UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA

UFS·UV
HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE

FACULTY OF HEALTH SCIENCES
49th RESEARCH FORUM

Thursday 24 and Friday 25 August 2017

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 **2017 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 the 49th 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

A warm welcome to the 49th Faculty Research Forum of 2017. Yes – this is correct. Last year it was announced that the 2016 Faculty Research Forum would be the 49th one. But not so! In preparation for the 2017 Faculty Research Forum it was found that between 2005 and 2006 there had been a calculation glitch in the forum announcement count. This honest mistake is corrected now and therefore we are again on the verge of our 50th forum – we are already planning to celebrate this achievement in style in 2018! Last year I pointed out the progress we had made – and indeed, this momentum is still maintained. Thank you to each researcher who invested the time and effort to participate in this prestigious event.

We are delighted to welcome Prof John Pettifor as the speaker at our FP Retief Lecture. We are grateful to have three highly distinguished external evaluators attending: Prof Hesta Friedrich-Nel, Dr Gerda Marx and Dr Rohen Harrichandparsad. We continue with the initiative launched last year and will host an exciting workshop linked with the forum on Saturday. I hope this venture will be enthusiastically supported by all.

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 either presenting your research, attending the paper or poster presentations, or contributing to its success in any other way. May I request your special attention for the session that presents the student winners of 2017. Each year this is a very enjoyable session 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 deal with relationships. Marvin Ashton once advised *"Be the one who nurtures and builds. Be the one who has an understanding and a forgiving heart and who looks for the best in people. Leave people better than you found them."*

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

Prof GJ van Zyl
DEAN

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EXTERNAL ADJUDICATORS

CLINICAL: Dr Rohen Harrichandparsad

Rohen Harrichandparsad is a Senior Consultant based at the Inkosi Albert Luthuli Central Hospital (IALCH), Department of Neurosurgery and Senior Lecturer at the University of KwaZulu-Natal, Durban. His clinical and research interests include Neurovascular pathology: brain aneurysms and arteriovenous malformations; neuro-trauma and cervical myelopathy.

He is a member of the University of KwaZulu Natal's Biomedical and Research Ethics Committee (BREC).

EDUCATIONAL: Prof Hesta Friedrich-Nel

Prof Hesta Friedrich-Nel is the education representative of the National Council of the Society of Radiographers of South Africa (SORSA), the co-ordinator of the CPD committee, the representative for the Society of Radiographers of South Africa on the ISRRT council and the ISRRT Regional co-ordinator Education: Africa. She has been a member of the SORSA Bloemfontein branch since 1978 and served on the committee as secretary, chairperson and education representative. She was the president of National Council in 2010 and 2011.

Prof Friedrich-Nel is the HOD of the department of Clinical Sciences at the Central University of Technology, Free State (CUT) in Bloemfontein, South Africa since 2013. She is involved in research supervision of masters and a doctoral student, have published in accredited and non-accredited journals and was fortunate to receive a Fulbright scholarship in 2011 to visit the Indiana University in Indianapolis for three months.

LABORATORY: Dr Gerda Marx

Gerda Marx is a senior lecturer in the Department of Genetics in the Faculty of Natural and Agricultural Sciences. She obtained her PhD in Human Molecular Biology in 2011, from the University of the Free State. In the same year, she was selected into the Prestige Scholar Program (PSP) of the UFS. She has authored papers in both national and international journals and have supervised several postgraduate students. She is leading a research group studying the genetic variation associated with a range of human diseases, with a keen interest in Diabetes. Her research incorporates state-of-the-art technology such as next generation sequencing and Real-time PCR. Her students and research are mainly funded under the NRF Thuthuka grant of which she has been the recipient for the last four years.

She is one of the founding members of the recently established Metabolic Research Unit (CSMRU) of the University of the Free State, together with Prof WF Mollentze and Dr W de Lange. Currently she is the study coordinator at the unit, conducting several pharmaceutical phase III trials relating to metabolism. On a national level, she serves on the Executive Committee of the Society for Endocrinology, Metabolism and Diabetes of South Africa (SEMDSA). She has also been elected to the Local Organising Committee of the meeting of the International Congress of Endocrinology (ICE). Recently, she was the recipient of a national award to attend the European Association for the Study of Diabetes (EASD) meeting to be held in Lisbon, Portugal.

24th – FP RETIEF Lecture

INVITED SPEAKER

Professor John Pettifor

John Pettifor was until his retirement in 2010 Head of the Department of Paediatrics at Chris Hani Baragwanath Hospital in Soweto, Johannesburg and the University of the Witwatersrand, and director of the MRC Mineral Metabolism Research Unit and the Birth to Twenty longitudinal study. He now holds a part-time position in the Faculty Research Office as director of the Carnegie Clinician Scientist PhD Fellowship Programme and an honorary professorial researcher post in the MRC/Wits Developmental Pathways for Health Research Unit within the Department of Paediatrics.

He qualified as a doctor from the University of the Witwatersrand in Johannesburg in 1968, and then specialised in Paediatrics which he completed in 1974. In 1978/9, he spent a year as a clinical research fellow at the Shriners Hospital in Montreal with Dr Francis Glorieux studying paediatric bone diseases. He was the first of many clinical research fellows who have come to the Shriners in Montreal to hone their skills in paediatric metabolic bone disease. On Pettifor's return to South Africa he established the Mineral Metabolism Research Unit and was appointed director of the Unit by the SA Medical Research Council in 1985, a position he held until his retirement. In 1981 he obtained his PhD (Med) for studies into the role of low dietary calcium intakes in the pathogenesis of rickets in children in rural areas of South Africa.

Prof Pettifor's major research interests have focused on metabolic bone diseases in children and in particular the roles of vitamin D and dietary calcium intake in the pathogenesis of rickets. He is currently involved in a longitudinal study of the ethnic differences in bone mass in children and the factors influencing bone growth and acquisition during puberty. He has over 240 publications in accredited journals, 35 chapters in books and is co-editor of a book on paediatric bone diseases. Since 2005, he has been an NRF A2 rated scientist.

He is on the editorial boards of a number of international bone and nutrition journals, and has received a number of national and international awards for his research.

ORGANIZING COMMITTEE

Chair:	Dr Deirdre van Jaarsveldt
Vice chair:	Dr Wattie Janse van Rensburg
Dean:	Prof Gert van Zyl
Faculty Admin:	Ms Marlene Viljoen
Liaison Officer:	Ms Sandra Gouws
Research Admin:	Ms Lizelle de Reuck, Ms Colleen Bezuidenhout
School of Medicine:	Dr Nicholas Pearce
School for Allied Health Professions:	Dr Corlia Brandt
Laboratory:	Prof Jackie Goedhals
Clinical:	Dr Anton van Aswegen
Educational:	Dr Cynthia Spies
Student Forum Chair:	Dr Chantelle Liebenberg
Student Representatives:	Ms Sarah Hartley Mr Kennedy Lempetje

EVALUATION COMMITTEES

CLINICAL

Internal Evaluation Committee:	Dr Anton van Aswegen (Chair) Dr Lincoln Solomon Prof Hanneke Brits
External Adjudicator:	Dr Rohen Harrichandparsad, University of KwaZulu Natal
Adjudicators of research articles:	Dr Rohen Harrichandparsad, University of KwaZulu Natal Prof I Vlok, University of Stellenbosch Dr H Makajee, Inkosi Albert Luthuli Hospital

LABORATORY

Internal Evaluation Committee:	Prof Jacqueline Goedhals (Chair) Ms Anneke van der Spoel van Dijk Dr Dominique Goedhals
External Adjudicator:	Dr Gerda Marx, University of the Free State
Adjudicators of research articles:	Dr Gerda Marx, University of the Free State Prof Debbie van der Merwe, University of the Witwatersrand Dr Mignon du Plessis, National Institute for Communicable Diseases

EDUCATIONAL

Internal Evaluation Committee	Dr Cynthia Spies (Chair) Mr Gerhard van Zyl Prof Louise van den Berg
External Adjudicator	Prof Hesta Friedrich-Nel, Central University of Technology Free State
Adjudicators of research articles:	Prof Hesta Friedrich-Nel, Central University of Technology Free State Dr Charity Ndeya-Ndereya, University of the Free State Prof Sechaba Mohlomaholo, Walter Sisulu University Prof Flip Louw, University of the Free State

PRIZE WINNERS OF RESEARCH ARTICLES

John van der Riet Medal Winner

L Janse van Rensburg, R Nel & CM Walsh
Department of Nutrition and Dietetics, School for Allied Health Professions

Knowledge, opinions and practices of healthcare workers related to infant feeding in the context of HIV.

SA Health 21 (2016) 129-136

Muller Potgieter Medal Winner

WJ Janse van Rensburg
Department of Haematology, School of Medicine

Comparison of common platelet receptors between the chacma baboon (Papio ursinus) and human for use in pre-clinical human-targeted anti-platelet studies.

Platelets 2016; 27(4):322-32

Kerneels Nel Medal Winner

M Jacobs, D van Jaarsveldt
School of Nursing

'The character rests heavily within me': drama students as standardized patients in mental health nursing education.

Journal of Psychiatric and Mental Health Nursing, 2016, 23, 198-206

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 2017 Faculty of Health Sciences Faculty Research Forum of the University of the Free State.

DONORS

BRONZE
South African Medical Association

SILVER
School of Nursing UFS
Prof Gina Joubert

GOLD
None

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

EXHIBITORS

- Ampath
- Discovery Foundation
- Furniture Fair
- Novagen
- Partner4Life
- Pfizer
- SAMA (South African Medical Association)
- SANBS
- 3F Scientific
- SSEM Mthembu Medical
- The Scientific Group
- Welch Allyn/Nostics
- Whitehead Scientific

Programme

THURSDAY, 24 AUGUST 2017

	KINE 1		
SESSION 1 **08h00-08h15**	Chairperson: Dr Deirdre van Jaarsveldt **Opening Lecture**: Prof GJ van Zyl (Dean: Faculty of Health Sciences) *How do we deal with relationships?*		
SESSION 2 **08h20-10h05**	**KINE 1** Chairperson: Dr Corlia Brandt **Clinical Papers**	**KINE 2** Chairperson: Dr Wattie J van Rensburg **Laboratory Papers**	**KINE 3** Chairperson: Dr Johan Bezuidenhout **Educational Papers**
08h20-08h35	CR1 Ms Mahlodi Modikoe	LR1 Mr Jean Kloppers	ER1 Dr Monique de Milander
08h35-08h50	CR2 Dr Carri-Lee Greig	LR2 Dr Jaco Joubert	ER2 Ms Carina Pheifffer
08h50-09h05	CR3 Dr Jan Du Plessis	LR3 Prof Harry Kotze	ER3 Mr Champion Nyoni
09h05-09h20	CR4 Dr Roline Barnes	LR4 Mnr Hans van den Heever	ER4 Dr Johan Bezuidenhout
09h20-09h35	CR5 Dr Chantelle Liebenberg	LR5 Dr Martin Nyaga	ER5 Ms Maryna Hattingh
09h35-09h50	CR6 Dr Marisan Nienkemper	LR6 Mr Ayodeji Ogunbayo	ER6 Ms Karen Bodenstein
09h50-10h05	CR7 Prof Corinna Walsh	LR7 Ms S Sreenivasan Tantuan	ER7 Prof Hannes Steinberg
TEA (10h05 – 10h15)			
	KINE 1		
SESSION 3 **10h15-10h45**	Chairperson: Dr Anton van Aswegen **Invitation Lecture**: Dr Rohen Harrichandparsad *The Benchmarks for Ethical Research*		
SESSION 4 **10h50-13h05**	**KINE 1** Chairperson: Dr Esme le Grange **Clinical Papers**	**KINE 2** Chairperson: Dr Willie Shaw **Laboratory Papers**	**KINE 3** Chairperson: Dr Lily van Rhyn **Educational Papers**
10h50-11h05	CR8 Ms Robyn Smith	LR8 Ms Daniella Violante	ER8 Ms Veronica Taschl
11h05-11h20	CR9 Dr Corlia Brandt	LR9 Mr Kyle Davis	ER9 Dr Jehron Pillay
11h20-11h35	CR10 Ms Robyn Smith	LR10 Dr Oluwaseyi Oderinde	ER10 Dr Joleen Cairncross
11h35-11h50	CR11 Dr Corlia Brandt	LR11 Dr Nerina van der Merwe	ER11 Dr Cynthia Spies
11h50-12h05	CR12 Dr André Theron	LR12 Ms Charmaine Conradie	ER12 Dr Rene Botha
12h05-12h20	CR13 Ms Demaré Potgieter	LR13 Ms Déte van Eeden	ER13 Dr Dirk Hagemeister
12h20-12h35	CR14 Prof Louise van den Berg	LR14 Ms Atang Bulane	ER14 Ms Maria Phillips
12h35-12h50	CR15 Dr Teboho Malindi	LR15 Mr Johnathan Adams	ER15 Ms Lizemari Hugo
12h50-13h05	CR16 Dr Johan Aikman	LR16 Dr William Shaw	ER16 Ms Lizemari Hugo
LUNCH (13H05-13H30)			

SESSION 5 **13h30-14h00**	**KINE 1**	
	Chairperson: Dr Cynthia Spies **Invitation Lecture**: Prof Hesta Friedrich-Nel *#quality_culture*	
	Chairperson: Dr Chantelle Liebenberg **Best presentations of Student Forum**	
14h05-14h20	Best Student Paper	School of Allied Health Professions
14h20-14h35	Best Student Paper	School of Nursing
14h35-14h50	Best Student Paper	School of Medicine
TEA (14h50-15h05)		
SESSION 6 **15h05-16h30**	**KINE 1**	
	Chairperson: Dr Nicholas Pearce **Clinical Posters**	
15h05-15h10	CP1 Dr Chantelle Liebenberg	
15h10-15h15	CP2 Dr Chantelle Liebenberg	
15h15-15h20	CP3 Ms Cherezane Marais	
15h20-15h25	CP4 Ms Helena Nel	
15h30-15h35	CP5 Ms Helena Nel	
15h35-15h40	CP6 Dr Claire Barrett	
15h40-15h45	CP7 Dr Caroline Steyn	
15h50-15h55	CP8 Ms Gloria Tamenti	
	Chairperson: Prof Chris Viljoen **Laboratory Posters**	
16h00-16h05	LP1 Dr Chantelle Liebenberg	
16h05-16h10	LP2 Prof Marius Coetzee	
16h10-16h15	LP3 Dr Ella Morrison	
	Chairperson: Dr Santie van Vuuren **Educational Posters**	
16h20-16h25	EP1 Dr Anthonio Adefuye	
16h25-16h30	EP2 Dr Chantel van Wyk	

Programme
FRIDAY, 25 AUGUST 2017

	KINE 1	
SESSION 7 **08h00-08h45**	Chairperson: Prof GJ van Zyl **FP Retief Lecture:** Professor John Pettifor *Bone mass and fractures in South African children*	
SESSION 8 **08h50-10h35**	**KINE 1**	**KINE 2**
	Chairperson: Prof Willem Kruger **Clinical Papers**	Chairperson: Prof William Rae **Laboratory Papers**
08h50-09h05	CR17 Dr Elmine du Toit	LR17 Mr Willem Boonzaier
09h05-09h20	CR18 Prof Riaz Seedat	LR18 Ms Mpoi Makhetha
09h20-09h35	CR19 Dr Jan Du Plessis	LR19 Mr Jaco Oosthuizen
09h35-09h50	CR20 Dr William Shaw	
09h50-10h05	CR21 Dr Hannelo Noeth	
10h05-10h20	CR22 Dr Nico van der Westhuizen	
10h20-10h35	CR23 Dr Dirk Hagemeister	
TEA/TEE (10h35-11h05)		
SESSION 9 **11h05-12h20**	**KINE 1**	
	Chairperson: Dr Justin Basson **Clinical Papers**	
11h05-11h20	CR24 Dr MF Potgieter	
11h20-11h35	CR25 Dr Lumko Ngetu	
11h35-11h50	CR26 Dr Theunis Botha	
11h50-12h05	CR27 Dr Monique de Milander	

SESSION 10 **12h20-12h50**	**KINE 1**	
	Chairperson: Prof Jackie Goedhals **Invitation Lecture:** Dr Gerda Marx *What we know about the genetics of Diabetes*	
LUNCH (12h50-13h20)		
SESSION 11 **13h30 – 14h15**	**KINE 1**	
	Chairperson: Prof Magda Mulder **Rebuttals**: External Evaluators	
13h30-13h45	Rebuttal Clinical External Adjudicator	Dr Rohen Harrichandparsad
13h45-14h00	Rebuttal Educational External Adjudicator	Prof Hesta Friedrich-Nel
14h00-14h15	Rebuttal Laboratory External Adjudicator	Dr Gerda Marx
CLOSURE		
	FOYER	
16H00	**Announcement of Winners** **IMPORTANT NOTICE:** **All persons** who present papers during the Forum must assemble in the Foyer directly after the conclusion of Friday's programme for the announcement of the winners and handing over of prizes during a cocktail function.	

Programme
THURSDAY, 24 AUGUST 2017

Session 2 **KINE 1**

CR1 ORAL HEALTH-RELATED KNOWLEDGE, ATTITUDES AND PRACTICES [KAP] OF ADULT PATIENTS IN THE MANGAUNG METROPOLITAN MUNICIPALITY, SOUTH AFRICA

08h20-08h35 Presenter: Ms Mahlodi Modikoe
Authors: MM Modikoe, M Reid, R Nel
Department: School of Nursing

Session 2 **KINE 1**

CR2 SHORT AND MEDIUM TERM OUTCOMES OF SYSTEMIC TO PULMONARY ARTERY SHUNTS IN CENTRAL SOUTH AFRICA

08h35-08h50 Presenter: Dr Carri-Lee Greig
Authors: C Greig, DG Buys, M Long
Department: Paediatrics and Child Health (Cardiology), Cardiothoracic Surgery

Session 2 **KINE 1**

CR3 FAMILY EXPERIENCES AND VIEWPOINTS OF PALLIATIVE AND SUPPORTIVE CARE FOR CHILDREN WITH CANCER: CAN WE DO BETTER?

08h50-09h05 Presenter: Dr Jan Du Plessis
Authors: JP du Plessis, DK Stones, M Meiring
Department: Paediatrics

Session 2 **KINE 1**

CR4 THE PREVALENCE AND NATURE OF MUSCULOSKELETAL DISORDERS WITHIN ADULT MIDDLE-AGED WOMEN, ATTENDING A COMMUNITY CLINIC IN THE FREE STATE: AN EPIDEMIOLOGICAL STUDY

09h05-09h20 Presenter: Dr Roline Barnes
Authors: R Barnes, J Jelsma, R Parker
Department: Physiotherapy, Department of Health and Rehabilitation Sciences (UCT)

Session 2 **KINE 1**

CR5 THE AMOUNT OF POSTMORTEM BLEEDING FROM SEVERED UTERINE ARTERIES

09h20-09h35 Presenter: Dr Chantelle Liebenberg
Authors: C Liebenberg
Department: Forensic Medicine

Session 2 **KINE 1**

CR6 HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS

09h35-09h50 Presenter: Dr Marisan Nienkemper
Authors: M Nienkemper, J Malherbe, C van Vuuren, C Barrett
Department: Internal Medicine, Haematology

Session 2 **KINE 1**

CR7 FOOD SECURITY, DIETARY INTAKE AND ANTHROPOMETRY OF GRADE-R LEARNERS IN FICKSBURG: IMPACT OF A SCHOOL FEEDING PROGRAMME

09h50-10h05 Presenter: Prof Corinna Walsh
Authors: C Walsh, R Lategan, E du Toit, L vd Berg, L Meko, M Cronje, L Robb, R Nel
Department: Nutrition and Dietetics, Biostatistics

Session 2 **KINE 2**

LR1 SCREENING OF HAEMOPHILIA A PATIENTS AND CARRIERS FOR THE INTRON 22 INVERSION MUTATION IN CENTRAL SOUTH AFRICA WITH A NEWLY DEVELOPED METHOD.

08h20-08h35 Presenter: Mr Jean Kloppers
Authors: JF Kloppers, WJ Janse van Rensburg, GM Marx
Department: Haematology and Cell Biology, Genetics

Session 2 **KINE 2** **LR2 THE IN VITRO AND IN VIVO EFFECTS OF STREPTOKINASE IN A PAPIO URSINUS BABOON MODEL OF ACQUIRED THROMBOTIC THROMBOCYTOPENIC PURPURA (TTP) – A PILOT STUDY.**

08h35-08h50 Presenter: Dr Jaco Joubert

Authors: J Joubert, WJ Janse van Rensburg, SM Meiring, C Blaauw, C Tersteeg, K Vanhoorelbeke

Department: Haematology and Cell Biology; National Health Laboratory Service, Universitas Academic Laboratories; IRF Life Sciences, KU Leuven Campus Kulak Kortrijk, Laboratory for Thrombosis Research, Kortrijk, Belgium

Session 2 **KINE 2** **LR3 IS THE IMPACT OF CRYOPRESERVATION ON THE TISSUE STRENGTH OF OVINE PULMONARY ARTERY HOMOGRAFT LEAFLETS MORE IMPORTANT THAN EXTENDING ISCHAEMIC HARVEST TIMES?**

08h50-09h05 Presenter: Prof Harry Kotze

Authors: D Bester, L Botes, H van den Heever, HF Kotze, K Davis, M Esterhuizen, FE Smit

Department: Cardiothoracic Surgery, Health Sciences (CUT)

Session 2 **KINE 2** **LR4 CADAVER DONATION: STRUCTURAL INTEGRITY OF PULMONARY HOMOGRAFTS HARVESTED FORTY-EIGHT HOURS POST-MORTEM IN THE JUVENILE OVINE MODEL**

09h05-09h20 Presenter: Mnr Hans van den Heever

Authors: JJ van den Heever, D Bester, L Botes, HF Kotze, FE Smit

Department: Cardiothoracic Surgery, Health Sciences (CUT)

Session 2 **KINE 2** **LR5 WHOLE GENOME ANALYSIS OF THE P[6] ROTAVIRUS STRAINS FROM DIVERSE GEOLOCATIONS ACROSS AFRICA**

09h20-09h35 Presenter: Dr Martin Nyaga

Authors: MM Nyaga, Y Tan, LM Seheri, JM Mwenda, AD Steele, RS Shabman, MJ Mphahlele

Department: Medical Microbiology and Virology

Session 2 **KINE 2** **LR6 CHALLENGES IN DIAGNOSING PULMONARY TUBERCULOSIS IN CHILDREN: A COMPARATIVE ANALYSIS OF MULTIPLE SAMPLES AND METHODS**

09h35-09h50 Presenter: Mr Ayodeji Ogunbayo

Authors: AE Ogunbayo, A Bulane, A Van der Spoel van Dijk

Department: Medical Microbiology, NHLS

Session 2 **KINE 2** **LR7 QUANTIFICATION OF BCR-ABL1 ON THE GENEXPERT: FROM DIAGNOSTICS TO RESEARCH**

09h50-10h05 Presenter: Ms Sandhya Sreenivasan Tantuan

Authors: S Sreenivasan Tantuan, H Fonternel, M Stemmet, CD Viljoen

Department: Haematology and Cell Biology

Session 2 **KINE 3** **ER1 EQUINE-ASSISTED THERAPY AS INTERVENTION FOR MOTOR PROFICIENCY IN CHILDREN WITH AUTISM SPECTRUM DISORDER: CASE STUDIES**

08h20-08h35 Presenter: Dr Monique de Milander

Authors: M De Milander, S Bradley, R Fourie

Department: Exercise and Sport Sciences

Session 2 **KINE 3** **ER2 THE PSYCHOSOCIAL THEMES OF CHILDREN WITH A CONGENITAL HEART DEFECT**

08h35-08h50 Presenter: Ms Carina Pheifffer

Authors: C Pheiffer, R Van der Watt, S Brown

Department: Psychology, Paediatric Cardiology

Session 2	**KINE 3**	**ER3 STRATEGIES TO SUSTAIN CURRICULAR INNOVATIONS IN HIGHER EDUCATION: AN INTEGRATIVE REVIEW**
	08h50-09h05	Presenter: Mr Champion Nyoni **Authors**: CN Nyoni, Y Botma **Department**: School of Nursing
Session 2	**KINE 3**	**ER4 THE DEFICIENCIES AND SURGICAL SKILLS NEEDS OF RURAL GENERAL PRACTITIONERS IN SOUTH AFRICA**
	09h05-09h20	Presenter: Dr Johan Bezuidenhout **Authors**: DC Porter, J Bezuidenhout, RS du Toit, AO Adefuye **Department**: Health Sciences Education, Surgery
Session 2	**KINE 3**	**ER5 PEER PHYSICAL EXAMINATION IN CLINICAL PHYSICAL EXAMINATION TRAINING: A VIABLE OPTION IN THE SOUTH AFRICAN CONTEXT?**
	09h20-09h35	Presenter: Ms Maryna Hattingh **Authors**: M Hattingh, M Labuschagne **Department**: Clinical Simulation and Skills Unit: School of Medicine
Session 2	**KINE 3**	**ER6 STRESSORS AND COPING STRATEGIES AMONG PHYSIOTHERAPY STUDENTS: TOWARDS AN INTEGRATED SUPPORT STRUCTURE**
	09h35-09h50	Presenter: Ms Karen Bodenstein **Authors**: K Bodenstein, EC Janse van Vuuren, M Nel **Department**: Physiotherapy, Economic Management Sciences, Biostatistics
Session 2	**KINE 3**	**ER7 THE SELECTION OF STUDENTS AS RESEARCH PARTICIPANTS IN UNDERGRADUATE MEDICAL STUDENT PROJECTS AT THE SCHOOL OF MEDICINE, UFS 2002-2017**
	09h50-10h05	Presenter: Prof Hannes Steinberg **Authors**: G Joubert, WJ Steinberg, LJ van der Merwe **Department**: Biostatistics, Family Medicine, Undergraduate Programme Management, School of Medicine
Session 4	**KINE 1**	**CR10 INFLUENCE OF CARDIAC INTERVENTION ON NEURODEVELOPMENT IN YOUNG CHILDREN WITH CONGENITAL HEART DISEASE IN CENTRAL SOUTH AFRICA: THREE-MONTH AND SIX-MONTH OUTCOMES**
	11h20-11h35	Presenter: Ms Robyn Smith **Authors**: R Smith, J Potterton, V Ntsiea, S Brown **Department**: Physiotherapy WITS, Paediatrics and Child Health UFS
Session 4	**KINE 1**	**CR11 LOWER LIMB MUSCLE FORCES AFTER FATIGUING EXERCISE ON GRASS AND ARTIFICIAL TURF PLAYING SURFACES AMONG ELITE SOCCER PLAYERS**
	11h35-11h50	Presenter: Dr Corlia Brandt **Authors**: JAT Greyling, C Brandt, FF Coetzee, C van Rooyen **Department**: Physiotherapy, Sport and Exercise Science, Biostatistics
Session 4	**KINE 1**	**CR12 MICROBIOLOGICAL PROFILE OF ORGANISMS CAUSING VENTILATOR ASSOCIATED PNEUMONIA IN PATIENTS ADMITTED TO SURGICAL ICUS IN UNIVERSITAS ACADEMIC HOSPITAL IN 2015**
	11h50-12h05	Presenter: Dr André Theron **Authors**: A Theron, S Potgieter **Department**: Anaesthesiology, Infectious disease
Session 4	**KINE 1**	**CR13 LIMITING FOETAL DOSES DURING A FOUR-VESSEL ANGIOGRAM AND ENDOVASCULAR STENT-ASSISTED BERRY ANEURYSM REPAIR: A CASE REPORT**
	12h05-12h20	Presenter: Ms Demaré Potgieter **Authors**: D Potgieter, WID Rae, CS de Vries **Department**: Medical Physics

Session 4 **KINE 1** **CR14 RANDOMISED CONTROLLED TRIAL OF PROTEIN SUPPLEMENTATION ON NUTRITIONAL STATUS OF SOUTH AFRICAN PATIENTS RECEIVING CONTINUOUS AMBULATORY PERITONEAL DIALYSIS**

12h20-12h35 Presenter: Prof Louise van den Berg
Authors: B LeQlerck, C Walsh, R Nel, L van den Berg
Department: Nutrition and Dietetics, Biostatistics

Session 4 **KINE 1** **CR15 OUTCOMES OF ELDERLY PATIENTS THAT HAD APPENDECTOMY DONE AT PELONOMI AND UNIVERSITAS HOSPITAL**

12h35-12h50 Presenter: Dr Teboho Malindi
Authors: T Malindi, E Le Grange
Department: Surgery

Session 4 **KINE 1** **CR16 PROGNOSTIC INDICATORS DETERMINING OUTCOME OF PATIENTS ADMITTED TO A MULTI-DISCIPLINARY ICU: VALIDATING THE APACHE IV SCORING SYSTEM**

12h50-13h05 Presenter: Dr Johan Aikman
Authors: JG Aikman, MGL Spruyt
Department: General Surgery, Critical Care

Session 4 **KINE 1** **CR8 EFFECT ON PARENTING STRESS OF CARDIAC INTERVENTION IN YOUNG CHILDREN WITH CONGENITAL HEART DISEASE IN CENTRAL SOUTH AFRICA: THREE-MONTH AND SIX-MONTH OUTCOMES.**

10h50-11h05 Presenter: Ms Robyn Smith
Authors: R Smith, J Potterton, V Ntsiea, S Brown
Department: Physiotherapy WITS, Paediatrics and Child Health UFS

Session 4 **KINE 1** **CR9 REHABILITATION IN WOMEN UNDERGOING PELVIC FLOOR RECONSTRUCTIVE SURGERY: A DOUBLE-BLIND, RANDOMISED, CONTROLLED CLINICAL TRIAL**

11h05-11h20 Presenter: Dr Corlia Brandt
Authors: C Brandt, HS Cronje, EC Janse van Vuuren, M Nel
Department: Physiotherapy, Obstetrics and Gynaecology, Economic and Management Sciences, Biostatistics

Session 4 **KINE 2** **LR10 TESTING THE INTEGRAL QUALITY MONITORING SYSTEM WITH RANDOM POSITIONAL ERRORS**

11h20-11h35 Presenter: Dr Oluwaseyi Oderinde
Authors: OM Oderinde, F Du Plessis
Department: Medical Physics

Session 4 **KINE 2** **LR11 INTRODUCTION OF NEXT GENERATION SEQUENCING FOR FAMILIAL BREAST CANCER DIAGNOSTICS**

11h35-11h50 Presenter: Dr Nerina van der Merwe
Authors: NC van der Merwe, J Oosthuizen
Department: Division of Human Genetics, NHLS

Session 4 **KINE 2** **LR12 PITFALLS IN THE LABORATORY DIAGNOSIS OF VON WILLEBRAND DISEASE**

11h50-12h05 Presenter: Ms Charmaine Conradie
Authors: M Meiring, C Conradie
Department: Haematology and Cell Biology

Session 4 **KINE 2** **LR13 CONTRAST ENHANCEMENT WITH MULTI-ENERGY COMPUTED TOMOGRAPHY**

12h05-12h20 Presenter: Ms Déte van Eeden
Authors: D van Eeden, FCP du Plessis
Department: Medical Physics

Session 4 **KINE 2** **LR14 DETECTION OF HUMAN PAPILLOMAVIRUS TYPES IN HEAD AND NECK SQUAMOUS CELL CARCINOMA**

12h20-12h35 Presenter: Ms Atang Bulane
Authors: A Bulane, D Goedhals, R Seedat, J Goedhals, FJ Burt
Department: Medical Microbiology and Virology

Session 4 **KINE 2** **LR15 THE EFFECT OF HETEROZYGOUS BLM MUTATIONS ON BREAST CANCER RISK IN SOUTH AFRICA**

12h35-12h50 Presenter: Mr Johnathan Adams
Authors: J Adams, S-R Schneider, E Imyanitov, NC van der Merwe
Department: Division of Human Genetics UFS, Department of Genetics UFS, NN Petrov Institute of Oncology Russia

Session 4 **KINE 2** **LR16 INTESTINAL CRYPT REGENERATION EXHIBITS A VOLUME EFFECT IN MOUSE JEJUNUM**

12h50-13h05 Presenter: Dr William Shaw
Authors: W Shaw, M van Heerden, E Bahn, ML Alber, J Gueulette, J Slabbert
Department: Medical Physics, University of Heidelberg, Université Catholique de Louvain, iThemba LABS

Session 4 **KINE 2** **LR8 IMPLEMENTING A MODIFIED WINSTON-LUTZ TEST FOR STEREOTACTIC RADIOTHERAPY AT UNIVERSITAS HOSPITAL ANNEX**

10h50-11h05 Presenter: Ms Daniella Violante
Authors: D Violante, IE Setilo
Department: Medical Physics

Session 4 **KINE 2** **LR9 COMPARING THE HEMODYNAMICS OF A RE-ENGINEERED POPPET VALVE TO A BI-LEAFLET AORTA VALVE**

11h05-11h20 Presenter: Mr Kyle Davis
Authors: K Davis, CJ Jordaan, L Thompson-Jooste, L Botes, RWM Frater, FE Smit
Department: Cardiothoracic Surgery

Session 4 **KINE 3** **ER10 THE FACILITATORS' PERSPECTIVE OF INTERPROFESSIONAL EDUCATION AT THE FACULTY OF HEALTH SCIENCES**

11h20-11h35 Presenter: Dr Joleen Cairncross
Authors: J Cairncross
Department: School of Medicine

Session 4 **KINE 3** **ER11 MEANINGFUL SIMULATION LEARNING EXPERIENCES FOR MATURE LEARNERS: A CONCEPTUAL FRAMEWORK**

11h35-11h50 Presenter: Dr Cynthia Spies
Authors: C Spies, Y Botma
Department: School of Nursing

Session 4 **KINE 3** **ER12 A ONE YEAR REVIEW OF THE IMPACT OF A RURAL INTERPROFESSIONAL EDUCATION COLLABORATIVE PLATFORM ON HEALTH PROFESSIONS STUDENT LEARNING**

11h50-12h05 Presenter: Dr Rene Botha
Authors: R Botha, A Joubert, D Hagemeister, H Morgan
Department: Office of the Dean, School of Nursing, School of Medicine, School for Allied Health Professions

Session 4	**KINE 3**	**ER13 RURAL AND INTER-PROFESSIONAL – A PARTICIPATORY-ACTION-RESEARCH REFLECTION ON THE NEW CLINICAL TRAINING PLATFORM FOR THE FACULTY OF HEALTH SCIENCES, UFS**
	12h05-12h20	Presenter: Dr Dirk Hagemeister **Authors**: D Hagemeister, J Cairncross, A Joubert, H Morgan, R Botha **Department**: Family Medicine, School of Medicine, School of Nursing, School for Allied Health Professions, Office of the Dean
Session 4	**KINE 3**	**ER14 TRANSFORMATIVE LEARNING EXPERIENCES OF NURSE EDUCATORS IMPLEMENTING HIGH FIDELITY SIMULATION: AN INTERPRETATIVE PHENOMENOLOGY ANALYSIS**
	12h20-12h35	Presenter: Ms Maria Phillips **Authors**: M Phillips, L van Rhyn, D van Jaarsveld **Department**: School of Nursing
Session 4	**KINE 3**	**ER15 AN ASSESSMENT TOOL TO MEASURE THE SUPPORTIVE ROLES OF PRECEPTORS**
	12h35-12h50	Presenter: Ms Lizemari Hugo **Authors**: L Hugo, Y Botma **Department**: School of Nursing
Session 4	**KINE 3**	**ER16 NURSING STUDENTS' EVALUATION OF SUPPORT OFFERED BY PRECEPTORS**
	12h50-13h05	Presenter: Ms Lizemari Hugo **Authors**: L Hugo, Y Botma **Department**: School of Nursing
Session 4	**KINE 3**	**ER8 DETERMINING WHETHER THE BRIDGING COURSE FOR ENROLLED NURSES MEETS THE NEED OF THE STAKEHOLDERS**
	10h50-11h05	Presenter: Ms Veronica Taschl **Authors**: V Taschl, MP Jama **Department**: Health Sciences Education
Session 4	**KINE 3**	**ER9 CARDIOTHORACIC SURGICAL TRAINING IN SOUTH AFRICA – FACTS, CHALLENGES AND SIMULATION**
	11h05-11h20	Presenter: Dr Jehron Pillay **Authors**: J Pillay, J Bezuidenhout, FE Smit **Department**: Cardiothoracic Surgery, Health Sciences Education

Programme
FRIDAY, 25 AUGUST 2017

Session 6	**KINE 1**	**CP1 HUNTING FOR COPPER IN MILITARY TRAINING GROUNDS: A DANGEROUS ENDEAVOR**
	15h05-15h10	Presenter: Dr Chantelle Liebenberg **Authors**: C Liebenberg **Department**: Forensic Medicine
Session 6	**KINE 1**	**CP2 DEATH BY PORCUPINE QUILL**
	15h10-15h15	Presenter: Dr Chantelle Liebenberg **Authors**: C Liebenberg, HJB Butler **Department**: Forensic Medicine, Zoology and Entomology
Session 6	**KINE 1**	**CP3 CHRONIC ANKLE INSTABILITY AND ASSOCIATED SELF-REPORTED FUNCTION IN PROFESSIONAL BALLET DANCERS IN SOUTH AFRICA**
	15h15-15h20	Presenter: Ms Cherezane Marais **Authors**: C Marais, A van der Merwe, R Nel **Department**: Physiotherapy, Biostatistics
Session 6	**KINE 1**	**CP4 THE EFFECT OF SHOULDER STABILITY TRAINING ON UPPER LIMB FUNCTION IN PATIENTS WITH HEMIPLEGIA A PILOT STUDY.**
	15h20-15h25	Presenter: Ms Helena Nel **Authors**: HW Nel, W Mudzi, EC Janse van Vuuren, E Musenge **Department**: Physiotherapy
Session 6	**KINE 1**	**CP5 CHALLENGES OF STUDENTS WITH MOBILITY LIMITATIONS ON THE MAIN CAMPUS OF THE UNIVERSITY OF THE FREE STATE**
	15h30-15h35	Presenter: Ms Helena Nel **Authors**: HW Nel, MJ Cizek, J Huang, E Meyer, C Scott, L van den Heever, N van Wyk **Department**: Physiotherapy
Session 6	**KINE 1**	**CP6 ISOLATED NON-COMPACTION OF THE LEFT VENTRICLE**
	15h35-15h40	Presenter: Dr Claire Barrett **Authors**: N Lufundo, HDT Theron, CL Barrett **Department**: Internal Medicine
Session 6	**KINE 1**	**CP7 TRACHEOBRONCHIAL STRICTURE AN UNUSUAL PRESENTATION OF THORACIC TUBERCULOSIS**
	15h40-15h45	Presenter: Dr Caroline Steyn **Authors**: C Steyn, C van Vuuren **Department**: Internal Medicine
Session 6	**KINE 1**	**CP8 OCULAR SYMPTOMS AMONG CALL CENTRE AGENTS: CITY OF TSHWANE CALL CENTRES**
	15h50-15h55	Presenter: Ms Gloria Tamenti **Authors**: GT Tamenti, TA Rasengane **Department**: Optometry
Session 6	**KINE 1**	**EP1 MEDICO-LEGAL DOCUMENTATION OF RAPE OR SEXUAL ASSAULT: ARE COMMUNITY-SERVICE DOCTORS EQUIPPED FOR THE TASK?**
	16h20-16h25	Presenter: Dr Anthonio Adefuye **Authors**: L Fouché, J Bezuidenhout, C Liebenberg, AO Adefuye **Department**: Health Sciences Education, Clinical Forensic Medicine

Session 6 **KINE 1** **EP2 NEWLY APPOINTED HEALTH PROFESSIONS EDUCATORS' REFLECTIONS AND EVALUATIONS: TO FLEE OR FIGHT.**

16h25-16h30 Presenter: Dr Chantel van Wyk
Authors: C van Wyk, C Kridiotis
Department: Health Sciences Education

Session 6 **KINE 1** **LP1 NO SUCH THING AS NON-LETHAL PROJECTILES**

10h20-10h35 Presenter: Dr Chantelle Liebenberg
Authors: C Liebenberg
Department: Forensic Medicine

Session 6 **KINE 1** **LP2 MUTATION DETECTION IN THE ENDOGLIN GENE IN A FAMILY AFFECTED WITH HEREDITARY HAEMORRHAGIC TELANGIECTASIA (HHT)**

16h05-16h10 Presenter: Prof Marius Coetzee
Authors: KT Peta, GM Marx, MJ Coetzee
Department: Haematology and Cell Biology, Genetics

Session 6 **KINE 1** **LP3 PATIENT MIX-UP DUE TO PRE-LABELLING OF SPECIMEN TUBES PRIOR TO SAMPLE COLLECTION**

16h10-16h15 Presenter: Dr Ella Morrison
Authors: EM Morrison, HD Potgieter, TJ Naicker
Department: Chemical Pathology

Session 8 **KINE 1** **CR17 SPERM MORPHOLOGY INFLUENCED BY NUTRIENT SUPPLEMENTATION**

08h50-09h05 Presenter: Dr Elmine du Toit
Authors: E du Toit, R Lategan-Potgieter, J Raubenheimer
Department: Nutrition and Dietetics, Biostatistics

Session 8 **KINE 1** **CR18 AGE OF DIAGNOSIS, INCIDENCE AND PREVALENCE OF RECURRENT RESPIRATORY PAPILLOMATOSIS IN THE FREE STATE**

09h05-09h20 Presenter: Prof Riaz Seedat
Authors: RY Seedat, R Schall
Department: Otorhinolaryngology, Mathematical Statistics and Actuarial Science

Session 8 **KINE 1** **CR19 OUTCOME OF PAEDIATRIC ONCOLOGY PATIENTS ADMITTED TO A PAEDIATRIC ICU: A 10-YEAR EXPERIENCE**

09h20-09h35 Presenter: Dr Jan Du Plessis
Authors: JP du Plessis, DK Stones
Department: Paediatrics and Child Health

Session 8 **KINE 1** **CR20 IMAGE-GUIDED ADAPTIVE BRACHYTHERAPY DOSE ESCALATION FOR CERVIX CANCER VIA FRACTIONATION COMPENSATION**

09h35-09h50 Presenter: Dr William Shaw
Authors: W Shaw, WID Rae, ML Alber
Department: Medical Physics, Aarhus University, Heidelberg University Hospital

Session 8 **KINE 1** **CR21 THE INCIDENCE OF PHANTOM EYE PAIN POST EYE REMOVAL**

09h50-10h05 Presenter: Dr Hannelo Noeth
Authors: H Noeth
Department: Anaesthesiology

Session 8 **KINE 1** **CR22 LARYNGOSCOPE HANDLES - A HIDDEN DANGER IN THEATRE**

10h05-10h20 Presenter: Dr Nico van der Westhuizen
Authors: N van der Westhuizen, N Pearce
Department: Anaesthesiology

Session 8 **KINE 1** **CR23 AUDIT OF THE PREPAREDNESS OF PUBLIC PRIMARY HEALTH CARE CLINICS IN BLOEMFONTEIN REGARDING CONSUMABLES, EQUIPMENT AND MEDICATION TO MANAGE COMMON EMERGENCIES**

10h20-10h35 Presenter: Dr Dirk Hagemeister
Authors: D Hagemeister, M Makhoathi, L Sekhutsoanyane, N Dladla, S Mbongo, S Seemi, G Joubert
Department: Family Medicine, Undergraduate MBChB programme - School of Medicine, Biostatistics

Session 8 **KINE 2** **LR17 QUANTITATIVE MEASUREMENTS WITH INTRA-OPERATIVE PROBE IN BREAST CANCER PATIENTS TO ASSIST SENTINEL NODE REMOVAL**

09h35-09h50 Presenter: Mr Willem Boonzaier
Authors: WPE Boonzaier, K Ramonaheng
Department: Medical Physics, Nuclear Medicine

Session 8 **KINE 2** **LR18 SCREENING OF PALB2 IN HIGH-RISK BRCA1/2 NEGATIVE SA BREAST CANCER PATIENTS**

09h50-10h05 Presenter: Ms Mpoi Makhetha
Authors: MF Makhetha, NC van der Merwe, BK Dajee, I Buccamazza
Department: Division of Human Genetics

Session 8 **KINE 2** **LR19 PERSONALIZED MEDICINE – THE IMPLEMENTATION OF MLPA IN INTELLECTUAL DISABILITIES**

10h05-10h20 Presenter: Mr Jaco Oosthuizen
Authors: J Oosthuizen, M Theron
Department: Division of Human Genetics, NHLS

Session 9 **KINE 1** **CR24 PERCEPTIONS OF MENTAL HEALTHCARE CONSUMERS REGARDING THEIR CONDITIONS**

11h05-11h20 Presenter: Dr MF Potgieter
Authors: MF Potgieter, C van Rooyen
Department: Psychiatry, Biostatistics

Session 9 **KINE 1** **CR25 THE KEY OPHTHALMOLOGICAL FINDINGS IN SOUTH AFRICAN INTERVENTIONALISTS**

11h20-11h35 Presenter: Dr Lumko Ngetu
Authors: L Ngetu, W Marais, A Rose, WID Rae
Department: Ophthalmology, Community Health, Medical Physics

Session 9 **KINE 1** **CR26 RETINOPATHY OF PREMATURITY: A CASE SERIES REPORT OF TREATED INFANTS**

11h35-11h50 Presenter: Dr Theunis Botha
Authors: TC Botha, A Rose, WJ Marais
Department: Ophthalmology

Session 9 **KINE 1** **CR27 PREVALENCE AND EFFECT OF DEVELOPMENTAL COORDINATION DISORDER ON LEARNING-RELATED SKILLS OF SOUTH AFRICAN GRADE ONE CHILDREN**

11h50-12h05 Presenter: Dr Monique de Milander
Authors: M de Milander, FF Coetzee, A Venter
Department: Exercise and Sport Sciences, Paediatrics

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 in the marble foyer of the F.P. Retief Building for viewing from Wednesday to Friday.

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

Dr D van Jaarsveldt
Chairperson: Organising Committee

CLINICAL PAPERS

CR1

Title: **Oral health-related knowledge, attitudes and practices [KAP] of adult patients in the Mangaung Metropolitan Municipality, South Africa of**

Authors: MM Modikoe, M Reid, R Nel
Presenter: Ms Mahlodi Modikoe
Departments: School of Nursing

Introduction and aim: Planning and implementation of oral health education programme is of more value when oral health-related knowledge, attitudes and practices (KAP) are known. This study aimed to describe the oral health-related KAP of adult patients in Mangaung Metropolitan Municipality. The theory of planned behaviour (TPB) was applied as the foundation for describing KAP of adult patients.
Methodology: A quantitative descriptive design was used and a questionnaire as the research technique. The KAP questions were structured in line with the TPB. The population comprised of all adult patients receiving oral-related care at community health centres (CHCs) and district hospitals in Mangaung Metropolitan Municipality within Bloemfontein, Botshabelo and Thaba 'Nchu. On average, 4089 adult patients attended these facilities on a monthly basis. Proportional convenient sampling (N=207) of participants at the sampled facilities took place. Descriptive statistics, namely frequencies and percentages for categorical data and medians and percentiles for continuous data, were calculated.
Results: Data was presented according to the TPB. High percentages of participants' responses towards oral health-related KAP were regarded as strengthening oral health-related behaviours/practices. Oral health-related knowledge as reflected by the participants' behavioural beliefs (93.7%), normative beliefs (81.1%), subjective norm (70%) and perceived behavioural control (71.9%), strengthened oral health behaviours positively. Participants' control beliefs did not strengthen oral health behaviours. Participants' attitudes (62.3%), intention (98.5%), actual behavioural control (99%) and behaviour (95.1%) strengthened oral health-related behaviour/practices.
Conclusion(s): Understanding the oral health related KAP of adult patients in Mangaung Metropolitan Municipality, would assist the Free State Department of Health to plan an evidence based oral health education programme. A greater sensitivity could be created among the healthcare workers to consider the KAP of adult patients receiving oral health-related care.

CR2

Title: **SHORT AND MEDIUM TERM OUTCOMES OF SYSTEMIC TO PULMONARY ARTERY SHUNTS IN CENTRAL SOUTH AFRICA**

Authors: C Greig, DG Buys, M Long
Presenter: Dr Carri-Lee Greig
Departments: Paediatrics and Child Health (Cardiology), Cardiothoracic Surgery

Introduction and aim: Congenital heart lesions with significant right ventricle outflow tract obstruction (RVOTO) can be critical and difficult to manage. More patients are undergoing full surgical repair with favourable outcomes. There remains a group that requires a staged surgical approach which commences with a systemic to pulmonary artery shunt (SPS) as a temporary palliative intervention. The outcome of this procedure has improved over the years, however there is still significant morbidity and mortality attached. The aim of this study was to determine the short and medium term outcomes of SPSs in central South Africa.
Methodology: A retrospective review of all SPSs operated at Universitas Hospital from October 1995 until July 2017 was performed. Patients who underwent additional complex surgical procedures at the time of index shunt were excluded.
Results: 136 SPSs were performed. Lesions with RVOTO consisted of: Tetralogy of Fallot/Pulmonary Atresia-VSD (n=54); Double Outlet Right Ventricle (n=14); Tricuspid Atresia (n=38); Pulmonary Atresia-intact septum (n=9); critical Pulmonary Stenosis (n=1); Transposition of the Great Arteries (n=8); Ebstein's anomaly (n=2) and AVSD (n=10). Median age at procedure was 3.3 months (range: 0-200). 32% (n=44) were performed during the neonatal period. Shunt types were: Modified Blalock Taussig (n=104); central (n=30) and other (n=2). Documented shunt diameters were: 3mm (n=7); 4mm (n=52); 5mm (n=39); 6mm (n=2) and 7mm (n=1). At last follow-up (median 7.9 months since index shunt [range: 0-107.1]) 42% (n=55) proceeded to definitive surgery; 9% (n=12) remain in follow up awaiting definitive surgery; 28% (n=37) were lost to follow up and 21% (n=28) demised. 18 were classified as early deaths before discharge from hospital. Of the neonatal group 34% (n=15) demised and 23% (n=10) were lost to follow up.
Conclusion: A SPS in our setting is associated with significant mortality with neonates being a specifically vulnerable and high risk group. Continuation of care remains problematic as a large proportion of patients are lost to follow up. Multiple factors contribute to the outcome of these patients, with the potential for improvement.

CR3

Title: **Family experiences and viewpoints of palliative and supportive care for children with cancer: Can we do better?**

Authors: JP du Plessis, DK Stones, M Meiring
Presenter: Dr Jan Du Plessis
Departments: Paediatrics

Introduction and aim: The palliative and supportive care needs of children with cancer and their families are unique and require special attention. Children and their families in Africa facing life-threatening/life-limiting diseases have unique needs and have the right to achieve effective and evidence-based care. Development of appropriate services sensitive to the needs of families and based on observed evidence has become more and more recognized. As an introduction to develop and improve supportive and palliative care services for children with cancer, families were questioned regarding their experiences and suggestions for improvements.

Methodology: Sixteen family members, of children with cancer and treated at Universitas Academic Hospital, Bloemfontein, South Africa, were questioned regarding their children's standard oncology and supportive/palliative care. Their responses were studied and repeating themes were identified.

Results: A number of areas of need were identified: erratic psychosocial support, minimal financial support, poor parental access to basic needs and food provision, preventable errors in procedures and lack of sibling support. Staff were also not always sufficiently equipped to attend to palliative care patients.

Conclusion(s): Supportive and palliative care for children with cancer need to be improved. Family members are a valuable resource and the interviews identified a number of themes, valuable to consider in the expansion of a supportive/palliative service. The intension of the study was to create the awareness that by making small and affordable changes the quality of care that the children and families receive can be improved.

CR4

Title: **THE PREVALENCE AND NATURE OF MUSCULOSKELETAL DISORDERS WITHIN ADULT MIDDLE-AGED WOMEN, ATTENDING A COMMUNITY CLINIC IN THE FREE STATE: AN EPIDEMIOLOGICAL STUDY**

Authors: R Barnes, J Jelsma, R Parker
Presenter: Dr Roline Barnes
Departments: Physiotherapy, Department of Health and Rehabilitation Sciences (UCT)

Introduction and aim: Musculoskeletal diseases (MSD) are a major cause of disability in both low- and high-income countries and consume large amounts of health and social resources. The field of musculoskeletal disease is hampered by lack of epidemiological knowledge, particularly in low and middle income countries. This study investigated the nature and prevalence of MSD and co-morbidities in women between the ages of 40–64 years who attended a community clinic.

Methodology: A sample of convenience was utilised in that all women within the target population, on the days of data collection, were included in the sampling frame. Five trained health care workers conducted the survey. A self-designed questionnaire was used to gather demographic and medical information, the COPCORD questionnaire to screen for joint pain and the EQ-5D-3L to monitor Health Related Quality of Life. Body Mass Index (BMI), blood pressure measurements and random serum glucose levels were also determined. Descriptive statistics, namely frequencies and percentages, were calculated for categorical data. Non-parametric tests were used for ordinal data.

Results: A total of 1376 participants enrolled. The prevalence of joint pain was 62% and 53% had joint pain in conjunction with either hypertension and/or diabetes mellitus type II. There was a weak association between hypertension and joint pain. The BMI was significantly higher in those with joint pain and they reported a poorer quality of life, both with regard to the EQ-5D-3L index score and the more global VAS score. The dimensions affected include mobility, usual activities, pain/discomfort and anxiety/depression.

Conclusion(s): As two thirds of all respondents reported joint pain and in most cases co-morbid conditions, it is clear that MSD, in conjunction with CDL is a major problem in disadvantaged middle-aged women in peri-urban Free State. In addition, MSD is associated with poorer functional outcomes and quality of life.

CR5

Title: **THE AMOUNT OF POSTMORTEM BLEEDING FROM SEVERED UTERINE ARTERIES**

Authors: C Liebenberg
Presenter: Dr Chantelle Liebenberg
Departments: Forensic Medicine

Introduction and aim: In a court case where a patient had litres of blood in her abdomen at autopsy, the contribution made by postmortem bleeding from an untied uterine artery became a point of contention

between a clinician and a forensic pathologist. It is known that bleeding into body cavities can continue postmortem, but it is impossible to distinguish between antemortem and postmortem bleeding during autopsy. Studies that examined postmortem bleeding showed that large arteries such as the thoracic aorta can cause bleeding of up to 1300 millilitres. The amount of bleeding will however depend on the lumen of the injured artery.

Methodology: A prospective study was done to determine the amount of postmortem bleeding from severed uterine arteries. The uterus is removed routinely as part of all medicolegal post-mortems and the uterine arteries must be cut. For this study, the abdomen was opened, the uterine arteries severed and the body left undisturbed for 20 minutes. The amount of postmortem bleeding was then assessed. The study group consisted of woman between 20 and 50 years of age, who still had a uterus, was not pregnant and was without injury to the abdomen or pelvis.

Results: Only 14 cases were included in this study and their ages ranged from 25 to 50 years. Three ladies were murdered, one drowned, one cut her arm on a broken window and nine died in motor vehicle accidents. The postmortem interval ranged from 12 to 93 hours, but no bleeding was observed from any of the cut uterine arteries.

Conclusion(s): The concept of postmortem bleeding into body cavities is an accepted fact in forensic pathology. This was a small study but the contribution of postmortem bleeding from severed uterine arteries seems to be negligible.

CR6

Title: **Hemophagocytic Lymphohistiocytosis**

Authors: M Nienkemper, J Malherbe, C van Vuuren, C Barrett
Presenter: Dr Marisan Nienkemper
Departments: Internal Medicine, Haematology

Introduction and aim: Haemophagocytic lymphohistiocytosis (HLH) is a potentially fatal syndrome with an annual incidence of 1.2 cases per million. It is uncommon and mimics other conditions. HLH is caused by an uncontrolled pathological activation of the immune system resulting in clinical and laboratory features of severe inflammation. The aetiological classification is primary genetic or acquired. It is most likely under-diagnosed; thus effective treatment is delayed.
The HLH-94 trial showed a reduction in mortality from 95% to 35%, after initiation of effective early treatment. We aimed to describe the clinical presentation, aetiology and outcome of nine cases diagnosed with HLH at academic hospitals in Bloemfontein.

Methodology: Approval to perform the study was obtained from the Faculty of Health Sciences Research Ethics Committee (HSD2017/0309). A case series of nine patients with HLH who presented at Universitas- and 3 Military Hospital were included. Data were collected retrospectively from patients' hospital and clinic files.

Results: All patients presented with fever and cytopenias. Six patients fulfilled five of the eight HLH diagnostic criteria and three patients fulfilled six criteria. Haemophagocytosis was evident on the bone marrow biopsy of six patients. Hypertriglyceridaemia and hyperferritinaemia were present in all nine cases.

Four cases were triggered by a malignancy, three had Hodgkin's lymphoma and one had T-cell lymphoma. Three cases were infection-associated, with Ebstein-Barr virus, tuberculosis and gram negative septicaemia as precipitants. One case was triggered by previously undiagnosed systemic lupus erythematosus. In one patient the only possible precipitant identified was human immunodeficiency virus (HIV) infection.

Three of the nine patients diagnosed with HLH survived, a mortality rate of 66%.

Conclusion(s): A high index of suspicion for HLH is necessary for any patient presenting with fever and unexplained cytopenias. There are a number of acquired causes of HLH. There is a high mortality associated with HLH.

CR7

Title: **Food security, dietary intake and anthropometry of Grade-R learners in Ficksburg: Impact of a school feeding programme**

Authors: C Walsh, R Lategan, E du Toit, L vd Berg, L Meko, M Cronje, L Robb, R Nel
Presenter: Prof Corinna Walsh
Departments: Nutrition and Dietetics, Biostatistics

Introduction and aim: The adverse effect of hunger on health and school performance, is well-established. This study investigated household food security, dietary intake and anthropometry of Grade R-learners in Ficksburg, before and nine months after introduction of a school feeding programme.

Methods: A pre-test post-test design was applied (n=190). Learners at Masaleng Primary School received the National School Nutrition Programme (NSNP) as well as the Tiger Brands Foundation breakfast programme (experimental school) , while Caledon Park received the NSNP, but not the breakfast programme (control school). Questionnaires were completed in a structured interview with primary caregivers. To determine food security, the Community Childhood Hunger Identification Project (CCHIP) index was completed. Dietary intake was assessed using a 24-hour recall of dietary intake and a qualitative food frequency questionnaire. Weight-for-age and height-for-age were measured using standardised procedures.

Results: Learners had a median age of 5.5 years. At baseline 57.6% of households were food insecure and 29.2% at risk of food insecurity. Underweight was identified in 4.7% of learners, while 7.4% were stunted. After nine months of intervention, the percentage of food insecure children decreased significantly in both schools (by 18.7% in Masaleng and by 15.7% in Caledon Park). Intake of meat, fish and chicken increased significantly in the experimental school, while intake of egg increased significantly in both schools. Prevalence of underweight and stunting did not change significantly.

Conclusion(s): High prevalence of household food insecurity was identified amongst children starting school in Ficksburg. Despite this, a relatively small percentage of children were classified as underweight and stunted. The NSNP and breakfast programme succeeded in reducing food insecurity in a large percentage of children, but anthropometric indicators remained unchanged. Future research could assess other benefits of school feeding, such as effects on school attendance and performance.

CR8

Title: **Effect on parenting stress of cardiac intervention in young children with congenital heart disease in central South Africa: Three-month and six-month outcomes.**

Authors: R Smith, J Potterton, V Ntsiea, S Brown

Presenter: Ms Robyn Smith

Departments: Physiotherapy WITS, Paediatrics and Child Health UFS

Introduction and aim: Parents of children with congenital heart disease (CHD) are at increased risk of ongoing stress and psychological morbidity. The aim of this study was to determine stress in parents of children with CHD who underwent cardiac intervention. The levels of stress experienced by parents of children with CHD in South Africa are unknown. Reported parenting stress outcomes in children with CHD in developed countries are conflicting.

Methodology: Forty-eight consecutive children, 30 months and younger, and their parents were recruited into this observational descriptive study. Parenting stress was assessed using the Parenting Stress Index Short Form at baseline, and at three-month and six-month post-cardiac intervention. Parenting stress outcomes were compared over time, and variables associated with parenting stress determined at baseline, three-month and six-month post-cardiac intervention.

Medical severity of the cardiac disease was rated according to the Cardiologists Perception of Medical Severity Scale. Socioeconomic status was determined using Hollingshead's Index of Social Position and developmental status assessed using the Bayley Scales of Infant and Toddler Development, Third Edition.

Results: Baseline data was collected for 40 parents. Sixty percent of parents (n=24) experienced clinically significant stress prior to cardiac intervention. Levels of parenting stress were significantly decreased at both three-month ($p<0.001$) and six-month post-cardiac intervention ($p<0.001$). However, just more than a third of parents experienced ongoing stress. There was a significantly association between neurodevelopmental outcome ($p= 0.03$), perceived health-related quality of life ($p=0.02$), age at first cardiac intervention ($p=0.03$) and maternal age ($p=0.04$) and levels of parenting stress.

Conclusion(s): Most parents experienced clinically significant levels of stress prior to cardiac intervention in their children. Parenting stress declined significantly post-cardiac intervention, but a considerable number of parents experienced ongoing stress. Parents of children with CHD should be screened regularly for risk of psychosocial problems requiring referral for treatment.

CR9

Title: **REHABILITATION IN WOMEN UNDERGOING PELVIC FLOOR RECONSTRUCTIVE SURGERY: A DOUBLE-BLIND, RANDOMISED, CONTROLLED CLINICAL TRIAL**

Authors: C Brandt, HS Cronje, EC Janse van Vuuren, M Nel

Presenter: Dr Corlia Brandt

Departments: Physiotherapy, Obstetrics and Gynaecology, Economic and Management Sciences, Biostatistics

Introduction and aim: Adverse changes in pelvic floor (PF) muscle function have been associated with early presentation and recurrence of pelvic organ prolapse (POP) after surgery. However, very little and controversial evidence is available on neuro-musculoskeletal rehabilitation for POP and as an adjunct therapy to surgery.

The aim was to compare the outcomes of a pelvic floor muscle training (PFMT) and a core training programme on PF and abdominal muscle function, and quality of life (QOL) in women undergoing PF reconstructive surgery.

Methodology: Women (n=81, mean age 59 years) were randomly assigned to three groups in a double-blind randomised control trial. Group 1 (n=24) received a PFMT and group 2 (n=28) a core stability programme for six months (pre- to post-operatively). Group 3 (n=29) was the control group. QOL were assessed by the Prolapse specific-QOL questionnaire, and abdominal and PFM function by: ultrasound, the PERFECT scale, electromyography, Sahrmann scale, and the Pressure Biofeedback Unit (PBU). Data analysis included descriptive statistics and 95% CI`s.

Results: PFMT yielded significant changes regarding the levator hiatus length with Valsalva (median change -3.5mm, 95% CI [-10.3;-1.8]), thickness of the perineal body (median change 1.5mm, 95% CI [0.5;4.1]), and endurance (median change 2sec, 95% CI [1;5]). Group 2 showed significant changes in abdominal muscle function (Sahrmann and PBU levels, 95% CI's [1;3] and [1;9]) and improved PF function. Only group 2 improved significantly in their P-QOL scores (95% CI [1.5;28.4]). No statistically significant differences were found in the magnitude of the changes among the three groups.

Conclusion: Abdominal and PFMT are significant components to address different, but specific muscle function and QOL in this population. The interaction between lifestyle issues, co-morbidities, symptoms and signs, motor control and QOL motivates for a biopsychosocial rehabilitation model and further investigation for patients scheduled for pelvic floor reconstructive surgery.

CR10

Title: **Influence of cardiac intervention on neurodevelopment in young children with congenital heart disease in central South Africa: Three-month and six-month outcomes**

Authors: R Smith, J Potterton, V Ntsiea, S Brown
Presenter: Ms Robyn Smith
Departments: Physiotherapy WITS, Paediatrics and Child Health UFS

Introduction and aim: Congenital heart disease (CHD) survivors are at risk of neurodevelopmental morbidity. The neurodevelopmental outcomes of children with CHD in South Africa are unknown. The aim was to determine the neurodevelopmental outcome of young children with CHD following cardiac intervention.
Methodology: Forty-eight children, 30 months and younger, were recruited into this observational descriptive study. Children who had previous or emergency cardiac surgery were excluded. Development was assessed using the Bayley Scales of Infant and Toddler Development, Third Edition (BSID-III) before, at three-month and six-month post-cardiac intervention. Developmental outcomes were compared over time, and variables associated with developmental performance determined.
Results: Baseline data was collected for 40 children. The majority of children (n=26) underwent open-heart surgery in infancy with cardiopulmonary bypass. Most children (n=30) had moderate disease severity, with 20% (n=8) having cyanotic lesions. A quarter of the children (n=10) had Down syndrome (DS). Motor delays were prevalent (27.5%) prior cardiac intervention. Motor performance improved, but language and cognitive performance declined post-cardiac intervention, with age and increasing skill complexity. Hypotonia presented in 45% of children prior to cardiac intervention, resolving post-cardiac intervention in all children without DS. Fifty-nine percent of the children were at-risk of, or presented with developmental delays requiring access to early intervention therapies. There was no significant change in the developmental outcome over time. BSID-III subscale scores remained below the test mean of 100. The presence of DS ($p< 0.001$), disease severity ($p=0.02$), maternal age ($p < 0.001$), age at first surgery ($p <0.01$), and growth prior to cardiac intervention ($p=0.04$) were significantly associated with developmental performance. Social disadvantage negatively impacted developmental performance.
Conclusion(s): Neurodevelopmental delays prior to, and post cardiac intervention were prevalent in this study sample. The majority of the children were at risk, or had developmental delays requiring early referral to therapeutic services.

CR11

Title: **Lower limb muscle forces after fatiguing exercise on grass and artificial turf playing surfaces among elite soccer players**

Authors: JAT Greyling, C Brandt, FF Coetzee, C van Rooyen
Presenter: Dr Corlia Brandt
Departments: Physiotherapy, Sport and Exercise Science, Biostatistics

Introduction and aim: Fatigue and hard playing surfaces have been indicated as risk factors for injury in soccer players. Literature is contradicting regarding the prevalence of injuries, fatigue, and biomechanical mechanisms on different playing surfaces. The aim was to relate and compare lower limb muscle forces after sport-specific fatiguing exercise on grass and artificial surfaces in elite soccer players.

Methodology: Elite soccer players (n=25, mean age 24.8 years) were included in a cross-over study design. Players were randomly allocated to a soccer-specific, fatiguing exercise protocol on a grass and artificial surface, one week apart. A force plate was used to measure force generation and -rates in the lower limb. The Pearson correlation coefficient, effect sizes and p-values were used to determine associations. The Wilcoxon signed-ranks test determined changes from pre-test to post-test, while the Kruskal Wallis test compared the findings between the two exposures.

Results: Statistical significant correlations were found between propulsion and concentric forces (r=0.66, p<0.001); propulsion force and body mass (r=0.78, p<0.001); propulsion force and BMI (r=0.645, p<0.01); landing force and body mass (r=0.82, p<0.001); landing and eccentric forces (r=-0.75, p<0.001); jump height and concentric force (r=0.84, p<0.001); and body mass and concentric force (r=0.76, p<0.05). Propulsion and concentric forces increased significantly after fatigue on the grass surface (p=0.026 and 0.005). On the artificial surface there was a statistically significant increase in propulsion force and -force rate post-fatigue (p=0.0001 and 0.0153). Comparison of the changes in variables between the two surfaces, yielded no significant differences (p>0.05).

Conclusion(s): The limited differences in force changes after fatiguing exercise on artificial and grass surfaces, indicates inconsistency in force behaviour in response to fatiguing exercise and possible variable adaptation strategies. Surface-specific training could therefore be recommended for optimal adaptation to take place, thereby decreasing the risk for injury on specific playing surfaces.

CR12

Title: **Microbiological Profile of organisms causing Ventilator Associated pneumonia in Patients admitted to Surgical ICUs in Universitas Academic Hospital in 2015**

Authors: A Theron, S Potgieter
Presenter: Dr André Theron
Departments: Anaesthesiology, Infectious disease

Introduction and aim: Ventitalor associated pneumonia (VAP) or infection-related ventilator-associated complications are the most common health care related infection complications in nearly all intensive care units worldwide. If early appropriate antibiotic therapy is not instituted, it carries a very high morbidity and mortality rate. Therefore, unit specific antibiograms must be compiled and appropriate empirical antibiotic therapy protocols selected.
Methodology: With this retrospective observational study, we generated a local antibiogram for the Surgical ICU's (Cardiothoracic, Neurosurgical, General surgery ICU) of Universitas Academic Hospital in Bloemfontein. A retrospective analysis of all the organisms and their specific antibiograms cultured from tracheal aspirates (whether initial or repeated) of all intubated patients older than 18 years without previously cultured respiratory infection in the surgical ICU's at the Universitas Academic hospital complex during the time period from 1 January 2015 – 31 December 2015. The data was gathered from the MEDITECH clinical records system as well as the NHLS database, Infection control departmental database and the database from the Department of Microbiology.
Results: The organisms most frequently cultured in the surgical ICU's at Universitas Academic Hospital, with only slight variation, are Acinetobacter baumannii (26.67 – 32.14%, with high resistance to all antibiotics except colimycin), Klebsiella pneumonia (20 – 25%, With very high sensitivities to all the Carbapenems and Amikacin), Pseudomonas aeruginosa (8.77 – 23.33%, with sensitivities that varied considerably between the units) and Staphylococcus aureus (6.67 – 17.86% which was mostly MRSA). Though some cultures were done within 1-2 days of admission to the particular ICU, the most were done on days 5 – 32. Thus the burden of disease in our clinical setting is due to late onset VAP.
Conclusion(s): Our current empirical antibiotic therapy combinations for the treatment of VAP were not all appropriate or adequate. These have been adjusted according to the specific antibiograms of each unit to ensure early appropriate/adequate empirical antibiotic therapy for VAP.

CR13

Title: **Limiting foetal doses during a four-vessel angiogram and endovascular stent-assisted berry aneurysm repair: a case report**

Authors: D Potgieter, WID Rae, CS de Vries
Presenter: Miss Demaré Potgieter
Departments: Medical Physics

Introduction and aim: A 36-year-old female patient, 20 weeks pregnant, was diagnosed with a left internal carotid artery aneurysm. Fluoroscopically-guided repair was justified. A four-vessel cerebral angiogram was performed and a left paraclinoid aneurysm demonstrated. The patient subsequently underwent endovascular stent-assisted berry aneurysm repair. As the patient was pregnant, the procedure was preceded by consideration of the required radiation protection. The aim was to improve radiation protection during pregnancy.

Methodology: The patient underwent an endovascular stent-assisted repair, as open surgery would pose a high risk to the unborn. Before the procedure, a medical physicist was consulted to determine the radiation protection measures required to protect the foetus. Accordingly, a personal alarm was placed on the patient's abdomen with the limit set to 1 mSv (annual dose limit for a member of the public). A lead apron was placed over the patient's abdomen and over the alarm dosimeter, thus shielding the foetus and an additional lead apron was placed under the patient.

Results: The alarm dosimeter reading after the completion of the procedure was 1 µSv. The patient entrance surface dose (ESD), after the four-vessel angiogram, was 100.82 mGy and for the endovascular stent-assisted aneurysm repair 826.45 mGy which was found to be 23.67% of the diagnostic reference level (DRL) used in our department. The foetal dose was calculated using PCXMC®. The software calculated the total uterine dose which was used as a surrogate for dose to the foetus as being at background level.

Conclusion(s): This case demonstrates that radiation protection measures can be successfully employed for pregnant patients requiring head and neck interventional procedures, and was used to educate and reassure the interventional team. Adequate shielding of the abdomen, and good technique, gave the team confidence that there would be a negligible dose to the foetus.

CR14

Title: **RANDOMISED CONTROLLED TRIAL OF PROTEIN SUPPLEMENTATION ON NUTRITIONAL STATUS OF SOUTH AFRICAN PATIENTS RECEIVING CONTINUOUS AMBULATORY PERITONEAL DIALYSIS**

Authors: B LeQlerck, C Walsh, R Nel, L van den Berg
Presenter: Prof Louise van den Berg
Departments: Nutrition and Dietetics, Biostatistics

Introduction: Protein energy malnutrition is a life-threatening complication of chronic kidney disease, which is exacerbated by dialysis. This study aimed to access the effectiveness of supplementation with protein powder to improve nutritional status of patients receiving continued ambulatory peritoneal dialysis (CAPD), in a South African setting.

Methodology: Of the 28 patients receiving CAPD at Frere Hospital, Eastern Cape, 26 were recruited and randomised to a trial in which the experimental group (n=13) received a protein powder supplement at 0.65 g/kg actual body weight per day for three months. Socio-demographics, clinical histories, CAPD-regimens, anthropometry, nutritional status and dietary intakes were assessed at baseline and after one, two and three months, compared between the experimental and control groups and evaluated for significant changes by means of 95% confidence intervals.

Results: At baseline, 28.5% and 30.8% of the experimental and control groups, respectively, were overweight and obese, and the rest had normal BMI; yet 30.8% and 31.6%, respectively, had upper arm muscle areas below normal to wasted. Likewise, 92.3% and 91.7%, respectively, had below normal serum albumin levels (median of 29g/L in both groups). Most had raised serum phosphate, urea and creatinine levels despite being on CAPD. Energy and macronutrients intakes in both groups were largely inadequate. Despite compliance above 88.9%, no statistical significant changes were noted for anthropometry, including AMA, and most biochemical measures at one and two months in the trial; but total energy and micronutrient intakes tended to be non-significantly lower in the experimental group after two months. At three months, the experimental group showed non-significant weight gain and improvements in AMA and albumin levels, compared to baseline.

Conclusion(s): This is the first study describing the nutritional status of a South African CAPD population. Protein powder supplementation non-significantly improved nutritional status over three months. Larger trials over a longer time period are recommended.

ER15

Title: **AN ASSESSMENT TOOL TO MEASURE THE SUPPORTIVE ROLES OF PRECEPTORS**

Authors: L Hugo, Y Botma
Presenter: Ms Lizemari Hugo
Departments: School of Nursing

Introduction and aim: Preceptors are the ideal entity to support students' integration of theory and practice in the clinical facilities. Botma, Van Rensburg, Coetzee and Heyns (2013) adapted Donovan and Darcy's (2011) systemic transfer of learning model to explain the significant role that preceptors have to facilitate students' learning in practice by considering, student characteristics, educational approach, transfer climate, physical work environment and students' motivation. Preceptors provide system, tangible, cognitive and emotional support.

System support is associated with the liaison and monitoring role of the preceptor while tangible support addresses orientation and showing novices the "what, where and how". Cognitive support includes the development of critical thinking, clinical reasoning, clinical judgment and meta-cognition in students. Emotional support is regarded as being available and accessible to student during their placements.

Although numerous measurement instruments aim to measure the standard of precepting, none of them measures all the supportive roles. Therefore, the aim of the study was to develop a valid and reliable instrument that measures the four types of support rendered by preceptors to undergraduate nursing students.

Methodology: A quantitative methodological study design was used. Data were collected by means of a self-administered questionnaire. A sample of 192 undergraduate nursing students was used. Cronbach's alpha was computed to determine reliability, and an exploratory factor analysis was done to describe the construct

validity.

Results: The Cronbach's alpha of .98 indicated high reliability and high internal consistency. Three constructs regarding clinical support, namely cognitive, emotional and system support were identified through the exploratory factor analysis.

Conclusion(s): The new conceptualisation of support gave insight into the value of the preceptor role. The instrument designed might be used to assess and monitor preceptor support during the accompaniment of students.

ER16

Title: **NURSING STUDENTS' EVALUATION OF SUPPORT OFFERED BY PRECEPTORS**

Authors: L Hugo, Y Botma
Presenter: Ms Lizemari Hugo
Departments: School of Nursing

Introduction and aim: Nursing students are placed in a complex and challenging clinical environment as part of their educational training programme (Van Graan, et al., 2016). During their placement, students are expected to become competent nurse practitioners through the integration of theory and practice. Students need support to develop cognitively and professionally in order to become part of a sustainable workforce that can address the healthcare needs of the South African population. Preceptors are the perfect entity to provide support and maximize transfer of learning. The support that preceptors should provide to students include system, tangible, cognitive and emotional support (Botma, et al., 2013; Williamson, et al., 2011). Nursing education institutions (NEI) should ensure that preceptors provide comprehensive support to students enrolled in their programme. The aim of this study is to describe the support offered by preceptors to undergraduate nursing students at a NEI.
Methodology: A quantitative survey was done. Second to forth year undergraduate nursing students completed the questionnaire. Respondents indicated on a four-point Likert scale whether they strongly agreed to strongly disagreed with the latter having the lowest score. Students completed the questionnaire at the end of their clinical placement over two consecutive months. Descriptive statistical analysis was done.
Results: Results showed that preceptors provided students with the four types of support. Students rated emotional support as the highest type of support offered by preceptors. The mean value of each type of support varied between 3.21519 and 2.01321 and showed that there is still room for improvement on the support that preceptors offer to students, especially cognitive support.
Conclusion(s): Students need comprehensive support during their placements. Cognitive support is pivotal in developing students' ability to make sound clinical judgement and were identified as a priority. The use of this instrument can provide nursing education institutions with a clear indication on the quality of preceptorship.

CR17

Title: **SPERM MORPHOLOGY INFLUENCED BY NUTRIENT SUPPLEMENTATION**

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

Introduction and aim: Nutrition plays an important role in development of the reproductive system, spermatogenesis and sperm maturation. Several nutrients have been implicated in male fertility. This study investigated the effect of multi-vitamin mineral and omega-3 supplementation on semen parameters.

Methodology: Fifty apparently healthy males between the ages of 18 and 45 years volunteered to participate in this intervention study of 90 days. Participants were randomised into an experimental or placebo group. Two semen samples were collected before and after supplementation, three days apart.

Results: In this young sample (mean age 27.4 years), 18% did not meet the lower reference limit for sperm concentration, 8% for sperm motility, 2% for normal morphology and 14% for semen volume. At baseline the placebo group had a significant higher percentage of immotility compared to the supplementation group ($p<0.05$). After intervention, no significant differences in means for any of the sperm parameters were found. When comparing the mean changes of the two groups from baseline to post-intervention, a statistically significant improvement was noted in the mean number of sperm with normal forms for the experimental group when compared to the placebo group ($p<0.05$). Despite the percentage of normal forms being similar at baseline, the placebo group showed a slight reduction in the percentage of normal forms at post-intervention, while the supplementation group showed a moderate increase. A paired t-test for the supplementation group's baseline and post-intervention morphology scores showed a value of 2.63 (p-value: 0.016).

Conclusion(s): Supplementation with a multi-vitamin mineral and omega-3 improved sperm morphology, suggesting that this combination of nutrient supplements may have the potential to improve sperm morphology.

CR18

Title: **Age of Diagnosis, Incidence and Prevalence of Recurrent Respiratory Papillomatosis in the Free State**

Authors: RY Seedat, R Schall

Presenter: Prof Riaz Seedat

Departments: Otorhinolaryngology, Mathematical Statistics and Actuarial Science

Introduction and aim: Recurrent respiratory papillomatosis (RRP) is caused by human papillomavirus (HPV). Two forms of the disease are recognised: juvenile-onset RRP (JoRRP) adult-onset RRP (AoRRP) Traditionally, a bimodal distribution of age of diagnosis has been described, but a trimodal distribution of age of diagnosis has recently been reported. The aims of the study were to determine the distribution of the age of onset of recurrent respiratory papillomatosis (RRP) and to determine the incidence and prevalence in the Free State.

Methodology: The records of all patients with RRP in the Free State between 2011 and 2015 were reviewed and the age at diagnosis calculated. The Bayesian Information Criterion (BIC) was used to select the best fitting mixture distribution. Statistical analysis was carried out using the SAS procedure FMM.

Results: The median age at diagnosis of the 105 patients was 5.6 years (range of 0.55 to 72.5 years). A two component log normal distribution had the best fit. Within the first component (JoRRP), the age at diagnosis was significantly lower in patients with HPV11 disease (median 3.2 year) than those with HPV6 disease (median 5.6 years) (p=0.021), while in the second component (AoRRP), there was no significant difference in the age of diagnosis between HPV11 disease (30.7 year) and HPV6 disease (median 44.0 years) (p=0.0696).
The incidence and prevalence of JoRRP were 1.36/100000 population/year and 3.94/100000 population, respectively, while the incidence and prevalence of AoRRP were 0.18/100000 population/year and 0.38/100000 population, respectively.

Conclusion(s): RRP in the Free State is a disease with a predominantly juvenile onset.

CR19

Title: **Outcome of Paediatric Oncology patients admitted to a Paediatric ICU: a 10-year experience**

Authors: JP du Plessis, DK Stones

Presenter: Dr Jan Du Plessis

Departments: Paediatrics and Child Health

Introduction: The prognosis of paediatric cancers have improved over past few decades. The improvement is due to more aggressive treatments and improved supportive care. However, this result in more treatment related complications and life-threatening events which result in PICU admission. Poor outcomes of paediatric oncology patients admitted to PICU have been reported in some published studies. Recently, promising outcomes reported in developed countries (OS >80%). Literature is still sparse regarding PICU outcomes in developing countries.

Aim/Method: The aim of the study was to document the indications for admission and outcomes of paediatric oncology patients (POPs) admitted to a Paediatric Intensive Care Unit (PICU). Also compare some results, where possible, to non-oncology patients and the local paediatric oncology data base. It was a retrospective study of all paediatric oncology patients admitted to the PICU over a 10 year period.

Results: The POPs constituted 12.4% of the 2176 admissions to the PICU. There were slightly more females and the average age was 77 months. The average length of stay of 5.3 days. The two most common primary diagnoses for admission were nephroblastoma and leukaemia. The most common indication for admission was post-operative while resuscitation (sepsis), metabolic or respiratory support made up most of the remainder. Of all POP admissions 13.2 % demised in ICU compared to the non-oncological death rate of 11.2%. Excluding post-operative POPs the death rate was 22.2%. The most common cause of death in ICU was sepsis. Of the POPs discharged alive from PICU a further 79 died later mainly due to tumour progression.

Conclusion(s): The sex ratio and the death rate and the average age of the POPs is similar to our data base of children with malignancies. Our non-post-operative POPs do twice a badly as the non-POP ICU admissions. The indications for admission and survival on discharge from ICU are similar to that described in the literature.

CR20

Title: **Image-guided adaptive brachytherapy dose escalation for cervix cancer via fractionation**

compensation

Authors: W Shaw, WID Rae, ML Alber
Presenter: Dr William Shaw
Departments: Medical Physics, Aarhus University, Heidelberg University Hospital

Introduction and aim: In image-guided adaptive brachytherapy (IGABT), dose distributions are optimized for each fraction. Optimum fractional dose can be constant or adapted to previous fractions and a conjecture about the future ones.
We evaluate the efficacy of different fraction size schemes, derived from total IGABT dose constraints, against constant per-fraction constraints.

Methodology: This retrospective planning study included 20 IGABT patients where four different fractionation schedules were compared based on modern planning recommendations. A total high-risk-clinical target volume D90 (minimum dose in 90% of the volume) dose aim of 90.0 Gy with constant per-fraction organs at risk (OARs) dose constraint planning (CONST) was compared with conservative and aggressive fractionation compensation (COMP) techniques. COMP allows variations in the per-fraction dose constraints. Dose accumulation was performed through dose summation at a given volume and equivalent uniform dose (EUD) worst-case dose estimates.

Results: No significant differences were identifiable between dose metrics of CONST and COMP in the total patient population. However, a subgroup of patients with alternating dose limiting OARs had significant benefit from COMP. Median high-risk-clinical target volume dose escalation ranged from 5% to 12%, whereas OAR dose increases were lower and ranged from 3% to 8%. EUD-based planning delivered similar tumor doses, although slightly lower OAR doses. By distributing the treatment aim over an increased number of treatment fractions, median tumor dose could be increased by a further 8% per additional treatment fraction at the same OAR dose levels for both CONST and COMP.

Conclusion(s): COMP is effective in patients with alternating dose-limiting OARs and is enhanced using more treatment fractions and EUD constraints.

CR21

Title: **The incidence of phantom eye pain post eye removal**

Authors: H Noeth
Presenter: Dr Hannelo Noeth
Departments: Anaesthesiology

Introduction and aim: There is a paucity of literature about phantom eye pain. Current literature suggests that the incidence of phantom eye pain ranges from 23-28%. None of the published literature was done in a South African population. The etiology of eye removal surgery is also different in our population, with the most common causes being: trauma, infection and malignancies.
The aim of this study was to determine the incidence of phantom eye pain, after surgical eye removal, and to identify possible triggers and risk factors for the pain.

Methodology: A prospective descriptive study was done, by performing questionnaires before surgery and postoperatively at the one week and six weeks follow-up appointments. All patients which presented for eye removal surgery, that met the inclusion criteria, from November 2015 until October 2016 were included in the study.

Results:
A total of seventeen patients were invited to participate in the study, however two declined, fifteen were included, but only twelve patients' data was analysed, due to loss to follow-up of three patients. Evisceration was the only surgery performed. The cause for eye removing surgery was most commonly eye trauma (50%). The median age for the population was 37 years. The incidence of phantom eye pain in the population group was 16.67 %, at six weeks postoperatively, of which both these patients had malignancy and preoperative pain. Two patients were depressed, but neither had phantom eye pain.

Conclusion(s):
The study showed that the incidence of phantom eye pain was 16.67%. Although the study was small, it showed that phantom eye pain does occur in the Free State population. It also showed that it occurred in patients with malignant eye conditions and not trauma related causes.

CR22

Title: **Laryngoscope handles - a hidden danger in theatre**

Authors: N van der Westhuizen, N Pearce
Presenter: Dr Nico van der Westhuizen

Departments: Anaesthesiology

Introduction and aim: Laryngoscope blades have been identified as a possible vector for organisms. Nosocomial infections increase morbidity and mortality and increase the economic and patient burden on the health care system. The South African Society of Anaesthesiologists (SASA) published guidelines for infection control in anaesthesia in 2014 containing clear guidelines for the decontamination of laryngoscope handles (See Appendix B). Currently there is no written policy at Universitas Tertiary Academic Hospital regarding decontamination of laryngoscope blades. My observation is that decontamination seems erratic and inconsistent. The aim of this study was to establish what bacteria could be cultured from the laryngoscope handles at Universitas Tertiary Academic Hospital Theatre.

Methodology: 22 laryngoscope handles were swabbed with a moist swab in Universitas Tertiary Academic Hospital Theatres. Samples were taken in the morning before the start of elective lists. Samples were sent for gram staining and culture. Antimicrobial sensitivity was planned for all organisms isolated.

Results: Organisms were cultured from 3/22 (14%) of laryngoscope handles. One sample (5%) grew Staphylococcus arues and two samples (9%) grew coagulase-negative staphylococcus. No other pathogenic or resistant organisms were isolated.

Conclusion(s): We found a very low rate of bacterial contamination of the laryngoscope blades. There were two handles contaminated with coagulase-negative staphylococcus, a commensal organism, which is a suspected contaminant from theatre staff. Due to study limitations current decontamination practices at Universitas Tertiary Academic Hospital can not be safely advocated or dismissed.

CR23

Title: **Audit of the preparedness of public primary health care clinics in Bloemfontein regarding consumables, equipment and medication to manage common emergencies**

Authors: D Hagemeister, M Makhoathi, L Sekhutsoanyane, N Dladla, S Mbongo, S Seemi, G Joubert
Presenter: Dr Dirk Hagemeister
Departments: Family Medicine, Undergraduate MBChB programme - School of Medicine, Biostatistics

Introduction and aim: When a medical emergency occurs in a primary health clinic, staff must be prepared to manage the emergency until an ambulance arrives. The aim of this study was primarily to evaluate how well prepared the clinics in Bloemfontein are to manage their common emergencies with regards to consumables, equipment and medication, secondarily to identify common emergencies.

Methodology: The sample for this observational descriptive study included all 16 public Primary Health Care clinics in the Bloemfontein sub-district. Data were collected using a walk-through audit tool, based on current provincial equipment lists.

Results: Mean compliance rate for consumables was 45% (range 32 – 67%), for equipment 53% (range 46 – 63%), and for medication 58% (range 36 – 77). None of the clinics achieved a level of above 90% in any of the three subcategories of the tool (consumables, equipment, medication). 6 of the 16 clinics (38%) scored below 40% compliance for consumables, 1 (6%) for equipment and 2 (13%) for medication. Items not found in any of the clinics were paediatric or neonatal Magill forceps, size 6.5 cuffed and 4.5 uncuffed endotracheal tubes and 14g intravenous cannulas. Only two clinics had an automated external defibrillator (AED).
During the audit, practical questions such as 'should the item be counted as compliant if it is to be found elsewhere in the clinic?', 'should the function of equipment be tested, and how?' and 'is there acceptable alternatives to substitute an item?' had to be answered. Respiratory (asthma), metabolic (hypo- and hyperglycaemia) and cardio circulatory (hypertension) were the most common emergencies.

Conclusion(s): Given the vast room for improvement, the utilisation of a valid and easy to use audit tool to monitor the emergency-preparedness of clinics appears essential. Identified challenges with such a tool need to be addressed and clear audit rules must accompany such a tool.

CR23

Title: **Audit of the preparedness of public primary health care clinics in Bloemfontein regarding consumables, equipment and medication to manage common emergencies**

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Methodology: The sample for this observational descriptive study included all 16 public Primary Health Care clinics in the Bloemfontein sub-district. Data were collected using a walk-through audit tool, based on current provincial equipment lists.

Results: Mean compliance rate for consumables was 45% (range 32 – 67%), for equipment 53% (range 46 – 63%), and for medication 58% (range 36 – 77). None of the clinics achieved a level of above 90% in any of the three subcategories of the tool (consumables, equipment, medication). 6 of the 16 clinics (38%) scored below 40% compliance for consumables, 1 (6%) for equipment and 2 (13%) for medication. Items not found in any of the clinics were paediatric or neonatal Magill forceps, size 6.5 cuffed and 4.5 uncuffed endotracheal tubes and 14g intravenous cannulas. Only two clinics had an automated external defibrillator (AED).
During the audit, practical questions such as 'should the item be counted as compliant if it is to be found elsewhere in the clinic?', 'should the function of equipment be tested, and how?' and 'is there acceptable alternatives to substitute an item?' had to be answered. Respiratory (asthma), metabolic (hypo- and hyperglycaemia) and cardio circulatory (hypertension) were the most common emergencies.

Conclusion(s): Given the vast room for improvement, the utilisation of a valid and easy to use audit tool to monitor the emergency-preparedness of clinics appears essential. Identified challenges with such a tool need to be addressed and clear audit rules must accompany such a tool.

CR25

Title: **The key Ophthalmological Findings in South African Interventionalists**

Authors: L Ngetu, W Marais, A Rose, WID Rae
Presenter: Dr Lumko Ngetu
Departments: Ophthalmology, Community Health, Medical Physics

Introduction and aim: Radiation is an important modality in diagnostic and therapeutic medicine. Improvement in technology has resulted in a decreased dose to the patient but an increase in the number of procedures and their complexity has resulted in an increased dose to interventionists. This poses a potential occupational hazard to interventionists. The eyes are the most radiosensitive organs. The aim of this study was to describe the ocular findings in South African interventionists exposed to ionising radiation.

Methodology: This was a cross sectional study. We collected demographic and risk factor data using a survey questionnaire. A slit lamp examination was done. Visual acuities were collected using a hand held (33cm) Snellen chart. Anterior segment examination with fluorescein staining and tear break-up time was documented. A dilated fundoscopy was done with tropicamide mydriasis and a superfield fundoscopy lens. No sampling was done and all participants that met the inclusion criteria were enrolled. Participants were recruited at several conferences in South Africa. Ethics clearance was obtained from the University of the Free State (ECUFS 44/2014).

Results: Seventy two interventionists were screened. The average age was 45.7 (30-69). There were 14 radiologists, 34 cardiologists and 24 paediatric cardiologists screened. Visual acuity was decreased in the right eye in 28 (38.89%) and 32 (44.4%) in the left eye. There were lid abnormalities in 18 (25%) of participants. There were 12 (16.7%) cataracts present and of these three were in the posterior capsule. Three participants with cataracts were radiologists, five were cardiologists and four were paediatric cardiologists. There was not sufficient evidence to show a relationship between occupation and cataract formation (p value = 0.851).

Conclusion(s): There were no strong associations between eye changes and occupational radiation exposure. This may be due to the small sample size. The high percentage of cataracts is concerning those.

CR26

Title: **Retinopathy of Prematurity: A Case Series Report of Treated Infants**

Authors: TC Botha, A Rose, WJ Marais
Presenter: Dr Theunis Botha
Departments: Ophthalmology

Introduction and aim: Objective Retinopathy of Prematurity (ROP) is still a major contributor to childhood blindness, especially in middle-income countries. This study aimed to: identify risk factors for ROP in a population of treated infants; compare the detection of infants at risk for the development of ROP using the WINROP algorithm with international detection rates; find any major areas of concern in management of the premature infants in our setting; and to document the ROP stage and treatment given in the population.

Methods and Analysis: A case series was done. All infants treated for ROP at a single unit during the time period of 2009 to 2015 were included. Records were reviewed, data collected and data analysed.

Results: The average birth weight and gestational age of treated infants were 1061.2 grams and 27.6 weeks respectively. WINROP detected 9 (75%) of infants by 6 weeks when screening was initiated. One unit showed a lower limit for oxygen saturation to be set at 95% for all infants included in the study.

Conclusion: South Africa forms part of the third epidemic of ROP. The WINROP algorithm is not as accurate in our population as in the developed world where smaller premature infants get ROP. Further education is needed in our province concerning the management of at risk infants in the prevention of ROP.

CR27

Title: **PREVALENCE AND EFFECT OF DEVELOPMENTAL COORDINATION DISORDER ON LEARNING-RELATED SKILLS OF SOUTH AFRICAN GRADE ONE CHILDREN**

Authors: M de Milander, FF Coetzee, A Venter

Presenter: Dr Monique de Milander

Departments: Exercise and Sport Sciences, Paediatrics

Introduction and aim: Physically awkward children face a host of difficulties, which include difficulties in the school environment. Therefore, it is important to identify Developmental Coordination Disorder (DCD) early in a child's life to allow for proper and timely intervention and support. The aim of this study was to determine the prevalence of DCD and examine the relationship of the degree of motor difficulties on learning-related skills.

Methodology: This comparative study made use of quantitative data. Three hundred and forty-seven (N=347) Grade 1 children took part and were between the ages of five and eight years (mean age=6.58±0.4). There were 190 girls and 157 boys. The Movement Assessment Battery for Children-2 was used to identify DCD. In addition, each participant was evaluated with the Aptitude Test for School Beginners. Learning-related skills of children with DCD were compared to those without DCD.

Results: The prevalence of DCD (severe motor difficulties) was 6% and the at-risk group constituted another 6%. The results of the various learning-related skills in the different categories of degree of motor difficulty (at risk and severe), and no motor difficulties were compared. It can be observed that for 2 of the 8 learning-related skills, significant differences were indicated for reasoning ($p=0.004$) and memory ($p=0.024$). However, there were highly significant differences between the children with different degrees of motor difficulty and those with no motor difficulties for numerical skills ($p=0.0001$), gestalt ($p=0.0001$) and coordination ($p=0.0001$), where children without DCD significantly outperformed their peers with DCD.

Conclusion(s): Children with DCD experienced more learning-related problems compared to their peers without DCD.

CLINICAL POSTERS

CP1

Title: **HUNTING FOR COPPER IN MILITARY TRAINING GROUNDS: A DANGEROUS ENDEAVOR**

Authors: C Liebenberg
Presenter: Dr Chantelle Liebenberg
Departments: Forensic Medicine

Introduction and aim: Military training areas may contain ''unexploded ordnances'' that can be lethal to people trespassing on these military grounds. People enter the training grounds illegally and on purpose to collect metal objects and then sell the metal, especially copper. The De Brug military base outside Bloemfontein has a 22 000 ha piece of land that is used as a training area. This area is camped off with signs stating that it is illegal to enter, but the military has difficulty in keeping civilians off their property. The military sweep this area for unexploded ordnances but it is a costly, time consuming process. There is currently a suspicion that a syndicate collecting copper is active in the area.

Methodology: The body of a 60-year-old man was admitted to the Bloemfontein Medicolegal Laboratory. He was trespassing on the military training grounds and he found an unexploded 84mm ammunition round. He had already removed the nose cone of the rocket with a stone and chisel when it exploded.

Results: During autopsy, he had a very large defect straight through the chest and abdominal cavity. His face, hands and arms showed extensive peppering. There were two lacerations on the front of his left leg with one small piece of shrapnel just under the skin. A CT examination of the body showed no other shrapnel present in the body.

Conclusion(s): It is unusual for forensic pathologists to see military explosion type injuries outside war times. This case highlights the fact that war and preparing for war has certain public health issues that must be addressed.

CP2

Title: **DEATH BY PORCUPINE QUILL**

Authors: C Liebenberg, HJB Butler
Presenter: Dr Chantelle Liebenberg
Departments: Forensic Medicine, Zoology and Entomology

Introduction and aim: Porcupines are rodents whose bodies are covered in quills. These are modified hairs covered with keratin plates that sharpen into a point, can easily penetrate human skin and although painful, are not usually fatal. The quills are 30-50 cm long, bend easily and are smooth. In South Africa, the use of homemade firearms is well known and a *qwasha* is a commonly used steel pipe gun.

Methodology: The body of a 20-year old man was admitted to the Bloemfontein Medicolegal Laboratory as a sudden unexpected death. He was found dead in his bed by his mother. During a medicolegal autopsy, a 4mm x 3mm puncture wound was present on the front of the left chest. When the skin was removed, a 60mm-diameter porcupine quill was protruding through the intercostal muscles. The quill went through the left lung, through the heart and stopped in the hilum of the right lung. There was free blood in the pericardial sac and both thoracic cavities. The cause of death was a sharp force injury to the chest, but the manner of death remained unclear.

Results: The investigating officer gave the history that the deceased was involved in an altercation 24 hours prior to his death with a suspect that was carrying a *qwasha*. The suspect destroyed the weapon but did confess to putting a porcupine quill in the homemade weapon when he loaded it.

Conclusion(s): It is very rare for animals to be involved in homicidal deaths. This was a very unusual case of a porcupine quill loaded into a homemade weapon and shot at a close range. It was unfortunate that the deceased did not seek medical attention in a timeous manner as surgical intervention probably could have saved his life.

CP3

Title: **Chronic ankle instability and associated self-reported function in professional ballet dancers in South Africa**

Authors: C Marais, A van der Merwe, R Nel
Presenter: Ms Cherezane Marais
Departments: Physiotherapy, Biostatistics

Introduction and aim: Chronic ankle instability (CAI) is characterized by a regular sense of the ankle giving way and recurrent sprains. This condition is thought to arise following acute ankle sprains. Due to a high ankle sprain rate as well as other sport specific factors, CAI may be a significant problem in professional ballet dancers. Previous studies investigated the prevalence of CAI in dancer populations, but no studies have been done on South African dancer populations and none examined the functional impact this condition might have on this population. The aim of this study was to determine the prevalence of CAI, as well as describe the level of associated self-reported function in professional ballet dancers in South Africa.

Methodology: Three professional ballet companies in SA were visited by the researcher who supervised the completion of the following questionnaires: The Identification of Functional Ankle Instability Questionnaire (IdFAI), the Foot and Ankle Ability Measure (FAAM) and the Dance Functional Outcome System (DFOS) as well as a self-compiled, literature based injury history questionnaire.

Results: Thirty-three dancers were included. Approximately 76% of participants reported having sustained at least one significant ankle sprain and 88% of those went on to develop CAI. A total of 67% of participants included in the analysis had CAI. The self-reported function of the participants suffering from CAI was not found to be significantly affected. The median score for dancers who had CAI was 95% on the FAAM (activities of daily living subscale), 88% on the FAAM (sport subscale) and 93% on the DFOS.

Conclusion(s): Although the prevalence of CAI in professional ballet dancers in South Africa was found to be high, their self-reported function was not significantly affected. The findings can stimulate further research to identify possible explanations for the reported level of function despite injury.

CP4

Title: **The effect of shoulder stability training on upper limb function in patients with hemiplegia a pilot study.**

Authors: HW Nel, W Mudzi, EC Janse van Vuuren, E Musenge
Presenter: Ms Helena Nel
Departments: Physiotherapy

Introduction and aim: Stroke is a major cause of long-term adult disability and has a significant physical and psycho-social impact on individuals. The loss of shoulder-girdle stability of the affected side impacts on the upper-limb function; good shoulder function is a prerequisite for effective hand function and execution of activities of daily living. Rehabilitation of the upper-limb post-stroke remains challenging. The aim of the study was to determine the effect of shoulder stability training on upper-limb function in patients with hemiplegia post-stroke.

Methodology: The study utilised a quantitative longitudinal randomised control trial design with single blinding. Ethical clearance was obtained from the University of the Witwatersrand (M130405) and the University of the Free State (79/2013). Participants were screened for inclusion. After screening, eligible participants gave informed consent and were assigned to the groups - using computer-generated random numbers with concealed allocation. In addition to usual care, shoulder-girdle stability training was given to the experimental group. Assessments were done by the research assistant at baseline and one month post-baseline, using the Fugl-Meyer Assessment Upper Extremity.

Results: Seventeen participants were included, 53% were males and a median age of 53 years. The control group comprised of five female and two male participants, while the experimental group comprised of seven male and three female participants. All the participants in the control group were right-handed implying that more

of them had their dominant hand affected. There was no significant difference in upper-limb function (baseline p=0.5, one-month follow-up post-baseline p=0.93) between the groups for the entire study period. The severity of the impairment of upper-limb function for both groups was comparable at baseline and improved from moderate (56-79) to mild (>79) for the study duration.

Conclusion(s): Shoulder girdle stability training did not result in significant improvements in upper-limb function in this cohort.

CP5

Title: **Challenges of students with mobility limitations on the main campus of the University of the Free State**

Authors: HW Nel, MJ Cizek, J Huang, E Meyer, C Scott, L van den Heever, N van Wyk
Presenter: Ms Helena Nel
Departments: Physiotherapy

Introduction and aim: Today, more South African tertiary institutions are placing an emphasis on the mainstreaming and inclusion of disabled students. To facilitate this process, the challenges disabled students face need to be identified by themselves.
The study aimed to determine the challenges experienced by students with mobility limitations on the main campus of the University of the Free State (UFS) from their point of view. Objectives included: possible reasons for these challenges, the location of these challenges and if emotional challenges were experienced.

Methodology: The study population: 32 students registered at the Centre for Universal Access and Disability Support on the UFS main campus, all students were approached. Ethical clearance was obtained from the Ethics Committee of the Faculty of Health Sciences of the UFS in November 2015 (76/2015).
A convenience sampling method with a sample size of nine participants was used. This study used a self-compiled questionnaire derived from two standardised questionnaires, the Facilitators and Barriers Survey of Environmental Influences on Participation among People with Lower Limb Mobility Impairments and Mobility Limitations (FABS/M) and the Craig Hospital Inventory of Environmental Factors (CHIEF) and was completed by means of structured interviews or by the participant themselves.

Results: Classrooms challenges were experienced by 67% of the participants. Inadequate orientation contributed to problems with participation in the classroom, sporting and social activities. Lack of exposure to available sports for disabled persons limited full participation in 40% of participants. The physical environment in and around the Administration Building (44%) and Sasol Library (56%) presented challenges. Emotional challenges were experienced in 44% of the participants.

Conclusion(s): This study provides valuable insight from the point of view of students with mobility limitations into the challenges they face on the UFS main campus.

CP6

Title: **Isolated non-compaction of the left ventricle**

Authors: N Lufundo, HDT Theron, CL Barrett
Presenter: Dr Claire Barrett
Departments: Internal Medicine

Introduction and aim: Isolated left ventricular non-compaction (ILVNC) is a rare idiopathic cardiomyopathy, characterized by excessive trabeculations of the ventricular wall and inter-trabecular recesses. It results from intrauterine arrest of the normal myocardial morphogenesis in the absence of other cardiac lesions. ILVNC may present with heart failure, arrhythmias or thromboembolic phenomena. Despite being a congenital condition, ILVNC may present in adulthood. Although there is no true gold standard for diagnosis of ILVNC, two-dimensional echocardiography with colour doppler is the modality of choice for the diagnosis of ILVNC.

Methodology: Consent to present these cases was obtained from the patients as well as from the Faculty of Health Sciences Research Ethics Committee (ref: ECUFS NR 234/2015). We describe the clinical presentation and echocardiographic findings of patients with isolated left ventricular non-compaction at Universitas Academic Hospital in the period 2011 - 2014.

Results: Four cases of ILVNC were identified at our institution. All cases were adults (16- 59 years, mean: 40 years) of African ethnicity. Three of the cases were male. Two patients presented with heart failure symptoms, one presented with palpitations and one was asymptomatic. No patients presented with embolic phenomena. All patients had significant other risk factors for heart failure (long standing hypertension, peri-partum, prior anthracycline exposure and alcohol abuse). All cases had sufficient echocardiographic evidence to make the diagnosis of ILVNC. Due to other risk factors for heart failure, the diagnosis of ILVNC was not expected in these cases.

Conclusion: This case series highlights the importance of routine echocardiography in all patients who present with heart failure, irrespective of their associated risk factors. The diagnosis of ILVNC may be delayed due to lack of awareness of the condition.

CP7

Title: **Tracheobronchial stricture an unusual presentation of thoracic tuberculosis**

Authors: C Steyn, C van Vuuren
Presenter: Dr Caroline Steyn
Departments: Internal Medicine

Introduction: Tuberculosis (TB) is a disease of epidemic proportions with a heavy preponderance in central and sub-Saharan Africa. Endobronchial tuberculosis (EBTB) is an unusual form of thoracic TB, defined as" Mycobacterium tuberculosis infection of the tracheobronchial tree with microbial and histopathological evidence, with or without parenchymal involvement". The disease is nonspecific in its presentation (both clinical and radiological), which frequently leads to alternative diagnoses such as bronchial asthma. This has potentially serious consequences for patients, in whom complications are common; and the community, where affected individuals remain a source of infection. Patients are at risk of the endobronchial lesions healing with concentric scarring, which leads to bronchostenosis and atelectasis. The prevalence of EBTB amongst patients with active pulmonary TB has been reported to be as high as 10-40%.

Case presentations: We present 3 patients with endobronchial tuberculosis (EBTB) causing severe tracheal and bronchial stenosis. One patient developed right middle lobe collapse due to obstruction of the ipsilateral main bronchus, and another suffered significant stenosis of the trachea and main bronchi. In the third patient EPTB was detected incidentally on surveillance CT, during oncological follow up of his follicular lymphoma.

Conclusion(s): Due to its non-specific clinical presentation, EBTB is notoriously difficult to diagnose. In addition, it is a paucibacillary disease and sputum staining for acid-fast bacilli (AFB) is often negative. Awareness of the existence of this condition, as well as a high index of suspicion is needed to make the diagnosis. Early diagnosis and treatment are crucial if adverse sequelae are to be avoided.

CP8

Title: **OCULAR SYMPTOMS AMONG CALL CENTRE AGENTS: CITY OF TSHWANE CALL CENTRES**

Authors: GT Tamenti, TA Rasengane
Presenter: Ms Gloria Tamenti
Departments: Optometry

Introduction and aim: Large municipalities in South Africa are using call centres as tools for delivering public services and providing access to information. These call centres utilize computers which are visually demanding. The aim of the study was to estimate the prevalence of ocular symptoms associated with computer vision syndrome (CVS) among call centre agents in the City of Tshwane call centres.

Methodology: A cross-sectional quantitative survey and observational study design was used to collect data among call centre agents regarding the demographic, occupational information, working conditions and ocular symptoms experienced during and after computer work. Chi-square test was used to test for any associations between variables.

Results: One hundred and seventy-five call centre agents aged between 21 years and 63 years participated in this study. Most participants (58%) spent more than 8 hours per day working on computers during working shift. Most participants (61.7%) worked at a far viewing distance from the computer than recommended distance of 50-70cm due to workstations design. Common ocular symptoms reported were tired strained eyes (95.43%), increased sensitivity to light (83.43%), burning eyes (82.86%) and itchy eyes (82.86%). The prevalence of ocular symptoms associated with CVS was 99.43%. Participants who worked more than 8 hours on computer reported more ocular symptoms ($p < 0.05$) compared to those who worked less than 8 hours. Participants who work at viewing distances of 71-90cm reported more symptoms ($p < 0.05$) compared to those who worked at viewing distances of 50-70cm.

Conclusion(s): There was higher prevalence of ocular symptoms among call centre agents who worked longer hours and those who worked at far viewing distances. There is a need for re-designing of the workstations at the City of Tshwane call centres which will help reduce the prevalence of ocular symptoms associated with CVS

LABORATORY PAPERS

LR1

Title: **Screening of haemophilia A patients and carriers for the intron 22 inversion mutation in central South Africa with a newly developed method.**

Authors: JF Kloppers, WJ Janse van Rensburg, GM Marx

Presenter: Mr Jean Kloppers

Departments: Haematology and Cell Biology, Genetics

Introduction and aim: Haemophilia A is an inherited bleeding disorder characterized by the deficiency of coagulation factor VIII (FVIII). In 45% of all severe haemophilia A cases, the causative mutation is the intron 22 inversion (Inv22) of the FVIII gene. The current Inv22 detection methods, namely, the Southern Blot assay, Long range PCR and Inverse PCR, all have eminent disadvantages. There is, thus, a need for a more rapid test that can accurately identify Inv22 in haemophilia A patients and carriers.
The aim of this study was to develop a PCR method that can rapidly detect the Inv22 in haemophilia A patients and carriers and to screen the central South African haemophilia A patients and potential carriers for Inv22.

Methodology: We selected 60 volunteers as follows: two non-related severe haemophilia A patient who have been confirmed Inv22 positive with Southern blot, 33 haemophilia A patients (Inv22 status unknown), 20 female putative haemophilia A carriers (Inv22 status unknown) and five healthy controls. A conventional PCR assay was developed for Inv22 and the results were confirmed with Sanger sequencing.

Results: The two Southern blot confirmed Inv22 positive samples also tested Inv22 positive with our PCR method. Four of the female volunteers tested positive for the Inv22 mutation as well as the wild type, confirming their carrier status. Nine of the haemophilia A patients were positive for Inv22. The remaining participants were negative for Inv22. The PCR results were confirmed with Sanger sequencing.

Conclusion(s): We have successfully developed a rapid method to identify Inv22 in haemophilia A patients and carriers. The method is reliable, cost-effective and can be performed in under resourced laboratories. We found Inv22 in 12 of the 60 participants in this study.

LR2

Title: **The in vitro and in vivo effects of streptokinase in a Papio ursinus baboon model of acquired thrombotic thrombocytopenic purpura (TTP) – a pilot study.**

Authors: J Joubert, WJ Janse van Rensburg, SM Meiring, C Blaauw, C Tersteeg, K Vanhoorelbeke

Presenter: Dr Jaco Joubert

Departments: Haematology and Cell Biology; National Health Laboratory Service, Universitas Academic Laboratories; IRF Life Sciences, KU Leuven Campus Kulak Kortrijk, Laboratory for Thrombosis Research, Kortrijk, Belgium

Introduction and aim: VWF multimer accumulation due to absence/inhibition of ADAMTS13, is central to the pathogenesis of TTP. Recently, plasmin has been identified as a back-up for ADAMTS13, and the potential utility of streptokinase in the treatment of acquired TTP was demonstrated in a mouse model. Higher animal model evidence is now desirable and a *Papio ursinus* baboon model of acquired TTP has previously been used for the pre-clinical study of novel therapies in TTP. We aimed to determine the in vitro and in vivo effects of streptokinase in this model.
Methodology: In vitro: VWF activities & multimer patterns, and thromboelastograms were assessed after spiking citrated baboon blood with increasing concentrations of streptokinase. In vivo: After induction of TTP with the anti-ADAMTS13 monoclonal antibody 3H9, escalating streptokinase doses (ranging from 50 000 to 900 000 IU) were administered intravenously to a 13 kg baboon, and the effects of streptokinase assessed on peripheral blood counts, fibrinolysis, VWF activities & multimer patterns, and thromboelastograms.
Results: After spiking, fibrinolysis with loss of large VWF multimers, was observed at [2200 IU/mL] - roughly equivalent to a dose of 1 500 000 IU in a 10 kg baboon. Administration of escalating intravenous streptokinase doses had no effect on platelet counts, or VWF activities & multimer patterns. Doses above 700 000 IU did, however, lead to activation of fibrinolysis as evidenced by increasing plasmin-antiplasmin complexes and fibrin(ogen) degradation products, and declining plasminogen levels.
Conclusion(s): Although intermediate dose streptokinase does activate the fibrinolytic system in a *Papio ursinus* baboon model of acquired TTP, it has no effect on the TTP phenotype. As suggested by in vitro data, further in vivo studies in this model would require higher streptokinase doses to confirm proof-of-concept, before it can be considered a therapeutic option in acquired TTP.

LR3

Title: **Is the impact of cryopreservation on the tissue strength of ovine pulmonary artery homograft leaflets**

more important than extending ischaemic harvest times?

Authors: D Bester, L Botes, H van den Heever, HF Kotze, K Davis, M Esterhuizen, FE Smit
Presenter: Prof Harry Kotze
Departments: Cardiothoracic Surgery, Health Sciences Central University of Technology (CUT)

Introduction and aim: The availability of homografts, the gold standard of surgical correction of congenital defects of RVOT, remains a challenge. The fact that leading homograft banks limit post mortem harvest times to less than twenty-four hours is the main cause. The aim of this study was to address the availability by assessing the effect of ischaemic times of up to seventy-two hours before harvest on the strength of ovine pulmonary artery homograft leaflets. We also assessed the effect of cryopreservation at the longer ischaemic times on these leaflets.

Methodology: Pulmonary homograft leaflets were harvested from the pulmonary arteries of eighty-four sheep. The arteries were stored at 4°C for six hours, 24 hours, 48 hours and 72 hours before harvesting. Twelve of the leaflets harvested at each time-point were unprocessed. Twelve of those harvested at twenty-four, forty-eight and seventy-two hours were cryopreserved. The strength of the leaflets was assessed by determining tensile strength (TS) and Young's modulus (YM).

Results: TS did not differ significantly between the twenty-four, forty-eight and seventy-two hour valves for both the unprocessed and cryopreserved leaflets. Cryopreservation tended to decrease, but not significantly, the TS in the cryopreserved leaflets when compared to the six hours unprocessed leaflet. A reduction in strength of the cryopreserved leaflets was demonstrated in the twenty-four and seventy-two hour groups compared to unprocessed leaflets, which did not reach significance in the forty-eight hour groups.

Conclusion(s): The results strongly indicate that the strength of valve leaflets was not negatively affected by increased post mortem harvest times. There is a slight possibility that cryopreservation may cause some decrease in the strength. Nevertheless, the results strongly suggest that post mortem harvest times may be extended to forty-eight hours and perhaps beyond.

LR4

Title: **Cadaver donation: Structural integrity of pulmonary homografts harvested forty-eight hours post-mortem in the juvenile ovine model**

Authors: JJ van den Heever, D Bester, L Botes, HF Kotze, FE Smit
Presenter: Mnr Hans van den Heever
Departments: Cardiothoracic Surgery, Department of Health Sciences CUT

Introduction and aim: Cryopreserved pulmonary homograft implantation remains the gold standard for reconstruction of the right ventricular outflow tract(RVOT), but availability remains a challenge worldwide. Harvesting homografts less than twenty-four hours post-mortem is the norm, thereby reducing the availability of cadaveric donors. However, excellent performance of pulmonary homografts harvested up to seventy-two hours post-mortem have been described in the juvenile ovine model. This study examines the structural integrity and stability of pulmonary homografts harvested after forty-eight hours post-mortem, cryopreserved and then implanted.
Methodology: Fifteen ovine pulmonary valve homografts were harvested forty-eight hours post-mortem and cryopreserved. Five homografts, cryopreserved but not implanted, served as control group (group1; n=5). RVOTs of ten juvenile sheep were reconstructed with cryopreserved homografts and explanted after fourteen days (group2; n=5) and 180 days(group3; n=5) respectively. Leaflet integrity was evaluated by morphology [Haematoxylin&Eosin(H&E), Picrosirius red staining, Scanning Electron Microscopy(SEM), Transmission Electron Microscopy(TEM), von Kossa stains] and strength analysis [Tensile strength(TS) and Young's modulus(YM)].
Results: All animals had uncomplicated postoperative courses and all homografts functioned well clinically and on echocardiography. TS and YM of group 3 were significantly increased($p<0.05$) compared to that of groups 1 and 2. H&E staining demonstrated mostly acellular leaflet tissue in both groups 2 and 3, with an endothelial layer in all explanted homografts, confirmed with SEM. No difference could be demonstrated by Picrosirius red staining between the groups. TEM demonstrated consistent collagen disruption following cryopreservation in all three groups, with no morphological deterioration or changes during the study period. von Kossa stains showed mild calcification in group 3.
Conclusion(s): No deterioration of structural integrity could be demonstrated using strength (TS, YM) or morphological evaluations between the controls and explanted leaflet tissues over the study period, with only mild calcification in group 3. Expanding homograft harvesting time to forty-eight hours post-mortem is not associated with early homograft failure.

LR5

Title: **WHOLE GENOME ANALYSIS OF THE P[6] ROTAVIRUS STRAINS FROM DIVERSE GEOLOCATIONS ACROSS AFRICA**

Authors: MM Nyaga, Y Tan, LM Seheri, JM Mwenda, AD Steele, RS Shabman, MJ Mphahlele
Presenter: Dr Martin Nyaga

Departments: Medical Microbiology and Virology

Introduction and aim: For most human rotavirus gene segments, genotypes 1 (Wa-like) or 2 (DS-1-like) are often present. The most common VP4 genotypes are P[8], P[4] and P[6]. All genotype P[6]s are potential zoonotic strains in human rotavirus surveillance. P[6]s are completely unrelated in relation to G-type combinations and little is known about their genetic composition. This study employed Bayesian analysis to determine possible genetic reasons favouring predominance of the P[6]s in African settings.

Methodology: Archived stool samples (n= 57) conventionally genotyped as P[6]s were selected for whole genome sequencing using a MiSeq Illumina platform. Evolutionary dynamics of the African P[6]s were investigated by constructing a maximum clade credibility tree, a skyride plot and a country statistical phylogeography map for the VP4 gene as implemented in the BEAST package.

Results: Genome analyses revealed that the 57 P[6] strains were associated with 63 different G genotypes: G1 (n=9), G2 (n=10), G3 (n=9), G6 (n=3), G8 (n=3), G9 (n=14) and G12 (n=15), some being mixed-infections. However, complete genotype constellation of all analysed study P[6]s exhibited either Wa-like or DS-1-like genotype constellations, suggesting high conservation in their genetic backbone. Bayesian phylogenetic linkage showed that the African P[6] strains were divided into three main clusters, each containing multiple sub-clusters based on the G-type, year of isolation and also geographical location. Bayesian skyride results disclosed that genotype P[6] effective population size was growing slower in 1998–2008 than in 1963–1998 and 2008-2013.

Conclusion(s): The study highlights the great diversity of genotype P[6] rotavirus strains circulating in Africa. The observed changes in cluster frequency could be a regional adaptation of the rotavirus population to evade host immunological pressure. Given the predominance of the P[6] strains in Africa, there is a need to monitor the potential impact of diversity on the newly introduced vaccination programs.

LR6

Title: **Challenges in Diagnosing Pulmonary Tuberculosis in Children: A Comparative Analysis of Multiple Samples and Methods**

Authors: AE Ogunbayo, A Bulane, A Van der Spoel van Dijk
Presenter: Mr Ayodeji Ogunbayo
Departments: Medical Microbiology, NHLS

Introduction and aim: The diagnosis of childhood pulmonary tuberculosis (PTB) remains an ongoing challenge. Bacteriological confirmation of PTB and drug susceptibility testing (DST) is important in an era of increasing drug resistance. Difficulty in obtaining spontaneously expectorated sputum has necessitated the use of induced sputum or gastric aspiration (GA) both requiring infrastructure and technical expertise. To promote decentralization and enhance the routine acceptance of alternative specimen collection in children, this study investigated the feasibility of using stool, urine, nasopharyngeal aspirate (NPA), nasopharyngeal swab (NPS) and GA for the routine diagnosis of childhood PTB.

Methodology: A total of 110 children ≤ 13 years, clinically suspected of PTB based on established criteria were recruited from two public hospitals in Mangaung, Free State. Consent was obtained from parent/guardian. GA, stool, urine, NPA/NPS were collected per child. Smear microscopy, GeneXpert™ MTB/RIF and MGIT 960 liquid culture were performed on each specimen. All culture positive samples were confirmed with Kinyoun staining and MTBc antigen testing. DST for first line drugs was performed on positive cultures using the Genotype MTBDRplus assay.

Results: Microbiological confirmation was achieved only in 3/110 (2.7%) children. Two children (HIV uninfected) were positive on urine and NPS culture only, respectively; while child 3 (HIV infected) had a positive smear microscopy (Auramine) on stool and urine, with a positive Xpert™ and culture on urine, stool, and GA specimens. All isolates were susceptible to rifampicin and isoniazid.

Conclusion(s): Alternative specimen's (urine), increased the diagnostic yield of positive PTB diagnosis in this study by 1.8% compared to GA. This suggests that urine and possibly stool and NPS for the diagnosis of PTB have the potential to complement standard specimen in both HIV infected and uninfected children. We intend extending this study to determine the true value of alternative specimens for the diagnosis of childhood PTB.

LR7

Title: **QUANTIFICATION OF BCR-ABL1 ON THE GENEXPERT: FROM DIAGNOSTICS TO RESEARCH**

Authors: S Sreenivasan Tantuan, H Fonternel, M Stemmet, CD Viljoen
Presenter: Ms Sandhya Sreenivasan Tantuan
Departments: Haematology and Cell Biology

Introduction and aim: The GeneXpert is an excellent point of care system which requires none to minimal processing of whole blood prior to analysis. However, this is also a potential disadvantage of the GeneXpert since its application in a research environment is limited especially for archived experimental and clinical trial samples that are often stabilized prior to medium to long term storage. Stabilization of white blood cells in

TRIzol or its equivalent has been common practice to quantify BCR-ABL1 in patients with chronic myeloid leukaemia, since it preserves nucleic acid integrity and allows for further analysis if required. We describe a novel method of using blood stabilized in TRI Reagent (an equivalent of TRIzol) on the GeneXpert for the quantification of BCR-ABL1. We investigated the use of white blood cells stabilized in TRI Reagent at six disease levels from BCR-ABL1 above 10% to BCR-ABL1 not detected, with five patient samples in each group.

Methodology: The Xpert BCR-ABL Monitor Assay was performed using 200 µL of whole blood according to the manufacturer's instructions. The remaining whole blood was stabilized in TRI Reagent according to the manufacturer's instructions and stored at -70ºC until used on the GeneXpert.

Results: We observed a 0.99 correlation in percentage BCR-ABL1 between fresh whole blood and white blood cells stored in TRI Reagent for up to 11 months. We demonstrated that 20 µL of whole blood stabilized in TRI Reagent yields comparable results to recommended 200 µL of fresh blood on the GeneXpert regardless of patients' white blood cell count. A further advantage of this method is that it does not require RNA extraction prior to analysis on the GeneXpert.

Conclusion(s): Our approach extends the current capabilities of the GeneXpert to more than a typical point of care instrument by allowing retrospective analysis of archived samples.

LR8

Title: **Implementing a modified Winston-Lutz Test for stereotactic radiotherapy at Universitas Hospital Annex**

Authors: D Violante, IE Setilo
Presenter: Ms Daniella Violante
Departments: Medical Physics

Introduction and aim: The high dose delivered during stereotactic radiotherapy necessitates accurate patient positioning by performing the Winston-Lutz test in the case of a single lesion treatment. Since a single-isocentre approach in treating multiple lesions is convenient, a modified Winston-Lutz test has been proposed. This study aims to evaluate, from a quality control perspective, the single isocentre technique in treating multiple lesions in stereotactic radiotherapy.

Methodology: The modified Winston-Lutz test is performed on the ELEKTA Synergy linear accelerator system, using a Winston-Lutz test tool. The test is performed at isocentre and a range of off-isocentric distances (2,4,6, and 9 cm) representing separation between multiple lesions, where EPID images are acquired using a 3×3 cm^2 field and 6MV photon beam. The test is repeated at a series of gantry and collimator angle combinations. The deviation of the light and radiation fields at these distances are compared to the 1 mm limit, as recommended by the AAPM TG-142, using a custom MATLAB script. An off-isocentric margin is identified above which the single-isocentre treatment delivery for multiple lesions no longer adheres to recommended limits.

Results: The average light/radiation field deviations were 0.46±0.25, 0.66±0.16, 0.67±0.35, 1.02±0.36 and 1.07±0.39 mm for 0, 2, 4, 6 and 9 cm offset respectively. The results show a distinct increase in deviation with increasing off-isocentric distance. A linear fit attributed to the data suggests a margin of 6.7 cm. However, the limit is reached as soon as 4 cm for a particular gantry and collimator combination.

Conclusion(s): The results indicate two different limits based on the interpretation of the quality control recommendation. The more conservative 4 cm margin is recommended for use at UHA.

LR9

Title: **Comparing the Hemodynamics of a re-engineered Poppet valve to a bi-leaflet aorta valve**

Authors: K Davis, CJ Jordaan, L Thompson-Jooste, L Botes, RWM Frater, FE Smit
Presenter: Mr Kyle Davis
Departments: Cardiothoracic Surgery

Introduction and aim: Explanation of pristine poppet valves decades after implantation lead to the redesign of the 1960's version of the University of Cape Town Poppet valve as the hemodynamically improved Glycar valve. The valve was re-engineered and the hemodynamics of the Glycar valve was compared to that of the commercially available Sorinbi-leaflet aorta valve.

Methodology: A steady state computational fluid dynamics (CFD) model developed for the Glycar valve was compared to experimental data. The valves were evaluated at 80 beats per minute (BPM) and 80 ml stroke

volume at a flow of 6.4 L/min using a VivitroLabs pulse duplicator. Particle image velocimetry (PIV) was performed where the velocity vector field and viscous shear stresses (VSS) were compared and evaluated against the CFD model for the Glycar valve.

Results: The VSS was compared for the bileaflet and Glycar valve, as well as with CFD. The PIV confirmed low VSS behind the Glycar valve. CFD results show that the VSS is higher at the front of the poppet, and may lead to clotting. However, the VSS after the valves remains low enough to prevent clotting or hemolysis. The Glycar valve had higher closing volume leakage, however there was negligible paravalvular leaks.

Conclusion(s): 1) Pulse duplication was performed and analysed according to ISO 5840.
2) PIV shows VSS post valve and confirms the recirculation regions from the CFD results.
3) CFD indicates that the VSS at the front of the poppet may be high enough to cause clotting.

LR10

Title: **Testing the Integral Quality Monitoring System with random positional errors**

Authors: OM Oderinde, FCP Du Plessis
Presenter: Oluwaseyi Michael Oderinde
Departments: Medical Physics

Introduction and aim: The integral quality monitoring (IQM) system® is a real-time beam output verifying system that validates the integrity and accuracy of patient treatment plan (TP) data during radiation treatment. The purpose of this study was to evaluate the sensitivity of the IQM to errors in segment using EGSnrc/BEAMnrc Monte Carlo (MC) codes.

Methodology: Sensitivity analysis (SA) techniques were applied to study the significance of small alterations of field sizes (segments) on the IQM signal response. One hundred and eighty altered multi-leaf segments were analysed with methods that include scatter plots, brute force, variance-based, and standard regression coefficient SA.

Results: The segments were altered randomly within ±1, ±2, and ±3 mm leaf steps for 10 MV photon beams. The scatter plots analysis has a gradient of 1.045 for the smallest segment and 0.018 for the largest segment, indicating more sensitivity for smaller beam segments. The brute force and standard regression displayed maximum sensitivity indices around the unaltered segments. The variance-based sensitivity indices for alterations of the smallest segment have a maximum index of 0.556 and 0.504 for alterations of the largest segment considered.

Conclusion(s): These tests conclusively indicated that the IQM was more sensitive to alterations of small segments compared to larger segments. This is important since small segment variation will cause a higher dose output variation that should be picked up during on-line beam monitoring.

LR11

Title: **INTRODUCTION OF NEXT GENERATION SEQUENCING FOR FAMILIAL BREAST CANCER DIAGNOSTICS**

Authors: NC van der Merwe, J Oosthuizen
Presenter: Dr Nerina van der Merwe
Departments: Division of Human Genetics, NHLS

Introduction and aim: Hereditary breast and ovarian cancer, caused by germline pathogenic variants in the familial breast cancer genes BRCA1/2, is characterized by an increased risk for breast, ovarian, pancreatic and other cancers. Identification of mutation carriers are therefore important in order for patients to take advantage of potentially life-saving prevention strategies. The increase in demand for comprehensive screening pressured the diagnostic laboratory to increase mutation screening capacity in conjunction with a decrease in processing time and unit costs. We describe the introduction of the NGS based OncomineTM BRCA Research Assay using orthogonal assays for familial breast cancer diagnostics.

Methodology: High quality DNA from a training set of 8 controls and 116 breast cancer patients was sent to a

NGS service provider for the experimental (wetlab) procedures, where it was run on the Ion PGM™ instrument. The raw data was uploaded onto the Ion Suite™ cloud in order to be accessible for analysis by the diagnostic laboratory in Bloemfontein. Raw data was processed and analysed using the Ion Reporter™ Software.

Results: A total of 161 variants were called. These variants were obtained by filtering based on the following requirements: a medium absolute pairwise difference (MAPD) score of <0.4, a p-value <0.05, a minimum coverage of 200 reads per fragment, with an allele ratio between 0.4 and 0.6 in the case of a heterozygote. Of these, a total of 9 pathogenic, 6 likely pathogenic and 12 variants of unknown clinical significance were observed. The validation proved successful with NGS detecting equivalent or more than the previous mutation screening protocols.

Conclusion(s): NGS was successfully validated and introduced on the diagnostic platform for BRCA screening. It was able to detect the full range of mutation types screened for. It resulted in a decrease in processing time and costs, and increased the throughput.

LR12

Title: **Pitfalls in the laboratory diagnosis of Von Willebrand disease**

Authors: C Conradie, M Meiring
Presenter: Charmaine Conradie
Departments: Haematology and Cell Biology

Introduction and aim: Bleeding disorders largely influence the quality of life of patients. Von Willebrand disease (VWD) is the most common bleeding disorder with a prevalence of 1% in the population. Despite this high prevalence, the diagnosis and classification remain a challenge. Our laboratory diagnoses the sub-classes of VWD in South Africa. The diagnostic screening of the disease includes four screening and three confirmatory tests. Most laboratories in South Africa, only performs two of these tests. With this project, we determined the pitfalls in the laboratory diagnosis of VWD by calculating the percentage misdiagnosis when only two or three of the tests are used.

Methodology: Retrospective data of 250 Von Willebrand disease cases were gathered and the percentage misdiagnoses were calculated when only two or three of the screening tests were to be used.

Results: By performing four screening tests, instead of two that most labs are using, prevents misdiagnosis of the disease. However, by performing only the two most popular tests (VWF antigen and ristocetin cofactor) 28% type 2M would be misdiagnosed as type 1 and 48% would be misdiagnosed as type 2A or B. 13% type 2A patients were to be misdiagnosed as type 1 VWD and 77% as type 2B. 6% type 1 VWD were to be misdiagnosed as type 2. 1% type 3 patients were to be misdiagnosed as type 2 VWD. 8% 2B VWD patients were misdiagnosed as type 1 and 55% of type 2B patients would be diagnosed as type 2A. Furthermore, when the multimeric analysis were to be included in the diagnostic setup, together with the two most popular tests, 20% of patients would still be misdiagnosed.

Conclusion(s): It is of utmost importance to include all screening and confirmation tests in the laboratory diagnosis in order to prevent misdiagnosis of the disease.

LR13

Title: **Contrast Enhancement with Multi-Energy Computed Tomography**

Authors: D van Eeden, FCP du Plessis
Presenter: Ms Déte van Eeden
Departments: Medical Physics

Introduction and aim: Energy-resolving photon-counting detectors are capable of discriminating between different energies and producing multiple monoenergetic images from a single exposure. The enhancement in contrast for breast tissue was explored by using multi-energy CT.

Methodology: The BreastSimulator software was used to generate three breast models with varying tumour sizes and composition. The composition ranged from a breast with mainly adipose tissue to a dense breast consisting mainly of glandular tissue. The models were converted to a format compatible with the egs_cbct Monte Carlo code for the simulation of the projection images. Projection images over a 360-degree arc were taken with 1 billion histories and a statistical variance below 1%. The OSCaR reconstruction software was used for all the reconstructions with a Shepp-Logan filter and reconstruction voxels of 0.05 cm. The contrast-to-noise ratio for the different models at different energies was determined and compared to one another. The reconstructed images were compared to the breast models to determine the accuracy of the simulation and reconstruction process.

Results and discussion: It was shown that a better contrast is seen between the malignant and glandular tissue at lower energies. The BreastSimulator Software is a valuable tool for modelling breast phantoms based on clinical data and the reconstruction software can accurately reconstruct the projection data obtained from simulations. The CNR for the lower energies were at the least 2.5 times higher as for, the higher energies. This leads to better tumour detection and makes the idea of multiple-energy CT feasible. In multiple-energy CT a range of images can be obtained with a single image acquisition. Therefore, multiple-energy CT is a promising technique that can lead to high CNR's within acceptable dose ranges. A high CNR was achieved for the breast consisting of 89 % glandular tissue and the tumours were clearly visible.

LR14

Title: **Detection of human papillomavirus types in head and neck squamous cell carcinoma**

Authors: A Bulane, D Goedhals, R Seedat, J Goedhals, FJ Burt

Presenter: Ms Atang Bulane

Departments: Medical Microbiology and Virology

Introduction and aim: Human papillomaviruses (HPV) are the aetiologic agents for diverse clinical conditions. HPV has recently been associated with head and neck squamous cell carcinomas (HNSCC). Little is known about the prevalence of HPV in HNSCC in South Africa. The aim of this study was to investigate the incidence of HPV DNA in archived formalin fixed paraffin embedded (FFPE) tissue from patients with confirmed HNSCC using multiplex PCR.

Methodology: A total of 1000 FFPE tissue biopsies from different sub-sites of the head and neck were screened. DNA integrity was confirmed by amplification of the human beta globin gene. A nested multiplex PCR was used for detection of HPV DNA using primers PGMY09/11 and GP5+/6+ targeting the L1 gene. HPV types of positive samples were identified by sequence determination of amplicons and analysis of sequence data using BLAST and confirmed using hemi-nested PCR targeting the E6 gene of the HPV.

Results: DNA integrity was confirmed in 786/1000 (78.6%) samples. Overall, HPV DNA was detected in 59/786 (7.5%) patients. Positive biopsies were from the larynx (20/262) 7.6%, tonsils (5/35) 14.3%, oral cavity (16/17) 94%, nose (4/9) 44.4%, mouth floor (5/97) 5.2%, oropharynx (7/26) 27%, nasopharynx (1/26) 3.8% and hypopharynx (1/17) 5.9%. HPV16 was the most commonly detected type, found in 26 (44%) of positive samples. Other types detected included HPV2, HPV6, HPV11, HPV13, HPV18, HPV31, HPV33, HPV35, HPV45, HPV52, and HPV59.

Conclusion(s): The overall rate of HPV infection of 7.5% in 786 samples was similar to previous rates of detection using PCR on FFPE tissues. The detection rate varied depending on the tumour location.

LR15

Title: **The effect of heterozygous BLM mutations on breast cancer risk in South Africa**

Authors: J Adams, S-R Schneider, E Imyanitov, NC van der Merwe

Presenter: Mr Johnathan Adams

Departments: Division of Human Genetics UFS, Department of Genetics UFS, NN Petrov Institute of Oncology Russia

Introduction and aim: Sequencing of potentially important genes involved with genomic stability and DNA repair has previously led to the identification of novel contributors to BC such as *CHEK2*, *PALB2* and *BLM*. Bloom's syndrome is a rare homozygous autosomal recessive chromosomal instability disorder with a high incidence of various types of neoplasia, including breast cancer (BC). A recurrent mutation *BLM* c.1642C>T, p.Q548X, has been associated with an increased BC risk in Slavic countries. We investigated the prevalence of this Slavic founder mutation and additionally screened *BRCA1/2* negative high risk BC cases for other mutations in this gene.

Methodology: A total of 241 high risk BC patients who either presented with early-onset disease or reported a positive family history, were screened for the presence of the Slavic founder in exon 7. In additional 68 patients were comprehensively screened using High Resolution Melt Analysis (HRMA). Samples deviating from the baseline were Sanger sequenced. Clinical significance of each variant was assessed using predictive algorithms.

Results: The BC modifying Slavic mutation was not detected within any of the SA high-risk BC cases. Comprehensive screening resulted in the identification of 24 variants. The variants detected ranged from global

to rare, and included several novel mutations. The rare *BLM* c.11T>A, p.V4D missense mutation detected within exon 2 has been classified as likely pathogenic. In addition, two variants *BLM*- c.2603C>T and c.3961G>A, considered to be likely pathogenic. However, its clinical significance needs to be proven using segregation analysis.

Conclusion(s): This study rejected the hypothesis that the Slavic mutation affects BC risk on a global scale. It furthermore identified various rare variants worth investigating in the future for SA. As *BLM* has not been screened within the SA population before, one should not be swift to discount the value of these results. Further large case-control studies or more advance screening techniques are required.

CR20

Title: **Image-guided adaptive brachytherapy dose escalation for cervix cancer via fractionation compensation**

Authors: W Shaw, WID Rae, ML Alber
Presenter: Dr William Shaw
Departments: Medical Physics, Aarhus University, Heidelberg University Hospital

Introduction and aim: In image-guided adaptive brachytherapy (IGABT), dose distributions are optimized for each fraction. Optimum fractional dose can be constant or adapted to previous fractions and a conjecture about the future ones.
We evaluate the efficacy of different fraction size schemes, derived from total IGABT dose constraints, against constant per-fraction constraints.

Methodology: This retrospective planning study included 20 IGABT patients where four different fractionation schedules were compared based on modern planning recommendations. A total high-risk-clinical target volume D90 (minimum dose in 90% of the volume) dose aim of 90.0 Gy with constant per-fraction organs at risk (OARs) dose constraint planning (CONST) was compared with conservative and aggressive fractionation compensation (COMP) techniques. COMP allows variations in the per-fraction dose constraints. Dose accumulation was performed through dose summation at a given volume and equivalent uniform dose (EUD) worst-case dose estimates.

Results:No significant differences were identifiable between dose metrics of CONST and COMP in the total patient population. However, a subgroup of patients with alternating dose limiting OARs had significant benefit from COMP. Median high-risk-clinical target volume dose escalation ranged from 5% to 12%, whereas OAR dose increases were lower and ranged from 3% to 8%. EUD-based planning delivered similar tumour doses, although slightly lower OAR doses. By distributing the treatment aim over an increased number of treatment fractions, median tumour dose could be increased by a further 8% per additional treatment fraction at the same OAR dose levels for both CONST and COMP.

Conclusion(s): COMP is effective in patients with alternating dose-limiting OARs and is enhanced using more treatment fractions and EUD constraints.

LR17

Title: **Quantitative measurements with intra-operative probe in breast cancer patients to assist sentinel node removal**

Authors: WPE Boonzaier, K Ramonaheng
Presenter: Mr Willem Boonzaier
Departments: Medical Physics, Nuclear Medicine

Introduction and aim: The incidence of breast cancer in South Africa per 100 000 women was estimated to be over 33.9 in 2015 of which 1/3 of patients had lymphatic involvement to the axillary lymph nodes. In Nuclear Medicine, a sentinel node study is performed by injecting Tc-99m-[nanocolloid] intramuscularly in the breast after which the lymphatic flow from the injection site can be mapped with the help of gamma camera imaging. Validation of the involved sentinel node is facilitated by an intra-operative probe; however, no quantification method has been introduced for using the intra-operative probe in theatre. The aim of this project was to determine the possibility of quantifying the signal from the intra-operative probe to aid in sentinel node removal during surgery.

Methodology: The attenuation coefficient of the Europrobe 3 intra-operative probe system was measured by acquiring transmission data with Tc-99m using different thicknesses of a PMMA phantom. The attenuation coefficient was used to quantify the attenuated counts from the sentinel node in patients and compared to the counts detected from the node after surgical removal and the accuracy determined as the percentage difference between the two values. Radioactivity quantification accuracy of the intra-operative probe was assessed using the PMMA phantom with corrections for attenuation. The accuracy was determined as the percentage difference between the quantified value and the known activity injected into the phantom.

Results: The average attenuation coefficient of PMMA for Tc-99m was 0.587 ± 0.036 per cm for the intra-operative probe. The average accuracy of the attenuation corrected counts in patients was 5.95±1.58%. Radioactivity quantification accuracy was poorer with an average of 26.67±3.61%.

Conclusion(s): The poor accuracy observed in the radioactivity quantification was attributed to the poor energy resolution used clinically. The measured attenuation coefficient could be used to accurately correct counts for attenuation affects.

LR18

Title: **SCREENING OF PALB2 IN HIGH-RISK BRCA1/2 NEGATIVE SA BREAST CANCER PATIENTS**

Authors: MF Makhetha, NC van der Merwe, BK Dajee, I Buccamazza
Presenter: Ms Mpoi Makhetha
Departments: Division of Human Genetics

Introduction and aim: Women from high-risk families are four times more likely to develop breast cancer (BC) compared to women in the general population. While some test positive for deleterious mutations within the high impact *BRCA1* and *BRCA2* genes, the majority remain unaccounted for. Investigations involving *BRCA* negative families revealed various other role players such as *PALB2*. Germline inactivating mutations in this gene are associated with more than a fourfold increase in risk for BC but the presence of such mutations has not been established in SA. This study aims to determine the presence of *PALB2* mutations in the high risk SA BC patients.

Methodology: Archived DNA samples of 66 *BRCA1/2* negative BC patients were selected based on the presence of a strong family history for BC and other cancer types (>3 affected per family). Thirty primer pairs were optimized for the detection of variants. All coding regions, together with splice-site boundaries were screened using High Resolution Melting Analysis. Samples that deviated from the baseline were bi-directionally sequenced.

Results: A total of 26 variants have been detected, ranging from global polymorphisms to two likely pathogenic mutations with the majority being in exon 4. One possible disease causing mutation; c.421A>T, p.K142Ter-Rs587782005, was identified in an Indian (35yrs) and a Caucasian (60yrs) patient, and the second mutation; c.2794G>A, p.V932M-Rs45624036 was detected in 2 Caucasian and 1 Indian patients all below 50yrs of age.

Conclusion(s): This study confirmed the presence of *PALB2* mutations, and role of *PALB2* as a breast cancer susceptibility gene in high-risk *BRCA1/2* negative patients. The results justify its inclusion in a more comprehensive breast cancer panel whereby the incorporation of *PALB2*, along with *BRCA1* and *BRCA2*, might explain a significant percentage of familial breast cancer in SA.

LR19

Title: **PERSONALIZED MEDICINE – THE IMPLEMENTATION OF MLPA IN INTELLECTUAL DISABILITIES**

Authors: J Oosthuizen, M Theron
Presenter: Mr Jaco Oosthuizen
Departments: Division of Human Genetics, NHLS

Introduction and aim: There is an estimated 19,000 to 20,000 human protein coding genes. Microdeletions and microduplications are defined as a group of clinically recognised disorders characterized by small rearrangements spanning more than 290 disease genes. The phenotype is the result of haploinsufficiency of critical genes. Intellectual disability, affecting 1 to 3% of the population, represents one of the most difficult challenges faced by clinicians today. These genetic changes are most often not detectable by the banding resolution of karyotyping (<10Mb). FISH as a diagnostic tool provided a higher resolution (2-5Mb) but is limited to a specific chromosomal region and the number of fluorochromes available. The diagnostic tool, Multiplex Ligation-dependent Probe Amplification assay (MLPA) is now replacing the golden oldie of molecular-cytogenetics, fluorescent in situ hybridization, as a more cost-efficient tool with decreased manual manpower, increased sensitivity and specificity and more complex bioinformatics.

Methodology: For the screening of microdeletions the P245-B1 Microdeletion syndromes-1A kit was used for the verification. Eight internal samples with known FISH results and four external controls (confirmed with FISH and MLPA) were used for the verification of the assay sensitivity.

Results: During the verification it was evident that the DNA quality and quantity influenced the relative copy number frequency and normalization extensively. MLPA had an increased resolution compared to karyotyping and FISH assay and has become increasingly more cost effective. Yet MLPA has its limitations with regards to sample extraction purity variations, the detection of mosaicism and structural translocations.

Conclusion(s): The sensitivity and specificity of MLPA was successfully verified as a copy number quantification assay for the detection of numerical chromosomal abnormalities. We successfully implemented MLPA as a diagnostic tool in intellectual disabilities and can identify more than 27 syndromes underlying intellectual disabilities in a single assay within 3 days.

LABORATORY POSTERS

LP1

Title: **NO SUCH THING AS NON-LETHAL PROJECTILES**

Authors: C Liebenberg
Presenter: Dr Chantelle Liebenberg
Departments: Forensic Medicine

Introduction and aim: Rubber and plastic bullets are usually classified as non-lethal or less-lethal projectiles. These projectiles vary in calibre and are usually fired from smooth-bore guns. Riot police in South Africa are equipped with Musler 12-gauge shotguns and firing these non-lethal projectiles are considered to be one of the legally admissible ways of controlling a rowdy crowd. It can be employed to repulse assault and battery or to prevent the damage of property and their most common use is for the dispersion of street demonstrations. There are guidelines for the safe use of these rounds, but it is important to remember that the use of these projectiles still carries a mortality rate.

Methodology: The body of a 33 year old man was admitted to the Bloemfontein Medicolegal Laboratory. He was shot with rubber bullets at close range.

Results: During autopsy, he had a large defect on the chest with a plastic wad and a blue rubber ball that was found inside the chest cavity. Another blue rubber ball was found in the soft tissue of his back.

Conclusion(s): It is unusual to see fatalities with the use of rubber or plastic bullets but it would be naïve to assume that they are always non-lethal. It is important to use these projectiles in the correct manner and for there to be at least 20 metres between the weapon and target.

LP2

Title: **Mutation detection in the endoglin gene in a family affected with hereditary haemorrhagic telangiectasia (HHT)**

Authors: KT Peta, GM Marx, MJ Coetzee
Presenter: Prof Marius Coetzee
Departments: Haematology and Cell Biology, Genetics

Introduction and aim: Hereditary haemorrhagic telangiectasia (HHT) is a rare autosomal dominant bleeding disorder that is characterized by recurrent epistaxis, and arteriovenous malformations. Males and females are equally affected, with a prevalence of 1 or 2 per 100 000 world-wide. About 80% of HHT cases are caused by the endoglin (ENG) and activin receptor kinase 1 (ALK1) gene mutations. HHT is found in all racial groups however previous studies have suggested that HHT is rarely found in Africans. In this study we screened for mutations in the ENG gene in a mixed-ancestry family, where some of the members are affected with HHT in comparison to those not affected in order to find the transmitted mutation.

Methodology: Blood samples were collected from 15 family members; RNA was extracted and converted to cDNA which was used as sequence template. Primers were designed for splice sites spanning exon regions of the ENG gene which was used to amplify and sequence the samples.

Results: No variants have been found in the exon splice sites 2-3, 3-4, 4-5, 5-6 and 8-9. Two variants (c.-324A>G and V504M) were detected that are probably not pathogenetic.

Conclusion: Genetic studies on HHT in Africa are minimal, because it is rare and mostly undiagnosed. This is the first study sequencing HHT patients with their families to find HHT related mutations in a South African population. The family still needs to be investigated for mutations in other genes associated with HHT.

LP3

Title: **Patient Mix-up due to Pre-labelling of specimen tubes prior to sample collection**

Authors: EM Morrison, HD Potgieter, TJ Naicker
Presenter: Dr Ella Morrison

Departments: Chemical Pathology

Introduction: Pre-labelling of sample tubes for a group of patients by sticking on patient identification labels prior to the morning phlebotomy, is a common practice and is designed to speed up the sample collection process, thereby providing timeous results for the consultant ward round. A paediatrician at the Universitas Hospital enquired why a baby's results (Baby H) were not amongst those of the nine babies tested in her Unit that morning.

Methodology: Review of all 9 babies' test results showed a set of results for a Baby M when no blood had been drawn from him that morning. The paediatrician suggested they probably belonged to Baby H. Baby M had neonatal sepsis and was receiving phototherapy for jaundice. Baby H had respiratory distress syndrome and was not jaundiced. The standard laboratory procedure of checking traceability & "delta checking" of consecutive chemistry test results over a few days was used.

Results: The results on the day in question were found to be better matched to Baby H because he was not jaundiced and the serum bilirubin result was normal. In addition, it was found that 10 sample tubes had been group pre-labelled in the Unit that morning and because blood had not been collected from Baby M there was the possibility that 8 out of 9 baby samples could have been mixed up in this process. This however, could not be proven, as no staff was able to remember if a surplus tube with Baby H's name had been found.

Conclusion(s): Most laboratory errors occur in the pre-analytical phase, and despite standard laboratory procedures being in place to correctly match sample with patient, the pre-lab ward process of group pre-labelling has potential to incorrectly link patients with mis-matched pre-labelled tubes with disastrous consequences.

EDUCATIONAL PAPERS

ER1

Title: **EQUINE-ASSISTED THERAPY AS INTERVENTION FOR MOTOR PROFICIENCY IN CHILDREN WITH AUTISM SPECTRUM DISORDER: CASE STUDIES**

Authors: M De Milander, S Bradley, R Fourie
Presenter: Dr Monique de Milander
Departments: Exercise and Sport Sciences

Introduction and aim: Children with Autism Spectrum Disorder display a range of challenging difficulties in all aspects of their daily living routines. Due to these challenges, parents look for various interventions that will improve the quality of life of their children. The aim of this study was to determine whether an Equine-Assisted Therapy (EAT) intervention would result in an improvement of balance, upper-limb coordination and strength.

Methodology: Two case studies were conducted, where one female (9 years and 4 months) and one male (8 years and 7 months) participated in a 10-week EAT intervention. Motor proficiency was evaluated by means of a pre-post-test research design using selected composites of the Bruininks-Oseretsky Test of Motor Proficiency (BOT-2). Individual changes were observed in balance, upper-limb coordination and strength.

Results: The female participant with regard to upper-limb coordination showed an improvement of 11 years and 1 month and the male participant 1 year and 3 months. With regard to balance there was an improvement of 11 years for the female and the male 1 year and 9 months. Finally, strength increased, suggesting an improvement of 1 year and 6 months for the female participant and even more for the male indicating a 2 year and 5-month improvement, although still below his chronological age.

Conclusion(s): EAT interventions could provide a suitable alternative approach for children on this spectrum who experience impairments in low muscle tone, repetitive motor movements, poor motor planning, postural instability, difficulty sequencing a task, as well as poor gross motor performance.

ER3

Title: **The Psychosocial Themes of Children with a Congenital Heart Defect**

Authors: C Pheiffer, R Van der Watt, S Brown
Presenter: Ms Carina Pheifffer
Departments: Psychology, Paediatric Cardiology

Introduction and aim: Children living with a congenital heart defect (CHD) carry the burden of a condition affecting their biological, psychological and social functioning. Even though the physical heartbeats of these children might be inaudible and defective, their intra- and interpersonal “stories in sound” need to be heard and understood. The aim of this research study was to explore these “stories in sound” in children diagnosed with CHD.

Methodology: A qualitative, exploratory, descriptive single- case study using thematic analysis was conducted. Semi-structured interviews were conducted with six boys and three girls between the ages of eight and fourteen years, who were diagnosed with CHD. The developmental psychopathology model (DPM) served as a conceptual framework.

Results: Five main themes emerged and were related to (a) the participants’ understanding of their cardiac diagnoses; (b) perceptions regarding their post-operative cardiac statuses; (c) psychological experiences related to their cardiac statuses; (d) the effects of living with CHD on their social functioning; and (e) a unique relationship to their chronic cardiac condition. Within each of these themes, thirteen subthemes were identified.

Conclusion(s): The research concludes that an age-appropriate understanding of CHD and post-operative cardiac status is important, as children’s perceptions have implications for their psychosocial experiences and acceptance of living with CHD.

ER3

Title: **Strategies to sustain curricular innovations in Higher Education: An integrative review**

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

Introduction and aim: Higher education, inclusive of health professions education, is under constant pressure to develop and sustain cutting edge curricula. New approaches to teaching, new insights into how students learn and improvements in science influence the development and implementation of curricula within higher education. Curricular innovation results in teaching and or testing materials, methodological skills, and pedagogical values that are perceived as new by potential implementers. Changes brought about by curricular innovation need to be accommodated during planning, designing, and implementation of a programme. Failure to adjust structures within a programme and institution for the adaptation of curricular innovations predisposes a curriculum to drift to its pre-innovative ancestor. The purpose of this integrative review was to synthesize evidence related to strategies used to sustain curricular innovations in higher education.

Methodology: Sixteen electronic data bases were searched and reference lists checked, citations tracked and journals hand searched to identify evidence that reflected strategies used to sustain curricular innovations in higher education from January 1996 to September 2016. The generated evidence was measured against inclusion criteria. Four independent reviewers appraised the methodological quality of the evidence using a variety of appraisal tools and the same reviewers were included in the data extraction. Data analysis and synthesis were carried out through a stepwise thematic approach.

Results: Thirty articles met the inclusion criteria for integrative review out of the 715 which were generated from the initial search. Strategies to sustain curricular innovation were focused on the specific level of curricular innovation at either the micro-, meso- and macro- level of curriculum implementation through various stakeholders, linear and integrated approaches.

Conclusion(s): The strategies revealed in this study may be applied and adapted to various contexts within higher education where curricular innovations should be sustained as a bid to prevent curriculum drift.

ER4

Title: **The Deficiencies and Surgical Skills Needs of Rural General Practitioners in South Africa**
Authors: DC Porter, J Bezuidenhout, RS du Toit, AO Adefuye
Presenter: Dr Johan Bezuidenhout
Departments: Health Sciences Education, Surgery

Introduction and aim: At present, much of the global surgical workforce is comprised of non-specialist physicians (general practitioners) whose only formal surgical training is during undergraduate medical school. However, there is a widespread concern that general practitioners (GPs) do not have the required surgical skills to deliver essential surgical care in a rural setting. This therefore requires that a specific training programme be developed to train rural GPs in essential surgical skills specific for rural settings. The objectives of this study was to perform a critical analysis to determine essential surgical skills required by GPs in rural South Africa, with the intention of developing the contents of an accredited continuing professional development (CPD) learning programme to address identified needs.

Methodology: This is a descriptive study in which a desk-top review analysis and a questionnaire survey was used to obtain both qualitative and quantitative data on essential surgical skills required for rural surgical practice.

Results: A total of 102 of the 300 GPs (34%) completed the questionnaire. GPs reached consensus on essential surgical skills that are need for rural surgical practice. Some of the surgical skills listed as essential by GPs includes; removal of foreign objects, not in visual axis (90%), packing of epistaxis (93%), haematoma drainage (78.3%), and wound debridement and suturing (96%). In addition, this study identified the outcomes and essential content of a proposed CPD programme to provide GPs in rural setting with the required surgical skills.

Conclusion(s): Enhancing skills of GPs in essential surgical techniques or procedures through an accredited CPD short learning programme will ensure that adequate and comprehensive essential surgical care is provided for people living in the rural communities.

ER5

Title: **Peer Physical Examination in clinical physical examination training: A viable option in the South African context?**
Authors: M Hattingh, M Labuschagne
Presenter: Ms Maryna Hattingh
Departments: Clinical Simulation and Skills Unit: School of Medicine

Introduction and aim: Peer physical examination (PPE) is used globally to facilitate clinical physical examination training. Many institutions across South Africa use PPE but do not have existing written policies or guidelines on how to conduct such training. Due to the sensitive ethical, cultural, legal and religious aspects associated with PPE, such policies are desired. The aim of the study was to determine what the experiences and attitudes of students and lecturers in the Faculty of Health Sciences at a central South African university are regarding PPE and what they suggest should be included in a PPE policy.

Methodology: A qualitative research design was followed with three focus group interviews with 19 students and 7 lecturers from the Faculty of Health Sciences. The student focus groups included 11 students in the first and 8 mainly English speaking students in the second group. The lecturers' focus group comprised of 7 participants. Transcription of focus groups was done, themes, categories and subcategories identified, compared and discussed with the findings and recommendations of the literature review in mind.

Results: Most participants agreed that the use of PPE is beneficial to students. Participation in PPE improve the competence and confidence of students. Professional attributes such as respect for others, communication skills and building a trust relationship with patients are enhanced by PPE. The participants agreed participation in PPE provides a safe space to learn clinical skills although some were concerned about inadequate educator supervision when practising on peers.

Conclusion(s): The use of PPE in the South African environment is supported by role-players of the specific university. Aspects such as informed consent, voluntary or compulsory participation, respect, privacy and confidentiality has been identified to be included in guidelines or policies. Further studies need to be conducted in a broader South African context.

ER6

Title: **STRESSORS AND COPING STRATEGIES AMONG PHYSIOTHERAPY STUDENTS: TOWARDS AN INTEGRATED SUPPORT STRUCTURE**

Authors: K Bodenstein, EC Janse van Vuuren, M Nel
Presenter: Ms Karen Bodenstein
Departments: Physiotherapy, Economic Management Sciences, Biostatistics

Introduction and aim: Stress is a major problem amongst university and specifically health care students, as it may influence academic performance and psychological wellbeing negatively. The aim of this study was to develop a student support system based on the perceived stress, stressors and coping strategies of physiotherapy students.

Methodology: A cross-sectional, descriptive study was undertaken using a self-assessment questionnaire and the 28-item General Health Questionnaire (GHQ-28). Over a three-year period, 207 third- and fourth-year physiotherapy students at the University of the Free State were included.

Results: Psychological distress experienced by participants (year groups combined) ranged from 61.8% - 71.2%. During the three months prior to the study, 6% of participants received psychological or psychiatric help and 9% of participants used some form of psychiatric medication. The main stressors identified during clinical training were the suffering and death of patients, academic pressure and tension during interaction with personnel. Participants indicated that they mainly coped with these stressors by talking to someone, such as family or friends.

Conclusion(s): Based on the findings of this study, a framework to identify and support students in pre-clinical and clinical training years was developed. This proposed framework might positively contribute to the psychological wellbeing of health care students.

ER7

Title: **The selection of students as research participants in undergraduate medical student projects at the School of Medicine, UFS 2002-2017**

Authors: G Joubert, WJ Steinberg, LJ van der Merwe
Presenter: Prof Hannes Steinberg
Departments: Biostatistics, Family Medicine, Undergraduate Programme Management, School of Medicine

Introduction and aim: An important methodological and ethical aspect of any research project is the selection of appropriate participants. The use of students as research participants can be seen as targeting convenient populations who are potentially vulnerable, especially in terms of giving valid informed consent. The aim of this

study was to investigate the selection and inclusion of students as research participants in undergraduate medical student projects at the School of Medicine, UFS, 2002 to 2017.

Methodology: For this descriptive study all undergraduate medical student projects were screened regarding the inclusion of any type of student as participant using the project oral presentation programmes from 2002 to 2017 (458 projects). Further information regarding the projects identified as having student participants was obtained through scrutiny of the relevant research protocols and final project reports.

Results: 57 student projects (12.4% of all projects, ranging yearly from 0% (2002) to 26.9% (2017)) had students as participants. The student participants were mainly medical students (52.7% of the 57 projects) or UFS residence students (26.3%). In 75.4% of projects there was some literature or subject content motivation for the type of student used as participant. In only 4 (7.0%) projects student records only were used. Recruitment was mostly done in class (45.6%), by the student researchers (80.7%), and no incentives for participation were offered (91.2%). Participation generally followed directly after recruitment (61.4%). In most (59.7%) of the projects no sampling was done, and anonymous questionnaires (63.2%) were used. Data collection frequently did not occur at the time proposed in the protocol.

Conclusion(s): The choice of students as participants seems generally motivated and anonymity is frequently ensured. Since medical students form the chosen population in a large number of projects, some form of scheduling of researchers' access to students as participants should be considered.

ER8

Title: **Determining whether the Bridging course for enrolled nurses meets the need of the stakeholders**

Authors: V Taschl, MP Jama

Presenter: Ms Veronica Taschl

Departments: Health Sciences Education

Introduction and aim: A study was conducted in Mpumalanga Province (MP), South Africa (SA), to determine whether the Bridging Course (BC) for enrolled nurses offered at the public nursing college meets the needs of the stakeholders. Training of nurses in Mpumalanga is fragmented because some courses are offered at the Mpumalanga College of Nursing and others at the nursing schools affiliated with clinical learning facilities. This fragmentation causes poor control of the quality of education and training of nurses. This study described the education and training that the BC student in MP receives in relation to the guidelines of the South African Nursing Council (SANC).

Methodology: Using a case study design, an inquiry into the education and training that the MP BC student receives was conducted. The data collection methods used included a document analysis of the current education practices at Mpumalanga College of Nursing compared to the SANC requirements and semi-structured, one-on-one interviews with nursing service managers in public sector hospitals.

Results: Analysis of data revealed outdated curricula, assessment methodology limited to pen and paper methods and no evidence of assessment of higher cognitive and analytical skills for clinical education and training. The finding of this study show that in terms of credentialing, the education and training of the BC student in Mpumalanga province compares well with international and national standards. In comparison with the regulatory body's requirements, the BC appears to conform to the SANC standards.

Conclusion(s): The outcome of the study might assist in highlighting the shortcomings and successes in the BC. Findings from the data were used to make recommendations towards the improvement of the education and training of nurses. Furthermore, the results might direct efforts to mitigate gaps identified and inform future curriculum development for the education and training of nurses.

ER9

Title: **Cardiothoracic surgical training in South Africa – facts, challenges and simulation**

Authors: J Pillay, J Bezuidenhout, FE Smit

Presenter: Dr Jehron Pillay

Departments: Cardiothoracic Surgery, Health Sciences Education

Introduction and aim: Cardiothoracic surgery training for registrars in South Africa is under scrutiny as it is becoming more difficult to complete the required training timeously, as facilities and the number of patients in the state sector are declining.

Methodology: A literature study and a questionnaire were used. Convenience sampling was used in order to obtain a cross sectional representation of the academic cardiothoracic community in South Africa, by targeting the attendees of the 2017 Hannes Meyer Registrar Symposium in Bloemfontein.

Results: Of the forty doctors attending, thirty-five completed the questionnaire (87.5%). The South African academic cardiothoracic community are of the opinion that simulation will play a valuable role in the future of cardiothoracic education in South Africa and should count towards the requirements for registration. Over 85% of respondents believe that simulation has a role to play even after graduation as a cardiothoracic surgeon and in lifelong continuing education.

Conclusion(s): Cardiothoracic surgical training in South Africa is not optimal due to a wide variety of intrinsic and extrinsic causes and does not meet the requirements stipulated by SAQA and the CMSA. There is a need to critically re-evaluate the current national training platform, including the centres of service delivery, the curriculum and the current
methods of competency assessment, amongst others, to ensure a standardised and reproducible programme of international standard. Simulation is a viable method of augmenting the current training programme in order to address some of the challenges faced.

ER10

Title: **The facilitators' perspective of interprofessional education at the Faculty of Health Sciences**

Authors: J Cairncross

Presenter: Dr Joleen Cairncross

Departments: School of Medicine

Introduction and aim:
The World Health Organisation (WHO) published a report that policy makers can apply to their local context to address local health needs and improve health outcomes through the implementation of interprofessional education (IPE) programmes that strengthen the health system. Traditionally students have been trained in silos, IPE programmes aim to promote a culture of collaborative practice in undergraduate students. The study investigated the facilitators' opinions and attitudes on the current and future IPE programmes.

Methodology:
A quantitative study was conducted with the use of an online survey. Twenty-three facilitators participated, from a population of thirty-four. The topics of sections included: demographic information, achieving key outcomes/competencies, challenges faced, highlights experienced and changes to future IPE programmes.

Results:
Ten respondents were junior lecturers. Two had no theoretical knowledge of IPE principles. Eight found the current IPE programme not useful for their academic discipline. Challenges that were identified included fatigue and absenteeism and its influence on student engagement, planning (venue,scheduling, not all professions represented in small groups) and programme content (case study). Ten facilitators requested further training on small group facilitation and thirteen in conducting a debriefing session. Observing the students achieving key outcomes/competencies and personal development were listed as highlights.

Conclusion(s):
Junior lecturers could be better motivated to become involved. Adequate preparation by facilitator and students alike is important. Future case studies should allow for all students to participate and well trained standardised patients are essential. Students were achieving the key outcomes/competencies as observed by facilitators.

ER11

Title: **Meaningful simulation learning experiences for mature learners: A conceptual framework**

Authors: C Spies, Y Botma
Presenter: Dr Cynthia Spies
Departments: School of Nursing

Introduction and aim: Extensive research supports the use of simulation as an effective educational intervention that fits well into the rapidly changing world of nursing education and advances in the delivery of healthcare. However, most research on simulation in nursing focusses on the learning experiences of undergraduate nursing students and not so much on the learning experiences of non-traditional or mature learners who enter postgraduate education. Since these postgraduate learners might not have had any prior simulation experiences, the nurse educator has to design simulation learning experiences that they will find meaningful.
The aim of this paper is to describe a conceptual framework for meaningful simulation learning experiences in postgraduate education.

Methodology: The conceptual framework is the result of an action research study conducted over a period of two years. Qualitative data were gathered from two separate groups of postgraduate nursing students. Techniques included focus groups, field notes and the nominal group technique.

Results: Results revealed a number of interdependent elements that should be considered in the design of simulation learning experiences. In essence, when the nurse educator combine constructivist learning theory, scaffolding, authenticity and experiential learning in a non-judgemental simulation learning environment, mature learners develop a sense of independence, competence, confidence and a readiness to transfer learning to the workplace.

Conclusion(s): Nurse educators, specifically those involved in postgraduate education, can use this framework as a guide to existing simulation practices. However, since simulation is useful in all healthcare education, this framework may also be beneficial to the broader community of healthcare educators. Although this framework proposes meaningful simulation design for mature learners, further research may shed light on whether the framework will be just as suitable in undergraduate simulation.

ER12

Title: **A one year review of the impact of a rural Interprofessional Education collaborative platform on health professions student learning**

Authors: R Botha, A Joubert, D Hagemeister, H Morgan
Presenter: Dr René Botha
Departments: Office of the Dean, School of Nursing, School of Medicine, School for Allied Health Professions

Introduction and aim: The Faculty of Health Sciences (FHS) established an interprofessional collaborative engagement platform in the Kopanong local municipality to optimise the quality of rural healthcare. The platform also incorporated 4 key competencies (role clarification, patient/ community-centred care, team functioning and interprofessional communication) that students had to achieve to improve their interprofessional practice. The aim of the study was to evaluate the impact of a rural IPE collaborative platform placement on health professions students' learning.

Methodology: Student groups were requested to create a digital story of rural IPE experiences, consisting of ten images and a five-minute narrative. This purposefully ill structured request using multimedia digital stories (images, video, text, and audio) gave students carte blanche and allowed for creativity. Purposive sampling was done of digital stories consisting of at least three professions (n= 23). The digital stories were transcribed and a qualitative content or contextual analysis was used to categorise the impact of the rural IPE placements on student learning.

Results: All student groups confirmed that they achieved the key competencies. Students realised the value of the different professions in their groups:
We were reminded of how important it is to have a holistic approach when treating patients and that everyone is equally important. Students were able to function as a team through improved communication and patient and community-centred care. With team building activities we learned the value of listening, understanding and appreciating each other. The community-centered approach ensured that any referrals were not missed. The digital stories additionally revealed that interprofessionality promotes academic learning: We realised that not all students know about diabetic diet so it was nice that they could learn from me.

Conclusion(s): Students placed on a rural IPE platform were able to gain key interprofessional competencies and interprofessional academic learning allowing for improved healthcare outcomes.

ER13

Title: **Rural and inter-professional – a participatory-action-research reflection on the new clinical training platform for the Faculty of Health Sciences, UFS**

Authors: D Hagemeister, J Cairncross, A Joubert, H Morgan, R Botha

Presenter: Dr Dirk Hagemeister

Departments: Family Medicine, School of Medicine, School of Nursing, School for Allied Health Professions, Office of the Dean

Introduction and aim: A group of health educators from the three schools in the faculty, together with staff from the faculty itself, had been tasked to utilise the community-based training platform in the Southern Free State, as a strategic decision had been made to invest in a university-owned facility in the town of Trompsburg. The aim of this research was to map the dynamics of the process, using a participatory action research design.

Methodology: The recurrent iterative process of 'abstract conceptualisation' – 'active experimentation' – 'concrete experience' and 'reflective observation' as experienced by the core-group of academics was documented to illustrate the development.

Results: We identified action-reflection cycles in the development of the group. Initial 'general conceptualisation' had to identify which students and academic programmes would take part. Additional staff was employed and stakeholder engagement increased in the 'organisation phase', when the details of the training platform (high schools, clinics) and the content from the different schools and programmes was to be developed. In the 'implementation phase', aiming at the large scale realisation of student placements in early 2016, logistics around the rotations and their accommodation in 'busy' academic calendars had to be faced. With commencement of student placements, the 'normalisation phase' was entered, as the focus shifted to day-to-day operational challenges and the maintaining and improvement of stakeholder relationships. Looking forward into the future, an 'optimisation/ expansion' phase might add qualitatively and quantitatively to the existing setting, depending on strategic decisions and identified opportunities for growth.

Conclusion(s): While some details still need to be optimised, the path walked by the multidisciplinary team responsible for the realisation of this training platform was one of significant growth both as individuals and as a team. Reflecting on achievements and re-conceptualising the future direction is a valuable complement to the group's past actions.

ER14

Title: **TRANSFORMATIVE LEARNING EXPERIENCES OF NURSE EDUCATORS IMPLEMENTING HIGH FIDELITY SIMULATION: AN INTERPRETATIVE PHENOMENOLOGY ANALYSIS**

Authors: M Phillips, L van Rhyn, D van Jaarsveld

Presenter: Ms Maria Phillips

Departments: School of Nursing

Introduction and aim: Globally, the use of high-fidelity patient simulation (HFPS) escalated in healthcare professions education over the past two decades. HFPS is an innovative, effective learning andragogy that bridge the theory and practice gap students. Nurse educators worldwide accept HFPS's important role in the near future. The future successes of HFPS are dependent on nurse educators' competence using HFPS. However, HFPS is a difficult strategy to implement even so for nurse educators in South Africa. The study explored, analysed and interpreted nurse educators' learning experiences of implementing leading to their HFPS at a school of nursing at a university in South Africa.

Methodology: An interpretative phenomenological analysis methodology researched seven voluntary participants through individual and dyadic, face-to-face, semi structured interviews, reflective journals, and a summary of participant learning experiences. I recorded personal reflective thoughts after each interviews. Data analysis adhered to phenomenological, hermeneutic and idiographic principles from an inductive paradigm. A double hermeneutic cyclic process were followed to describe both the participants' and researcher's interpretation of learning experiences. The study complied with institutional ethical approval and all requirements throughout the study.

Results: Five main themes transpired from the data, namely, 1) frames of reference of participants before exposure to HFPS, 2) discovering a new world, 3) critical reflection on experiences, 4) critical self-reflection, and 6) transformation in action.

Conclusion(s): The main contribution of the study is that participants experienced a deep transformative learning process as described in Jack Mezirow's transformative learning theory. Further contributions of this study comprise of recommendations to academic managers, nurse educators and institutions planning the implementation of HFPS as a successful learning strategy in the future.

ER15

Title: **AN ASSESSMENT TOOL TO MEASURE THE SUPPORTIVE ROLES OF PRECEPTORS**

Authors: L Hugo, Y Botma
Presenter: Ms Lizemari Hugo
Departments: School of Nursing

Introduction and aim: Preceptors are the ideal entity to support students' integration of theory and practice in the clinical facilities. Botma, Van Rensburg, Coetzee and Heyns (2013) adapted Donovan and Darcy's (2011) systemic transfer of learning model to explain the significant role that preceptors have to facilitate students' learning in practice by considering, student characteristics, educational approach, transfer climate, physical work environment and students' motivation. The support that preceptors are described as system, tangible, cognitive and emotional support
System support is associated with the liaison and monitoring role of the preceptor while tangible support addresses orientation and showing novices the "what, where and how". Cognitive support includes the development of critical thinking, clinical reasoning, clinical judgment and meta-cognition in students. Emotional support is regarded as being available and accessible to student during their placements.
Although numerous measurement instruments aim to measure the standard of precepting, none of them measures all the supportive roles. Therefore, the aim of the study was to develop a valid and reliable instrument that measures the four types of support rendered by preceptors to undergraduate nursing students.

Methodology: A quantitative methodological study design was used. Data were collected by means of a self-administered questionnaire. A sample of 192 undergraduate nursing students was used. Cronbach's alpha was computed to determine reliability, and an exploratory factor analysis was done to describe the construct validity.

Results: The Cronbach's alpha of .98 indicated high reliability and high internal consistency. Three constructs regarding clinical support, namely cognitive, emotional and system support were identified through the exploratory factor analysis.

Conclusion(s): The new conceptualisation of support gave insight into the value of the preceptor role. The instrument designed might be used to assess and monitor preceptor support during the accompaniment of students.

ER16

Title: **NURSING STUDENTS' EVALUATION OF SUPPORT OFFERED BY PRECEPTORS**

Authors: L Hugo, Y Botma
Presenter: Ms Lizemari Hugo
Departments: School of Nursing

Introduction and aim: Nursing students are placed in a complex and challenging clinical environment as part of their educational training programme (Van Graan, et al., 2016). During their placement, students are expected to become competent nurse practitioners through the integration of theory and practice. Students need support to develop cognitively and professionally in order to become part of a sustainable workforce that can address the healthcare needs of the South African population. Preceptors are the perfect entity to provide support and maximize transfer of learning. The support that preceptors should provide to students include system, tangible, cognitive and emotional support (Botma, et al., 2013; Williamson, et al., 2011). Nursing education institutions (NEI) should ensure that preceptors provide comprehensive support to students enrolled in their programme. The aim of this study is to describe the support offered by preceptors to undergraduate nursing students at a NEI.

Methodology: A quantitative survey was done. Second to forth year undergraduate nursing students completed the questionnaire. Respondents indicated on a four-point Likert scale whether they strongly agreed to strongly disagreed with the latter having the lowest score. Students completed the questionnaire at the end of their clinical placement over two consecutive months. Descriptive statistical analysis was done.

Results: Results showed that preceptors provided students with the four types of support. Students rated emotional support as the highest type of support offered by preceptors. The mean value of each type of support varied between 3.21519 and 2.01321 and showed that there is still room for improvement on the support that preceptors offer to students, especially cognitive support.

Conclusion(s): Students need comprehensive support during their placements. Cognitive support is pivotal in developing students' ability to make sound clinical judgement and were identified as a priority. The use of this instrument can provide nursing education institutions with a clear indication on the quality of preceptorship.

EDUCATIONAL POSTERS

EP1

Title: **Medico-legal documentation of rape or sexual assault: Are community-service doctors equipped for the task?**

Authors: L Fouché, J Bezuidenhout, C Liebenberg, AO Adefuye
Presenter: Dr Anthonio Adefuye
Departments: Health Sciences Education, Clinical Forensic Medicine

Introduction and aim: Following upon two-year internship, community-service doctors make mistakes when they deal with evidence of medico-legal examinations in various settings. These mistakes result in alleged perpetrators being released by courts. The study investigated undergraduate clinical forensic medicine training, based on experiences and opinions of community-service doctors. This article focuses on incidents of alleged rape cases only.

Methodology: The study was a quantitative retrospective cohort study that made use of a questionnaire with an adapted Likert scale. An electronic survey tool was employed to target 150 community-service doctors throughout South Africa. Percentages are used to display results.

Results: A response rate of 59.3% was achieved. Although, 80% of the participants reported that they had undergraduate training on how to manage alleged rape or sexual assault cases, only 11.4% of the participants had hands-on exposure to an alleged rape case during their undergraduate training. In addition, the majority of the participants (77.1%) never had undergraduate training on how to complete the J88 form. These findings indicate that clinical forensic training in the undergraduate medical programme does not adequately prepare community-service doctors to meet the challenges of clinical forensic practice. The current curriculum should be adapted to address these shortcomings.

Conclusion(s): Perpetrators cannot be convicted if evidence collected cannot stand up in court. Proper training of undergraduate medical students prior to their community-service posting will ensure that medico-legal documentation is completed correctly, leading to the presentation of credible evidence in the court of law in order to ensure successful conviction of alleged perpetrators.

EP2

Title: **Newly appointed health professions educators' reflections and evaluations: To flee or fight.**

Authors: C van Wyk, C Kridiotis
Presenter: Dr Chantel van Wyk
Departments: Health Sciences Education

Introduction and aim: Microteaching is an educational technique used to prepare educators to gradually obtain relevant pedagogic competencies. The technique uses real-time teaching experiences. Health professions educators who took part in a microteaching activity reported improved self-awareness, confidence in lecturing and the ability to effectively reflect on their teaching (Donnelly & Fitzmaurice 2011:1). A microteaching activity was used on the final day of an orientation programme for newly-appointed health professions educators. Reflections and evaluations were reported.

Methodology: Eleven newly-appointed health professions educators took part in the microteaching activity. Their reflections of the experience were documented. A questionnaire that was qualitative in nature, with specific criteria designed by the Division Health Sciences Education, was used to evaluate the microteaching activity.

Results: Newly-appointed health professions educators reflected fear of participating in the microteaching activity in terms of being evaluated. However, the cohort successfully depicted teaching competence and they reported that it was useful to self-reflect and receive feedback from peers and expert educationalists in a constructive educational environment. Areas for improvement in teaching practices were identified. Overall the activity led to strengthened collegial relationships among colleagues.

Conclusion(s): Using microteaching to train health professions educators did not only offer the educator the opportunity to enhance his/her teaching skills but contributed to an educator's positive attitude towards teaching. The health professions educators found that being evaluated in microteaching added value as they felt more confident and competent.
Take-home message: Microteaching experiences are enjoyable and offer definite benefits for newly-appointed health professions educators.