (CSF) MODULE OF THE SIEMENS ADVIA® 2120I FOR AUTOMATED CELL COUNTS OF CEREBROSPINAL FLUID**

Authors: E Kalambi-Matengu, L Haupt, Y Coovadia
Departments: Department of Haematology and Cell Biology & Department of Microbiology
Presenter: Esther Kalambi-Matengu,

Introduction and aim: Haematology analysers routinely utilised for whole blood specimens are now equipped with cerebrospinal fluid (CSF) and/or body fluid (BF) modules. These automated cell counters are steadily replacing manual microscopy for CSF cell counts. This is attributed to their higher throughput, improved turnaround times, superior precision and higher accuracy compared to manual microscopy. The aim of this study was to evaluate the CSF Module of the ADVIA2120i for CSF cell counts (RCC, WCC and two part differential) and compare them to the reference method (manual microscopy).

Methods: 46 consecutive routine CSF samples were analysed using the ADVIA2120i CSF Module to obtain a red cell count (RCC), white cell count (WCC) and a four-part WCC differential. Results were compared against the mean of two CSF cell counts performed by manual microscopy using the Improved Neubauer chamber haemocytometer. Quantitative method comparison was performed using EP Evaluator® software version 8.0.0 and Microsoft Excel®. The ADVIA2120i was further assessed for precision, accuracy, linearity and carryover.

Results: The ADVIA 2120i meets all the manufacturer claims in terms of precision and demonstrated acceptable accuracy for RCC, WCC, specifically including lymphocytes and polymorphonuclear (PMN) counts when compared with the reference method. Linearity results showed that the ADVIA2120i produced results that were proportional after serial dilutions. All parameters were deemed to have acceptable carryover.

Conclusions: The ADVIA2120i offers rapid, precise and accurate RCC and WCC for both normal and abnormal cell counts. Our results show that the ADVIA2120i is a suitable alternative to manual microscopy for CSF cell counts and deemed fit for purpose.

LP -2

Title: **THE PREVALENCE AND BACTERIAL DISTRIBUTION OF PERITONITIS AMONG ADULTS UNDERGOING CONTINUOUS AMBULATORY PERITONEAL DIALYSIS AT UNIVERSITAS HOSPITAL**

Authors: A Natverlal[+], I Moola[+], U Kajee[+], Y Moola[+], A Parlato[+], A Bailey[+], J Arendse[*], F Bisiwe[#,]
J Musoke[*]
Departments: Faculty of Health Sciences, University of the Free State[+] Department of Medical Microbiology, Universitas National Health Laboratory Services[*] Division of Nephrology, Universitas Academic Hospital[#]
Presenter: Jolly Musoke

Background: Peritonitis is the leading cause of morbidity and technique failure in peritoneal dialysis patients. ISPD recommends each center to monitor the peritonitis rates and the causative organisms in order to guide local empiric antibiotic protocols. Thus, the aim of this study was to determine the prevalence of peritonitis and describe the causative microorganisms and the antibiotic susceptibility in CAPD adult patients at Universitas Academic Hospital.

Methods: A single center retrospective descriptive survey was conducted to determine the prevalence of peritonitis in peritoneal dialysis patients (2016). All CAPD patients ≥ 18 years, who presented with clinical features of PD associated peritonitis were included. The peritonitis episodes were studied per patient and the causative microorganisms and the antibiotic susceptibility of the organisms were described. Positive cultures growing typical skin contaminants without leucocytes as well as duplicates were excluded.

Results: One hundred and twenty-eight patients underwent CAPD during the study period. The prevalence of peritonitis was 56% with 72 patients having 159 episodes of peritonitis. The majority of episodes (76.7%) (n=122) were mono-microbial. Gram-positive organisms accounted 76% of the peritonitis episodes, coagulase negative staphylococcus being the most common. Of these, 49% of them were methicillin resistant. Gram-negative organisms accounted 21.5% (n=34) of the peritonitis episodes and the most common pathogens were Enterobacterecaea.

Conclusion: The high peritonitis prevalence of 56% is alarming. There was a significant number of peritonitis episodes caused by Gram-negatives. The culture negative rate of 8.8% is within ISPD acceptable limits. There is a need to strengthen peritonitis preventive measures.

LP -3

Title: **WHO'S WHO? AN ERROR OF IDENTITY**

Authors: PT Jansen, TJ Naicker
Departments: Chemical Pathology
Presenter: Piet-Theron Jansen

Introduction and aim: Proper methods for confirmation of patient identity is fundamental in ensuring safe medical practice. Blood samples are linked to specific patients and their request forms by standard procedures.

Methodology: A doctor could not find patient A's test results on the laboratory information system, and the laboratory could find no evidence of receiving a sample for this patient. The doctor was adamant that he had taken the blood sample himself that morning. The laboratory conducted an investigation for the "missing sample".

The proximity of location of both patients in the ward was first checked. Both patients were then interviewed to confirm that blood has been taken from them and by whom. The original request forms belonging to both patients were also examined. Repeat blood samples were requested for both patients and all of the results were compared.

Results: Two patients (A and B) were found in the same ward with the same surname. Two doctors said they had taken blood from both patients. Patient B had no blood taken that morning, while patient A had two different doctors taking blood from separate arms at different times that morning. Blood test results were found on patient B's name.

Conclusion: One of the doctors had taken blood from patient A thinking that she was patient B and linked her blood sample with a previously filled-in request form identifying her as patient B. This explained the presence of blood results for patient B despite her not having had her blood drawn.

This error occurred due to filling-in test request forms well ahead of the actual phlebotomy process. It poses questions regarding how clinicians routinely identify patients on which they perform procedures. Incorrect sample identification could have led to harmful medical interventions with medico-legal implications.

EDUCATIONAL PAPERS

ER -1

Title: **THE USE OF TRADITIONAL FOLK MEDIA TO CONVEY DIABETES MESSAGES TO PATIENTS IN A SOUTH AFRICAN CONTEXT**

Authors: Lesego Radebe, D Krige, M Reid, R Nel
Departments: Communication Science, Nursing, Biostatistics
Presenter: Lesego Radebe

Introduction/aim: Traditional folk media can be successfully used to convey health information. The high prevalence of diabetes necessitates the use of innovate and culturally centered methods for conveying diabetes information. This study presents the use of traditional folk media to convey six key diabetes messages to patients attending public health care services in the Free State province.

Methods: This study used a quantitative quasi-experimental pre-test post-test design. Random sampling of public health care services (N=26) was done in order to sample three services from Thaba 'Nchu (control) and three services from Botshabelo (intervention). Participants (n=183) from the sampled services were conveniently selected, with the control group (n=63) and experimental group (n=120) undergoing a pre-test and 4-week post-test using structured questionnaires. Participants from the experimental group received 6 key diabetes messages conveyed via storytelling (n=2), poetry (n=2) and song/dance (n=2). Frequencies and percentages for categorical data and medians and percentiles for continuous data, were calculated per group, the groups were compared by means of the Chi Square test, Fisher's exact test and the change within a group was compared by means of the McNemar's test.

Results: In spite of an even gender distribution among the Sesotho speaking population in both control and experimental groups, more female participants took part in the study in both the control group (63.5%) and experimental group (69.2%) than men (36.5%; 30.8%).

Reponses to messages within experimental group for story telling was (P <0.01; <0.02), for poetry P<0.05: 1.0) and song and dance (P 0.79; 0.16). One message using story telling (P<0.01) and another using poetry (P<0.01) presented statistically significant changes from the pre-test to 4-week post-test.

Conclusion: Traditional folk media can be used to raise diabetes awareness to patients from indigenous language groups in SA. Communication and healthcare practitioners should therefore not underestimate the value of traditional folk media when promoting health messages.

ER -2

Title: **A FRAMEWORK FOR THE INTEGRATION OF SIMULATION IN THE SOUTH AFRICAN UNDERGRADUATE PHYSIOTHERAPY PROGRAMME:A NARRATIVE SYSTEMATIC REVIEW**

Authors: A van der Merwe, RY Barnes, MJ Labuschagne
Departments: Department of Physiotherapy; Support School of Medicine
Presenter: Anke van der Merwe

Introduction and aim: Due to the changing face of national healthcare and tertiary healthcare education, the need for investigating alternative teaching and learning strategies are essential. Published frameworks regarding the integration of simulation in healthcare education are varied and contextual research is essential in ensuring success of new educational approaches. The study aimed to review healthcare frameworks with the focus on curricular integration of simulation.

Methodology: A narrative systematic review was performed. All databases available to the University of the Free State, including a hand search, for publications between January 2005 and December 2017 presenting a framework for the curricular integration of simulation and yielded 975 texts. Following application of exclusion criteria, eight frameworks were included for independent and thematic review by the researcher and a trained research assistant.

Results: The identified 18 descriptive themes were grouped in four analytical framework themes, namely planning, implementation, programme evaluation and programme revision. Constructively aligning learning outcomes, resource consideration, and post-simulation debriefing were included in all frameworks with 38% mentioning the execution of needs analyses when planning simulation integration. Mastery Learning and Deliberate practice were indicated in 38% of frameworks. The use of simulation for assessment delivered various options- individual formative or summative assessment (63%), self-assessment (25%) and peer-assessment (13%). The need for programme evaluation was included in 63% of the frameworks, with 25% requiring a programme review phase.

Conclusion: Thoughtful planning prior to the integration of simulation is essential, notably in the design of sustainable simulated activities. Considering South Africa's unique social and educational environment, the execution of needs analyses requires further investigation when implementing these guidelines in the South African context. When integrating simulation, the use of Mastery learning, Deliberate practice and assessment should be reflected on in accordance with implemented educational theory due to issues relating to practicality and the safe guarding of the learning environment.

ER -3

Title: **THE PREVALENCE OF BURNOUT AMONG ANAESTHESIOLOGY REGISTRARS IN THE UNIVERSITY OF THE FREE STATE**

Authors: DM Adeleke, G Lamacraft
Departments: Anaesthesiology
Presenter: Durotolu Adeleke

Introduction and Aim: In January 2019 the leading health care organizations in the United States declared burnout as a "public health crisis" owing to the 78% burnout among the nation's physicians. Burnout is an "individual experience that is specific to the work context" which is associated with poor outcomes in job performance and health. Studies have revealed burnout ranging from 18-84% during residency training.

The aim of the study was to quantify the prevalence of burnout among anaesthesiology registrars, identify protective and aggravating factors.

Method: A descriptive, prospective cross-sectional study was done in November 2018 among 23 anaesthesiology registrars using the Maslach Burnout Inventory-the validated instrument globally to assess the three dimensions of burnout: emotional exhaustion, depersonalization and a reduced sense of personal accomplishment. A self-developed questionnaire that assessed demographics, contributing and protective factors of burnout was also administered.

Results: A prevalence of 17.4% of burnout was found with an equal distribution between males and females. The results also showed that all the participants who reported burnout were married. Difficulty in work-family-social life balance was the greatest factor for reconsidering anaesthesia as a career. This was exacerbated by not having fixed working hours. The protective factors identified were: spending time with loved ones, praying, taking a break or spending time in solitude and exercise.

About half (47.8 %) of the participants reported themselves as being prone to errors particularly when sleep deprived.

Conclusion: The registrars in the department of anaesthesiology showed less burnout in comparison with counterparts in anaesthesiology residency training programmes within South Africa and internationally. This reinforces the findings in other studies that physicians in small urban settings show less burnout when compared with national averages. The protective factors identified in Bloemfontein can be adopted as preventive action to improve the wellbeing of the registrar vis-à-vis patient outcomes.

ER -4

Title: **A FACE-TO-FACE PEER SUPPORT MODEL FOR ADULTS WITH TYPE 2 DIABETES: A SYSTEMATIC REVIEW**

Authors: M Pienaar, M Reid
Departments: School of Nursing
Presenter: Melanie Pienaar

Background: Peer support has been recognized as a promising strategy to improve self-management amongst patients living with chronic conditions such as type 2 diabetes.

Objective: The purpose of the review was to synthesise the best available evidence on face-to-face peer support models in adults with type 2 diabetes in low and middle countries.

Methodology: We searched Medline, Cumulative Index to Nursing and Allied Health, Literature Academic Search Ultimate, PsycINFO, CAB Abstracts, Health Source: Nursing/Academic Edition, SPORTDiscus, Africa-Wide Information, MasterFILE Premier, SocINDEX, ERIC, PsycARTICLES, Open Dissertations and Google Scholar from inception to December 2017. Reference list checking and contact with authors were additional sources of data. Due to the heterogeneity of the studies, a meta-analysis was not possible and narrative analysis was performed.

Results: The electronic search yielded 3092 papers and after screening and verification, data was extracted from 12 papers. All 12 papers reported positive self-management health outcomes. Diabetic patients and community health workers (CHW's) were commonly used as peer supporters. The recruitment and selection of diabetic patients as peer supporters focused on diabetic patients from the community, with good glycemic control and/or leadership skills that were recommended by healthcare professionals. CHW's were recruited as peer supporters from an existing infrastructure of CHW's for the community and thus, selection criteria was poorly described. The training of peer supporters featured as an important component, highlighting who provided training and the duration and content of training. Face-to-face group and/or individual peer support was often supplemented by other peer support methods. The supervision of peer supporters was generally poorly described.

Conclusions: Peer support could be used as a self-management strategy for patients with T2D in LMIC's, however, there are many grey areas with regard to the peer support interventions that need to be addressed.

ER -5

Title: **COPING IN HEALTHCARE PROFESSIONS STUDENTS AND STAFF AT THE UFS**

Authors: LJ van der Merwe, A Botha, G Joubert
Departments: Undergraduate Medical Programme Management, School of Clinical Medicine, Biostatistics, School of Biomedical Sciences
Presenter: Lynette van der Merwe

Introduction and aim: Healthcare professionals, university staff and students are at risk for burnout due to the stress of working and studying in a demanding environment. Effective coping strategies should contribute to their well-being, and are essential for resilience. The aim of this study was to investigate coping strategies among undergraduate medical students and staff at the UFS.

Methodology: A cross-sectional study was done using an anonymous self-administered, validated and standardised questionnaire. First to final year undergraduate medical students and staff in the Faculty of Health Sciences participated in the study. Quantitative data were collected including demographic and associated information, resilience (Connor-Davidson Resilience Scale), and coping strategies (Brief COPE). Ethical approval was obtained.

Results: Five-hundred medical students (n=270 pre-clinical, response rate 79.2%; n=230 clinical, response rate 62.0%) and 95 staff members (12% response rate) completed the questionnaire. The majority of students and staff self-reported high resilience (84.6% pre-clinical; 91.8% clinical students; 90.5% staff) and had high mean resilience scores (72.5 pre-clinical; 75.4 clinical; 75.2 staff). Most students had average to high reliance on adaptive coping strategies (active coping, instrumental support, positive reframing, and religious coping). Pre-clinical students had average to high reliance on emotional support, planning and humour, and clinical students on acceptance. Students had low reliance on substance abuse or behavioural disengagement, and average to high reliance on self-distraction. Staff had high reliance on active coping, emotional support, positive reframing and religious coping, and low reliance on denial, substance abuse and behavioural disengagement.

Conclusion: This study showed that medical students and staff in the Faculty of Health Sciences had high resilience scores and most self-reported high resilience. They relied on adaptive coping strategies. Ensuring well-being among students and staff in healthcare professions is essential for both personal well-being and optimal patient care.

ER -6

Title: **A FRAMEWORK TO IMPLEMENT AND SUSTAIN A CURRICULAR INNOVATION IN A HIGHER EDUCATION MIDWIFERY PROGRAMME**

Authors: C Nyoni, Y Botma
Departments: School of Nursing
Presenter: Champion Nyoni

Background and Purpose: Higher education institutions in low resource settings struggle with implementing curricular innovations, which threaten the sustainability of their academic programmes. A competency-based curriculum underpinned by a constructivist philosophy was developed for a one year post basic midwifery programme in Lesotho. Disparities in the enactment of the described curriculum within and across institutions were observed within two years of nation-wide implementation. Such disparities threatened the sustainability of the entire competency-based midwifery programme. This study presents a framework developed to implement and sustain a curricular innovation in a higher education midwifery programme in Lesotho

Methods: Multiple methods research informed by the theory-of-change logic model guided the development of the framework through a multi-phased approach. The initial phase synthesized the literature on strategies to sustain curricular innovations in higher education through an integrative review. The second phase described the implementation of the new curriculum through engaging with primary stakeholders in the setting. In the final phase, findings of the preceding phases were used to develop a framework, which was validated by primary implementers of the new curriculum.

Results: The results report on the elements of the framework to implement and sustain a curricular innovation in a higher education midwifery programme Lesotho.

Conclusion: Designing a strategy for higher education institutions to implement and sustain curricular innovations, should be grounded on an interplay of empirical evidence and contextual realities. Higher education institutions should unearth challenges related to curriculum implementation, and recommend tailor-made approaches that are based on evidence. Primary implementers of the curriculum are fundamental in enhancing the validity and feasibility of such a strategy within their setting.

ER -7

Title: **THE QUALITY OF LIFE OF UNIVERSITY OF THE FREE STATE HEALTH SCIENCES STUDENTS**

Authors: A Mostert, MP Jama, G Joubert, LJ van der Merwe
Departments: Department of Basic Medical Sciences, Faculty of Health Sciences, University of the Free State, Bloemfontein, Free State, South Africa
Presenter: Arnelle Mostert

Introduction and aim: Quality of life perceptions of students may influence their academic performance and vice versa. There is not much data available on the quality of life of undergraduate health sciences students in South Africa. The aim of the study was to determine the quality of life domain scores (physical health, psychological health, social relationships and environment) of first-year University of the Free State (UFS) health sciences students.

Methodology: The sample population included 244 first-year students from the Faculty of Health Sciences (medical, nursing and allied health professions). This quantitative, descriptive cross-sectional study used the self-administered World Health Organization Quality of Life Abbreviated version (WHOQOL-BREF) questionnaire, expanded to include demographic information.

Results: The overall response rate was 73% (n=179). The mean-values (0-100) of the quality of life domain scores (lowest to highest) were psychological health (67.0), social relationships (67.5), physical health (69.8) and environment (71.5). The quality of life domain score order varied in the three schools (School of Medicine, School of Nursing and School for Allied Health Professions) and academic programmes (medical, nursing, occupational therapy, physiotherapy, optometry and dietetics). The social relationships domain score was the lowest in both the School of Medicine (63.5) and the School for Allied Health Professions (69.7), whilst the psychological health domain score was the lowest in the School of Nursing (65.6).

Conclusion: In general, the overall quality of life scores were good. However, the domain score order of respondents in the three schools and various academic programmes of the Faculty of Health Sciences differed. The findings of the study make a valuable contribution to the knowledge base about the quality of life of first-year health sciences students, and could assist health care professionals to address challenges related to students' quality of life.

ER -8

Title: **THE PREVALENCE OF DEVELOPMENTAL COORDINATION DISORDER AMONGST GRADE ONE LEARNER'S IN LOW SOCIO-ECONOMIC ENVIRONMENTS IN MANGAUNG**

Authors: M De Milander, A.M du Plessiss, F.F. Coetzee
Departments: Exercise and Sport Sciences
Presenter: Monique De Milander

Introduction and aim: Developmental Coordination Disorder (DCD) is a motor skill disorder that affects the child's performance during daily life. Different occurrences of DCD has been reported within various countries and socio-economic environments. This study determined the prevalence of DCD in grade one learners and gender living in a low socio-economic environment of the Mangaung, Motheo District in South Africa.

Methodology: Grade one learners between the age of six to eight years old (N = 242) from a low socio-economic environment attending quintile one to quintile three schools were randomly selected for assessment in this study. The Movement Assessment Battery for children, Second Edition, Performance Test (MABC-2) was used to identify learners with and without motor difficulties. The Diagnostic Statistical Manual fifth edition (DSM-5) was used to identify DCD within the group of learners. Prevalence of grade one learners living with DCD was determined and described by means of 95% Confidence interval. The learners were compared per gender by means of kruskal wallis test for numerical data and for categorical data, where the chi-square test or when needed the fisher's exact test was used for small samples.

Results: The results indicated that out of the total group of 242 learners, 10% of the learners were identified with DCD (moderate motor difficulties, 3%, and severe motor difficulties, 7%) and 90% of the learners were identified with no motor difficulties. With regard to the boys, 10% (moderate motor difficulties, 3% and severe motor difficulties, 7%) were identified with DCD and 90% without motor difficulties whereas 11% (moderate motor difficulties, 3% and severe motor difficulties, 6%) of the girls were identified with DCD and 91% indicated no motor difficulties.

Conclusion: The prevalence of DCD in grade one learners living in a low socio-economic environment in Mangaung, Motheo District is estimated at 10%. Furthermore, the results indicated no significant difference (p=0.9439) between the two genders.

ER -9
Title: **EXCAVATING THE BONES OF THE PAST: FOUCAULDIAN DISCOURSE ANALYSIS AS METHODOLOGY TOWARD DECOLONIZATION OF CURRICULA**
Authors: Tania Rauch van der Merwe
Departments: Occupational Therapy
Presenter: Tania Rauch van der Merwe

Introduction and aim: Marked progress has been achieved post-apartheid in the higher education sector in terms of equity, number of students accessing higher education, and pockets of excellence in areas of research, teaching and learning. However, pervasive exclusionary, discriminatory and hegemonic patterns among staff and students along the lines of race and gender, in addition to untransformed and alienating epistemologies, institutional cultures and curriculum, also seem to endure – rendering transformation in higher education painfully slow. Viewing occupational therapy curriculum as discourse, this study developed a critical analysis of how the socio-historical political markers for inclusion and exclusion continue to be reproduced in a contemporary curriculum.

Methodology: The study is anchored in critical theory. Foucauldian discourse analysis was employed using both archaeology and genealogy as methods. Data collection for archaeology comprised of historical archive about the origin of occupational therapy profession from 1943-1994 in order to establish the rules of formation of the profession's knowledge. For the analysis on the reproduction of inclusionary/exclusionary patterns (genealogy), 30 sets of relevant, contextual data served as basis for data collection. A discourse analytical method for each of the analyses was constructed from Foucauldian theory.

Results: The archaeology findings revealed the markers for *inter alia* white exceptionalism, essentialization of female gender through patriarchy, as well as the wide-spread Christian missionary and welfarist underpinnings of 'community based development'. The genealogy findings show evidence of repetition of some patterns through rationalizations of moralism and mono-cultural epistemologies, reifying epistemological ignorance that may lead to epistemic injustice.

Conclusion: Foucauldian discourse analysis may be a valuable tool to reconceptualize curriculum as discourse, which enables conscious reflection of the historical markers for patterns of unjust inclusion/exclusion that are reified in current curriculum. Foucauldian discourse analysis as a methodology may therefore be a useful approach in the project of transformation and decolonization of curriculum.

EDUCATIONAL POSTERS

EP -1

Title: **VALIDITY AND RELIABILITY TESTING OF THE SESOTHO HEALTH LITERACY TEST (SHLT)**
Authors: M Reid, M Nel
Departments: School of Nursing; Department of Biostatistics
Presenter: Marianne Reid

Introduction: Health literacy is under-researched in developing countries. This presentation outlines the phased approach taken to determine the validity and reliability of the Sesotho Health Literacy Test (SHLT). Phase 1 evaluated the understandability of SHLT items, Phase 2 determining convergent and predictive validity of the SHLT items.
Methods: This was a descriptive cross-sectional study. Phase 1: Understandability of SHLT items (n=40) were assessed using cognitive interviews conducted amongst conveniently selected Sesotho first language speaking patients (n=15) at Heidedal primary healthcare clinic in Bloemfontein. Phase 2: Convergent and predictive validity of the of SHLT items (n=40), calibration of the scale and internal validity of SHLT items were determined from completed SHLT questionnaires (n=476). Participants consisted of conveniently selected patients (n=330) at MUCPP and Heidedal primary healthcare clinics in Bloemfontein, and grade 11/12 Sesotho speaking learners (n=146) at the three high schools in the towns of Springfontein and Trompsburg.
Results: Phase 1: Participants' (n=15) median age were 37 years (range 22-60) and mostly male (67%). All 40 SHLT items were understandable to participants (n=15). Phase 2: Participants' (n=476) median age were 32.9 years (range 15.9 - 97.5) and mostly female (67%). Item response analysis was done to calibrate the scale, where on the basis of the estimated discrimination and difficulty, 30 of the 40 items appeared to provide redundant information in terms of discrimination and difficulty. Two factors, declaring 60.3% of the variance, were identified by means of factor analysis namely: Appraising information and Understanding information. The ten item scale indicated good internal reliability with a Cronbach alpha value of 0.77.
Discussion: The 10 item SHLT is suitable to rapidly assess health literacy in people who speak Sesotho as their first language. This creates the platform to better understand health literacy amongst this population. Improvement in health status and healthcare-seeking behavior amongst this population may now too become a reality.

EP -2

Title: **STUDENTS' VOICE: STUDENTS FAILING ASSESSMENTS OR ASSESSMENT FAILING STUDENTS?**
Authors: H Brits, G Joubert, LJ vd Merwe, J Bezuidenhout
Departments: Family Medicine
Presenter: Hanneke Brits

Introduction and aim: Although there are different viewpoints on the reliability and validity of student opinions and perceptions, data obtained from students is valuable in the quality assurance of assessments. Collecting and including data from student opinions and perceptions may contribute to student agency in all aspects of teaching, learning and assessment. The aim of this paper was to obtain the opinions and perceptions regarding assessment of medical students in the clinical phase of the MBChB programme at the UFS.
Methods: In this cross-sectional study, all 227 enrolled 4th and 5th year medical students were asked to complete a printed, self-administered, anonymous questionnaire regarding assessment practices in the clinical phase. The questionnaire was based on literature and policy requirements regarding assessment and included open and closed-ended questions.
Results: The response rate was 84.6%. Only 44.0% of students felt that the assessments were fair, although 67% indicated that the assessment methods used are appropriate and that questions are aligned with the outcomes. The majority of students (73.8%) felt that passing or failing a high stakes exam is not an indication of competence. Almost all the students (89.1%) recognised the importance of assessment of "soft skills", in particular professionalism. They gave useful suggestions for assessment of these skills, including assessment by peers and patients, as well as the use of technology, e.g. smartphones. Students disliked multiple choice questions and preferred short answer questions. They also suggested more workplace-based assessment and a single integrated assessment at the end of the year.
Conclusion: Medical students' opinions and perceptions gave valuable insight into their experience of assessment. The suggestions obtained will be discussed with the relevant academic staff in departments in the School of Clinical Medicine as the next phase of this study.

EP -3

Title: **COMMUNICATION IN CPC BEYOND GENERATION, CULTURAL AND LANGUAGE BARRIERS: A CASE SERIES OF DRAWINGS.**
Authors: H Brits
Departments: Family Medicine
Presenter: Hanneke Brits

Introduction and aim: Do we really know what our children know, think or want? Due to generation, culture and language barriers it's easier to assume than to find out. In a children's palliative care (CPC) programme it's even more difficult to communicate with the children due to the added illness, underlying emotional state and low self-esteem. The aim of this study was to investigate if drawings could be used to encourage communication and better understanding of the issues that children in a CPC programme battle with, but not necessarily express. This was part of a bigger study which investigated the role of drawings to assess emotional well-being in children in a CPC programme.
Design: A qualitative study design was used. Primary school children were assessed while they were busy to draw pictures. Picture drawing is part of their daily activities. Only the results of the first encounter with each child was included in this study. Privacy was ensured and the same researcher assessed all the children. The same opening statement was used with all the children: "Would you like to tell me about your drawing?"
Results and discussion: All 11 children that were approached were included in the study. The children expressed opinions regarding their disease, feelings, caregivers and faith. These opinions were grouped in themes that included the individual (body, mind and spirit), the caregivers and the community. All the children were comfortable to discuss their drawings and feelings. The more they talked, the more detail they added to the pictures. Without encouragement most of the children expressed opinions regarding "total care".
Lessons learned: Do not interpret the drawing of/for the child. Give them the chance to tell you. Be prepared to manage what they disclosed to you.

EP -4

Title: **EVALUATION OF COMMUNITY-BASED EDUCATION FOR DIETETIC STUDENTS ATTENDING AND ASSISTING AT A CAMP FOR CHILDREN WITH DIABETES**
Authors: UM Hallbauer, R Lategan-Potgieter, G Joubert
Departments: Paediatrics & Child Health, Nutrition and Dietetics, Biostatistics
Presenter: Ute Hallbauer

Introduction and aim: Final year dietetics students assist at the annual "Kids Diabetes Camp" in Bloemfontein as part of community-based education in the undergraduate syllabus. Students plan, prepare and present meals and organize educational activities and games. Students observe glucose testing and injecting of insulin and interact with children to hear their stories. The objective of this study was to report on student self-assessment of their knowledge and skills regarding diabetes care as well as reflection of their camp experience.
Methodology: Self-assessment of 21 items of diabetes knowledge and skills regarding diabetes care in children was completed by 34 students before and after the camps of 2015, 2016 and 2017, using a Likert scale (1-5). Students also submitted an open written reflection of their camp experience which was summarized in themes.
Results: Thirty students (30/34) completed all 21 self-assessment items (total possible score 105). The median score was 64 (range 38-84) before and 81 (range 45-101) after the camp. Most improvement was seen in blood glucose testing with a glucometer, use of continuous glucose monitoring, choice of appropriate pre-meal insulin dose, insulin injection technique and knowledge of insulin devices, management of hyper- and hypoglycaemia, testing and responding to night glucose levels and assisting children with food choices. The prominent themes included in student reflections were: the value of spending time with children with diabetes for full days and learning from them; gaining respect for children's self-discipline and ability to cope with difficult experiences at school or at home; the importance of teaching carb counting skills and the experience of teamwork among the students in preparing meals.
Conclusion: Including "Kids Diabetes Camp" in the undergraduate dietetics syllabus is a win-win strategy: Students gain skills, learn from children with diabetes through close interaction and contribute to the successful functioning of the camp.