# Fifth Training Workshop and Symposium, MURIA Group in collaboration with ISPE

**North-West University | Potchefstroom | South Africa**
**8 - 11 July 2019**

## Program
## & Abstracts

International Society
for Pharmacoepidemiology

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## SPONSORS

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## WORD OF WELCOME

Dear attendee!

It is with great pleasure and excitement that we welcome you in Potchefstroom, South Africa, to the Fifth Training Workshop and Symposium of the MURIA Group, presented in collaboration with ISPE. The theme for this year is "**Enhancing future patient care through collaborative research**."

We have an attractive educational and scientific programme planned, starting with workshops on day one and two, presented in parallel sessions by local and international experts from the fields of drug utilisation research, pharmacoepidemiology and pharmacovigilance. The research symposium will take place over one and a half day. Take advantage of this opportunity to establish contacts and improve your networking with local and international experts.

Our hope is that this conference will build on the previous conferences, and be the start of our formal collaboration with the ISPE Africa Chapter, in particular.

Thank you for coming and we hope you find the workshops and symposia informative and rewarding.

Best regards

Johanita Burger and Rianda Joubert

On behalf of the MURIA 5 organising committee

### Local organizers

Rianda Joubert

Adèle Naudé

Marlene Julyan

Anne-Marie Bekker

Karen Jacobs

Steveland Louis

Johanita Burger

Cindy Purén - **Purén Marketing & Communications**

**Programme Committee**

Maribel Salas

Ilse Truter

Alison Bourke

Lisa Pont

Pia Caduff-Janoza

Kwame Appenteng

Johanita Burger

**Abstract review committee**

**Adèle Naudé** | School of Pharmacy, Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, Potchefstroom Campus, South Africa

**Brian Godman** | Strathclyde Institute of Pharmacy and Biomedical Sciences/Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden

**Dan Kibuule** | Department of Pharmacy Practice and Policy, School of Pharmacy, University of Namibia

**Francis Kalemeera** | Department of Pharmacology and Therapeutics, School of Pharmacy, University of Namibia

**Hannelie Meyer** | Division of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa

**Ilse Truter** | School of Pharmacy, Faculty of Health Sciences, Nelson Mandela Metropolitan University, Port Elizabeth

**Joseph Fadare** | Departments of Pharmacology and Internal Medicine Ekiti State University/Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria

**Joyce Kgatlwane** | Faculty of Health Sciences, University of Botswana, Botswana

**Olayinka Ogunleye** | Department of Pharmacology and Medicine, Lagos State University College of Medicine and Teaching Hospital

**Rianda Joubert** | School of Pharmacy, Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, Potchefstroom Campus, South Africa

**Johanita Burger** | Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, Potchefstroom, South Africa

## MONDAY, 8 JULY 2019: TRAINING/WORKSHOPS DAY 1

| | |
|---|---|
| **8:00 – 8:45** | **Arrival, registration and placing of posters** |
| ***G20, G01*** | |
| **8:45 – 9:00** | **Brief welcome and organization** |
| ***G20, G01*** | |
| **09:00 – 10:45** | **Workshops** |
| ***G23, 219*** | W1 - Introduction and use of drug utilisation metrics |
| ***G23, 218*** | W2 - Pharmacoepidemiology: Concepts and study designs |
| ***G23, 216*** | W3 - Introduction to pharmacovigilance: Concepts and General Framework |
| **10:45 – 11:15** | **Tea break** |
| ***G20, Foyer*** | |
| **11:15 - 13:00** | **Workshops** |
| ***G23, 219*** | W4 - Introduction and use of drug utilisation metrics (cont'd) |
| ***G23, 218*** | W5 - Pharmacoepidemiology 1: Concepts and study designs (cont'd) |
| ***G23, 216*** | W6 - Causality – did the drug do it? |
| **13:00 – 13:45** | **Lunch** |
| ***G20, Tent*** | |
| **13:45 – 15:30** | **Workshops** |
| ***G23, 219*** | W7 - Application of WHO ATC/ DDD methods in medicine utilisation research: A hands-on experience |
| ***G23, 218*** | W8 - Pharmacoepidemiology and Databases |
| ***G23, 216*** | W9 - From single case reports to case series |
| **15:30 – 16:00** | **Tea break** |
| ***G20, Foyer*** | |
| **16:00 – 17:45** | **Workshops** |
| ***G23, 219*** | W10 - Application of WHO ATC/ DDD methods in medicine utilisation research (cont'd) |
| ***G23, 218*** | W11 - Pharmacoepidemiology and Databases (cont'd) |
| ***G23, 216*** | W12 - Pharmacovigilance & Pharmacoepidemiology: Study Designs |
| **17:45** | **Close** |

## TUESDAY, 9 JULY 2019: TRAINING/WORKSHOPS DAY 2

**8:00 – 9:00** **Arrival, registration and placing of posters**
***G20, G01***

**09:00 – 10:45** **Workshops**
***G23, 219*** W13 - Quality indicators for medicine utilisation: Development and implementation
***G23, 218*** W14 - Pharmacoepidemiology 2
***G23, 216*** W15 - Signal detection in spontaneous reporting systems

**10:45 – 11:15** **Tea break**
***G20, Foyer***

**11:15 – 13:00** **Workshops**
***G23, 219*** W16 - Quality indicators for medicine utilisation (cont'd)
***G23, 218*** W17 - Pharmacoepidemiology 2 (cont'd)
***G23, 216*** W18 - Pharmacovigilance methods & Communicating emerging safety issue**s**

**13:00 – 13:45** **Lunch**
***G20, Tent***

**13:45 – 15:30** **Workshops**
***G23, 219*** W19 - Basic statistics for drug utilisation and pharmacoepidemiology research
***G23, 218*** W20 - Pharmacoepidemiology 2 (cont'd)
***G23, 216*** W21 - Risk management plans (RMPs)

**15:30 – 16:00** **Tea break**
***G20, Foyer***

**16:00 – 17:45** **Workshops**
***G23, 219*** W22 - Advanced statistics for drug utilisation and pharmacoepidemiology research (using SPSS)
***G23, 218*** W23 - Pharmacoepidemiology: Practical examples
***G23, 216*** W24 - Effectiveness of risk minimization activities (RMAs)

**17:45** **Close**

**19:00** **Welcome reception**
***G20, Tent***

## WEDNESDAY, 10 JULY 2019: CONFERENCE SYMPOSIA DAY 1

| | |
|---|---|
| **8:00 – 8:45**<br>***G20, G01*** | **Arrival and registration** |
| **8:45 – 9:15**<br>***G20, G01*** | **Official welcome and opening of symposium \| Dr Rianda Joubert \| Prof Awie Kotzé** |
| **09:15 – 10:05**<br>***G20, G01*** | **Keynote address**<br>*Session chairs: Dr Maribel Salas / Andy Gray* |
| | **Wisdom is like fire – people take it from others**<br>***Africa's pharmacovigilance journey within the WHO Programme for International Drug Monitoring*** **\| Dr Pia Caduff-Janosa** |
| **10:05 - 10:45**<br>***G20, G01*** | **Oral presentations**<br>*Session chairs: Dr Maribel Salas / Andy Gray* |
| 10:05 – 10:30 | Regulatory pharmacovigilance in South Africa \| Mrs Mafora Florah Matlala |
| 10:30 – 10:45 | Major cardiovascular events in adults on antiretroviral therapy in a South African HIV management programme \| Dr Hannes Mouton |
| **10:45 – 11:15**<br>***G20, Foyer*** | **Tea & poster walk** |
| **11:15 - 13:00**<br>***G20, G01*** | **Oral presentations**<br>*Session chairs: Drr Joseph Fadare / Kwame Appenteng* |
| 11:15 – 11:30 | Prevalence of anaemia among HIV/AIDS patients on tenofovir-containing ART regimens \| Mr Molungoa Sello |
| 11:30 – 11:45 | The incidence and risk factors for chronic kidney disease in patients receiving tenofovir disoproxil fumarate -containing ART \| Mr Francis Kalemeera |
| 11:45 – 12:00 | Haematological adverse effects associated with linezolid in patients with drug-resistant tuberculosis: An exploratory study \| Dr Razia Gaida |
| 12:00 – 12:15 | Sulphadoxine-pyrimethamine dosing and risk of adverse birth outcomes among pregnant women using intermittent preventive therapy in low malaria transmission settings \| Mr Wigilya P. Mikomangwa |
| 12:15 – 12:30 | Predictors of tuberculosis case-fatality under the DOTS program in a high burden setting \| Dr Dan Kibuule |
| 12:30 – 12:45 | Medication related problems among HIV/AIDS patients on antiretroviral therapy at a national referral hospital in Kenya \| Dr Sylvia Opanga |
| 12:45 – 13:00 | Patient-related factors leading to uncontrolled blood pressure in patients taking antihypertensive medication in Mafeteng, Lesotho \| Ms Refeletse Mafisa |
| **13:00 – 13:45**<br>***G20, Tent*** | **Lunch** |
| **13:45 – 14:30**<br>***G20, G01*** | **Plenary address**<br>*Session chairs: Drr Dan Kibuule / Rianda Joubert* |
| | **Drug utilisation studies globally and their influence on future patient management and policy \| Dr Lisa Pont** |
| **14:30 – 15:30**<br>***G20, G01*** | **Oral presentations**<br>*Session chairs: Drr Dan Kibuule / Rianda Joubert* |
| 14:30 – 15:00 | Use of utilisation data to track implementation of a policy: the challenges of palliative care and the proposed morphine monitoring system \| Mr Andy Gray |
| 15:00 - 15:15 | Prescribers' experiences of, and attitudes to, use of morphine for palliative care at a tertiary hospital in Zambia \| Dr Emma Robertson |
| 15:15 - 15:30 | Possible changes in prescribing patterns of central nervous system medication in |

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|---|---|
| | HIV/AIDS patients in the private medical scheme environment in South Africa \| Mr Floydi Wafawanaka |
| **15:30 – 16:00**<br>***G20, Foyer*** | **Tea & poster walk** |
| **16:00 – 16:45**<br>***G20, G01*** | **Oral presentations**<br>*Session chairs: Mr Francis Kalemeera / Prof Hannelie Meyer* |
| 16:00 – 16:15 | Data quality of Namibia's Pharmaceutical Management Information System: findings and implications \| Mrs Harriet Kagoya |
| 16:15 – 16:30 | Anticholinergic drug burden among ambulatory elderly patients in a Nigerian tertiary healthcare facility \| Dr Joseph Fadare |
| 16:30 – 16:45 | Childhood cancers in a section of the South African private health sector: Analysis of medicines claims data \| Ms Marianne Naana Otoo |
| **16:45 – 17:00** | **Close** |
| **17:00 – 19:00**<br>***G20, G01*** | **AGM - Strategic planning:** The way forward: ISPE Africa Chapter and MURIA ISPE Faculty \| MURIA members (Open invitation) |
| **19:00**<br>***G20, Tent*** | **Dinner** |

## THURSDAY, 11 JULY 2019: CONFERENCE SYMPOSIA DAY 2

| | |
|---|---|
| **8:00 – 8:45**<br>***G20, G01*** | **Arrival and registration** |
| **8:45 – 9:00**<br>***G20, G01*** | **Brief welcome program overview \| Dr Rianda Joubert** |
| **9:00 – 10:45**<br>***G20, G01*** | **Oral presentations**<br>*Session chairs: Drr Lisa Pont / Mr Francis Kalemeera* |
| 09:00 - 09:15 | Compliance to the South Africa's National Antimicrobial Resistance Strategy Framework \| Mrs Deirdre Engler |
| 09:15 - 09:30 | Drug and vaccine utilization among pregnant women in the Iganga Mayuge Health and Demographic Surveillance Site (IMHDSS), Uganda \| Dr Dan Kajungu |
| 09:30 - 09:45 | Evaluation of oral amoxicillin/clavulanic acid use in public sector primary health care facilities of the Cape Town metropole district, Western Cape \| Ms Yasmina Johnson |
| 09:45 - 10:00 | A point prevalent survey of antimicrobial utilization across public healthcare sector facilities in South Africa \| Mrs Phumzile Skosana |
| 10:00 - 10:15 | Comparison of malaria treatment outcome of generic and innovator's anti-malarial drugs containing artemether–lumefantrine combination in the management of uncomplicated malaria amongst Tanzanian children \| Mr Manase Kilonzi |
| 10:15 - 10:30 | The association between first-line antiretroviral therapy (ART) failure with a wildtype virus and adherence in second line regimen: A secondary analysis of prospectively collected data \| Dr Lentlametse Mantshonyane |
| 10:30 - 10:45 | Pregnancy and CYP3A5 genotype affect day 7 plasma lumefantrine concentrations \| Prof Appolinary AR Kamuhabwa |
| **10:45 – 11:15**<br>***G20, Foyer*** | **Tea & poster walk** |
| **11:15 – 12:45**<br>***G20, G01*** | **Feedback session: progress since 2018**<br>*Session chairs: Drr Dan Kibuule / Prof Johanita Burger* |
| **12:45 – 13:00** | **Closing remarks and Departure \| Drr Joseph Fadare \| Dr Rianda Joubert**<br>**Takeaway lunch** |
| **14:30** | **Airport transfer departure** |

## WORKSHOPS CONTENT

## MONDAY, 8 JULY 2019: TRAINING/WORKSHOPS DAY 1

### Introduction and use of drug utilisation metrics
***Presenter: Dr Lisa Pont***

This introductory course will focus on the foundation elements of drug utilisation research. Throughout the workshop we will consider the principles underpinning drug utilisation research, study designs used in drug utilisation research, identification of drug utilisation research data sources across Africa and discussion of data source strengths and limitations, choice of outcome measures and the role of drug utilisation research in health care provision and policy.

*This workshop is presented in two sessions.*

### Pharmacoepidemiology: Concepts and study designs
***Presenter: Drr Kwame Appenteng/ Joseph Fadare***

This introductory course will focus on basic elements of Pharmacoepidemiology (PE). We will explore drug use and effects in large populations. The course will focus on the use of the principles of modern epidemiologic methods to evaluate the safety, effectiveness, and utilisation patterns of medicinal products in human populations, with emphasis on observational studies. Examples of epidemiologic study designs (cohort studies, case-control studies, case-crossover, self-controlled) will be discussed.

*This workshop is presented in two sessions.*

### Pharmacovigilance: Concepts and regulatory framework supporting reporting of individual case reports
***Presenter: Dr Maribel Salas***

In this introductory presentation, we will review the key concepts used in pharmacovigilance and the regulatory framework currently used to support the reporting of adverse events.

### Causality – did the drug do it?
***Presenter: Dr Pia Caduff-Janosa***

In this workshop we will explore the logic of causality and look at some of the most widely used causality assessment methods such as global introspection (also known as the WHO-UMC method), the Naranjo algorithm and the French imputability method. After a theoretical introduction we will apply the presented principles to a set of examples and discuss our conclusions.

### Application of WHO ATC/ DDD methods in medicine utilisation research: A hands-on experience
***Presenter: Prof Ilse Truter***

The Application of the World Health Organization (WHO) Anatomical Therapeutic Chemical/Defined Daily Dose (ATC/DDD) Methodology in Medicine Utilisation Research Workshop will provide participants with the basic theory of the ATC/DDD system together with practical exercises. The workshop is designed to improve understanding of the ATC/DDD Classification System, and is aimed at healthcare professionals who are involved in prescribing, formulary management, essential medicine lists, drug utilisation and related fields, and who wish to obtain a basic knowledge and skills in the practical application of this international coding language and comparative tool for drug utilisation studies. A hands-on, interactive approach will be followed and participants do not need any prior knowledge of the ATC/DDD system. The workshop presenter is a member of the WHO International Working Group for Drug Statistics Methodology.

*This workshop is presented in two sessions.*

## Pharmacoepidemiology and Databases

***Presenters: Drr Kwame Appenteng/Joseph Fadare/ Mr Francis Kalemeera/ Mrs Alison Bourke***

We will discuss data sources for Pharmacoepidemiology studies. Different types of databases (insurance claims, electronic health records, registries) will be introduced. Medical data privacy and the limitations of these databases for PE studies will be discussed.

*This workshop is presented in two sessions.*

## From single case reports to case series

***Presenter: Dr Pia Caduff-Janosa***

One of the first steps in assessing a potential signal is building and evaluating a series of similar cases. We will discuss the characteristics of good case series and potential pitfalls. After reviewing the Bradford-Hill criteria and how they can be applied to pharmacovigilance we will practise pattern recognition with case series and discuss our conclusions.

## Pharmacovigilance: Study Designs

***Presenter: Dr Maribel Salas***

This introductory session will focus on pharmacoepidemiology study designs that can be applied in pharmacovigilance with some practical examples.

## TUESDAY, 9 JULY 2019: TRAINING/WORKSHOPS DAY 2

### Quality indicators for medicine utilisation: Development and implementation
***Presenter: Dr Lisa Pont***

In this workshop we will explore the development and use of prescribing indicators. Quality indicators are important tools for identifying and evaluating quality improvement in drug utilisation and disease management. Throughout the workshop we will consider the different indicators types commonly used to assess prescribing quality, methods for developing prescribing indicators and the essential attributes of quality indicators.

*This workshop is presented in two sessions.*

### Signal detection in spontaneous reporting systems
***Presenter: Dr Pia Caduff-Janosa***

In this session we will explore the advantages and limitations of data from spontaneous reporting systems and learn how they can be used for signal detection. Working on a selected small dataset will contribute to our understanding of the signal detection and assessment process.

### Pharmacoepidemiology 2
***Presenters: Drr Kwame Appenteng / Dan Kibuule / Joseph Fadare/ Mr Francis Kalemeera***

This session will build on topics discussed in day 1. Methods to address confounding and bias in PE studies will be introduced. We will also explore safety monitoring, risk management and risk communication, and drug use in special populations.

*This workshop is presented in three sessions.*

### Pharmacovigilance methods & Communicating emerging safety issues
***Presenter: Dr Pia Caduff-Janosa***

This workshop is divided into two independent parts. In the first part we will explore different methods within pharmacovigilance (PV) from targeted spontaneous reporting to cohort event monitoring. We will discuss which method is best applied to answer specific questions and gain an understanding of the prerequisites for such PV activities. The second part of this workshop is focused on emerging safety issues. Selected real life examples will illustrate the principles of communication in situations characterized by uncertainty, time pressure and high expectations.

### Basic statistics for drug utilisation and pharmacoepidemiology
***Presenters: Marike Cockeran / Dr Lisa Pont***

This session will focus on basic statistical techniques in pharmacoepidemiology and drug utilisation research. A hands on approach including use of descriptive statistics and univariate methods for quantifying and testing associations between continuous and categorical exposures and outcomes will be explored.

### Risk management plans (RMPs)
***Presenter: Dr Maribel Salas***

In this session, the general framework, concepts and strategies to organize a risk management plan will be reviewed. Some comparison between RMP and risk evaluation and mitigation strategies (REMS) will be discussed.

### Advanced statistics for drug utilisation and pharmacoepidemiology research (using SPSS)
***Presenters: Marike Cockeran / Dr Lisa Pont***

In this workshop we will focus on multivariate techniques for quantifying and testing associations in drug utilisation and pharmacoepidemiology research. A hands on approach to linear and logistic regression will be taken including dealing with confounders and effect modifiers, testing assumptions,

multicollinearity, interpreting regression coefficients and examining model fit.

*Course requirement: own laptop, with SPSS already installed.*

## Effectiveness of risk minimization activities (RMAs)

***Presenter: Dr Maribel Salas***

One of the key activities in the organization of a risk management plan is to determine the effectiveness of RMAs. This session will focus on main aspects during the evaluation of the effectiveness of RMAs with an example.

**Alison Bourke** is a professional with over 30 years' experience in medical data collection and research, with proven leadership skills involving managing, developing and motivating teams, as well as external thought leadership. Alison has expertise in analysis, study design, together with financial and strategic planning, and has been instrumental in promoting the role of Real World Data for research in epidemiology and to inform the drug development cycle, particularly in the areas of drug safety and outcomes research. Alison is Scientific Director at the Center for Advanced Evidence Generation within the Real World & Analytics Solutions of IQVIA.

She is also Deputy Chair of PRIMM (Prescribing and Research in Medicines Management – UK and Ireland, a multi-disciplinary organisation devoted to the study of medicine use in society) and was elected President of the International Society for Pharmacoepidemiology (ISPE) from August 2018.

**Dr Maribel Salas** is an Executive Medical Director, Head of Epidemiology and Head of the Cardiovascular Therapeutic Area at the Clinical Safety and Pharmacovigilance Department, Daiichi Sankyo Inc., and an Adjunct Scholar at the University of Pennsylvania. She has experience in Pharmacoepidemiology, Pharmacovigilance, Pharmacoeconomics, Clinical Epidemiology and Outcomes Research. Dr. Salas hold degrees in Medicine, Outcomes Research, Epidemiology, Clinical Epidemiology and Pharmacoepidemiology. She has experience working in the Internal Medicine Department at the National Medical Center, Mexican Social Security Institute.

Dr. Salas worked at the Department of Preventive Medicine and School of Public Health, University of Alabama at Birmingham where she developed the Pharmacoepidemiology program and represented the Birmingham Center for Education, Research and Therapeutics (CERTs) at the CERTs National Educational Consortium. As pharmacoepidemiologist, Dr. Salas wanted to get experience in the pharmaceutical industry, and she joined the Patient Safety Departments at AstraZeneca Pharmaceuticals, Pfizer Inc, and Merck Research Laboratories.

Dr. Salas obtained various federal grants from the Centers of Disease Control (CDC), Robert Wood Foundation, Carnegie Foundation, National Heart Lung and Blood Institute from the National Institutes of Health (NIH), Veterans Administration Hospital and others. Dr. Salas has worked with clinical, pharmacy and claims large databases such as the Saskatchewan, Medicare, Protocare, Veterans Administration, SEER and ERGO databases. She has been working in the adherence area, pharmacoepidemiology and pharmacovigilance for more than a decade and published numerous articles in peer-reviewed journals. She developed patient and physician' questionnaires related to drug utilisation, patient adherence, preferences and quality of life in hypertension. She has been a reviewer of scientific peer-review journals such as the Canadian Medical Association Journal (CMAJ), Value in Health, Clinical Therapeutics and the Journal of American Medical Association (JAMA). She is an active member of scientific committees such as the International Society of Pharmacoepidemiology (ISPE), and the International Society of Pharmacoeconomics and Outcomes Research (ISPOR).

**Dr Kwame Appenteng** is Epidemiology Director at Astellas, a global Pharma company, where he works in Pharmacovigilance. He is based in the North American headquarters of the company.

Dr Appenteng is a graduate of the New York Medical College, and the University of Pittsburgh. He is a clinician by training, and a pharmacoepidemiology expert, and has been the scientific lead of multiple national and international observational studies. He is a cross-functional subject matter expert for safety-related regulatory commitments and interactions, and has served in various capacities, and as a committee member of multiple company-wide initiatives, including non-interventional study Oversight Committee, Advisory Committee, Cardiovascular Task Force, and Big Data Project Task Force. Dr Appenteng has lectured masters and doctoral level courses in Pharmacoepidemiology, and mentored students, interns, post-graduate fellows and staff. Over the years, Dr. Appenteng's research interest has evolved from primarily studying the genetic basis of diseases, to analyzing real world data for drug-event pair evidence generation, and he foresees increased leveraging of a confluence of these two disciplines as pivotal in gaining in-depth insights in Pharmacoepidemiology research for the benefit of patients. He is a peer reviewer of scientific papers, and has co-authored, presented and published multiple peer-reviewed abstracts and manuscripts.

Dr. Appenteng is an active member of the International Society for Pharmacoepidemiology (ISPE), serves on the Global Development Committee, as well as the Membership Committee, and is Chair of the Africa Chapter of the organization.

**Dr Pia Caduff-Janosa** is a graduate from Medical School of the University of Basel (Switzerland), has completed her doctorate in medicine at the University of Bern (Switzerland) and holds a Diploma in Pharmacovigilance from the University of Hertfordshire (UK).

After her postgraduate training in internal medicine, surgery and anaesthesia in Switzerland and New Zealand she qualified as a specialist in anaesthesiology and spent many years in clinical practice with a focus on obstetric and paediatric anaesthesia. She joined the Swiss Regulatory Authority Swissmedic (former IKS) in 1999 as a clinical reviewer and headed the Unit Vigilance (safety surveillance of human and veterinary medicinal products as well as hemovigilance) from 2009 to 2012. Key responsibilities as Head of Vigilance included the identification, assessment and communication of safety issues related to human and veterinary medicines as well as blood products and their use.

An *ad hoc* WHO consultant in Pharmacovigilance for many years, she also served on the WHO Advisory Committee for the Safety of Medicines from 2010 to 2013. In January 2013, she joined the Uppsala Monitoring Centre (UMC) as Chief Medical Officer, responsible for all medical aspects of the Centre's activities. Since 2014 she also acts as Deputy Director of UMC.

**Dr Lisa Pont** is a Fellow of the International Society for Pharmacoepidemiology (ISPE) and was elected to the ISPE Board of directors in 2016. She is an Associate Professor in the Discipline of Pharmacy, Graduate School of Health at the University of Technology Sydney. She has a PhD in Clinical Pharmacology on Quality Use of Medicines from the University of Groningen in The Netherlands where she explored the development and validation of prescribing indicators for measuring quality of prescribing in general practice. Throughout her career she has been awarded over $1.2 million in research funding, including NHMRC, Heart Foundation and Pharmacy Guild funding.

Dr Pont currently holds a prestigious NHMRC Translating Research into Practice (TRIP) Fellowship. She has received a number of awards including two National NPS Medicinewise awards, the first in 2014 for her work leading the development of resource to support health professionals managing heart failure in Aboriginal and Torres Strait patients and a second in 2016 for her research into data driven solutions to improve the use of antipsychotics in residential aged care. Dr Pont's main research area is drug utilization research to understand and improve the quality and safety of medicines in older populations. She has extensive experience in analysing large administrative datasets to understand safety and quality issues associated with medication use and in the use of data to drive solutions for quality improvement. She collaborates with a number of large Residential aged care organisations to understand and improve the way medicines are used among older populations. She regularly conducts workshops on designing and conducting drug utilization research for the International Society of Pharmacoepidemiology and has an interest in building research skills and capacity.

**Prof Ilse Truter** is a full professor in the Department of Pharmacy and leader of the Drug Utilization Research Unit (DURU) at Nelson Mandela University (NMU). Ilse holds two doctorates (in Pharmacy and Business Management), and is a registered pharmacist. She has successfully completed the international accredited Travel Medicine Course, and is a member of the WHO International Working Group for Drug Statistics Methodology (ATC/DDD System). Ilse has authored 116 peer-reviewed research articles, three chapters in books, and 163 articles in local/professional journals. She is a National Research Foundation (NRF) C2-rated researcher.

Her research field is pharmacoepidemiology (including drug utilization research and pharmacoeconomics), and business management as applied to pharmacy. Ilse is a member of the South African Pharmacy Council, a member of the Cape Midlands Branch of the Pharmaceutical Society of South Africa, and a council member of the South African Association of Health Educationalists. She has supervised 22 masters' degrees and seven doctoral studies, and is currently supervising a further nine postgraduate students. Ilse was the recipient of the Distinguished Teacher Award of the Academy of Pharmaceutical Sciences of South Africa in 2013, and the Nelson Mandela Metropolitan University's Distinguished Teacher Award in 2014. She has been eight times the recipient of the Nelson Mandela University Researcher of the Year Award in the Faculty of Health Sciences.

She attended her first European Drug Utilization Research Group (EURO DURG) Workshop in 1997 and her first International Conference on Pharmacoepidemiology (ICPE) in 1998. She is a founding member of MURIA. She currently lectures Clinical Pharmacy and Pharmacy Practice at NMU, and regularly presents clinical and research workshops. She was until May 2019 the chairperson of the two research committees in the Faculty of Health Sciences at NMU. She has served as moderator and external examiner for various local and international universities, and serves on the international editorial board of the International Journal of Pharmacy Practice.

**Dr Joseph Fadare** is an Associate Professor of Clinical Pharmacology and Therapeutics and Consultant Physician/Clinical Pharmacologist at the Ekiti State University and Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria. He had his basic medical education at the Varna Medical University, Bulgaria and went further to specialize in Internal Medicine (subspecialty of Clinical Pharmacology and Therapeutics). He also has a joint Master's degree in Bioethics (specialization in Research Ethics) from Katholieke University, Leuven, Belgium, Radboud University, Nijmegen, the Netherlands and the University of Padova, Italy. He has been involved in the teaching of Clinical Pharmacology and Therapeutics to medical students and postgraduate resident doctors in several Nigerian universities in the last 13 years.

His research interests are mainly in drug utilization and pharmacoepidemiology, adverse drug reactions, pharmacoeconomics and pharmacotherapy of non-communicable diseases such as hypertension, diabetes mellitus and bronchial asthma. He is an external examiner in professional (MBBS) examinations in Pharmacology to many Nigerian universities. He has also served as an examiner to the Masters of Pharmacy programme of the Faculty of Pharmacy, Sefako Makgatho Health Sciences University, South Africa. He was, until September 2018, the Acting Dean, Faculty of Basic Clinical Sciences of his university. He is a founding member of the Medicines Utilization Research in Africa (MURIA) group and currently serves as the membership secretary. He is also an active member of the IUPHAR sub-committee of Clinical Pharmacology in Developing Countries.

**Dr Dan Kibuule** is a senior lecturer and founding member of School of Pharmacy, University of Namibia. He is the Deputy Associate Dean of the School of Pharmacy and served as Head of Department of Pharmacy Practice and Policy. Dan is registered as a pharmacist with the Health Professional Council of Namibia, Pharmaceutical Society of Uganda, and an associate member of the Royal Pharmaceutical Society and has served on the academic sections of these institutions. In his 15 years of Pharmacy academia, Dan has been instrumental in developing and implementing new Pharmacy programmes in Southern Africa (University of Namibia) and East Africa (Makerere University College of Health Sciences Kampala-Uganda and The Aga Khan University).

Dan Kibuule is a key member of several movements to strengthen Pharmacy Education in Africa – including the Centers of Excellence (CoE) for Africa implemented under the TWIN/UNESCO project of FIPEd and the Medicine Utilisation Research in Africa Group (MURIA) as well has an ExCo member of academic section of FIP. Dan is a holder of B Pharm (Hons) and MSc Clinical Pharmacology from the prestigious Makerere University Kampala-Uganda and recently defended his PhD studies on models to optimize tuberculosis treatment success rates in Namibia. Dan has published extensively in the areas of clinical pharmacy, pharmacy education, TB pharmacokinetics and medicine utilisation. Dan has also worked as a clinical trial pharmacist, medicines information pharmacist, hospital pharmacist and completed his assignment under Strengthening Pharmaceutical Systems (SPS/USAID) project implemented by the Management Sciences for Health (MSH-Namibia). Dan's vision is "African countries fostering centers of excellence of Pharmacy education, research and innovation".

**Mr Francis Kalemeera** is a trained healthcare professional with a focus of improving treatment outcomes.

He has used his training to provide reactive responses to queries from healthcare workers in Uganda and Namibia, where he worked in the AIDS Treatment Information Centre (ATIC), and the Therapeutics Information and Pharmacovigilance Centre (TIPC), respectively. While working at the ATIC, he led the establishment of a course to build the capacity of pharmacy based health workers in an era where extensive task shifting in pharmaceutical services was necessary to sustain antiretroviral drug access. When he was at the TIPC, he led a pharmacovigilance project on the safety of nevirapine, which contributed to the halting of the plan to use nevirapine in all pregnant females irrespective of their baseline CD4 count.

Currently, he is providing pedagogical services at the Faculty of Health Sciences of the University of Namibia, while at the same time collaborating with TIPC on pharmacovigilance related services, including training healthcare workers on pharmacovigilance. The modules he coordinates and lecture on at UNAM include Pharmacology & Therapeutics, and 'Pharmacoepidemiology & Pharmacovigilance' for undergraduate students. He is also leading pharmacovigilance and medicines information training for the Masters students, at the School of Pharmacy: UNAM. Ensuring patient safety through pharmacovigilance practices is not optional; without it health service provision is incomplete and potentially dangerous. He has just completed his PhD in the area of pharmacoepidemiology, with a focus on the safety of TDF-containing ART in Namibia; and he is looking forward to collaborating with fellow researchers in bid to conduct large studies across borders.

**Mrs Marike Cockeran** is a lecturer and statistical consultant in Statistics at the North-West University (NWU), Potchefstroom campus.

She is currently busy with her PhD at NWU, with Prof S.G Meintanis as co-promotor from the National and Kapodistrian University of Athens.

The study focuses on the evaluation of performances of various goodness-of-fit tests based on Monte Carlo simulations in order to determine the adequacy of a number of survival models and to the development of new asymptotic theory for characteristic functions based tests in the parametric Cox proportional hazards model context.

She regularly conducts short courses on basic statistics for researchers in the Health Sciences.

## O1

### Regulatory pharmacovigilance in South Africa

**Matlala, M.F.,[1,2]* Lubbe, M.S.[1] & Steyn, H.[1]**

**mafora.matlala@sahpra.org.za; [1]Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, Potchefstroom, South Africa, [2]South African Health Products Regulatory Authority, Pretoria, South Africa.*

Preclinical and clinical trial studies are used to provide evidence that medicines meet the prescribed requirements for registration. These studies provide limited safety data due to their nature of design. In order to establish a robust medicine safety profile of marketed drugs, pharmacovigilance and post-marketing monitoring of medicines is therefore important. The main aim of this review is to provide the historical context and the present status of pharmacovigilance in South Africa.

In light of the new Regulatory Authority, a comprehensive vigilance system encompassing all product related safety, quality and performance issues is prominent. This system should be able to integrate activities from facility, national to international levels and ensure provision of feedback to reporters. New developments are being introduced in the Authority to work towards achieving this mandate. The use of the Independent Case Safety Report (ICSR) management system is one of the new developments gearing towards a streamlined integrated vigilance system.

Coordination of vigilance activities within the country is fundamental in creating a resilient vigilance framework within the country. The national vigilance plan is an urgent document required in outlining the roles and responsibilities of different stakeholders involved in vigilance. Collaborations are being formed with relevant stakeholders in order to strengthen vigilance within the country. These collaborations will ensure that data collected by different stakeholders are shared at a central point and findings are communicated effectively to ensure that informed policy decisions are made and patient care is improved.

Despite several new developments gearing towards the development of a vigilance framework within the country, challenges remain a limitation in carrying out vigilance functions properly.

## O2

### Major cardiovascular events in adults on antiretroviral therapy in a South African HIV management programme

**Mouton, J.P.,[1]* De Waal, R.,[2] Cornell, M.,[2] Maartens, G.[1] & Cohen, K.[1]**

**hannes.mouton@uct.ac.za; [1]Division of Clinical Pharmacology, Department of Medicine, University of Cape Town, South Africa; [2]Centre for Infectious Diseases Epidemiology and Research (CIDER), School of Public Health and Family Medicine, University of Cape Town, South Africa.*

**Background:** Studies from high-income settings found increased risk of cardiovascular events (CVEs) in people living with HIV (PLWH). Data on CVE incidence in PLWH in Africa are limited.

**Objectives:** To describe the incidence of and risk factors for major CVEs leading to hospitalisation in PLWH on antiretroviral therapy (ART) in the Aid for AIDS (AfA) private sector cohort.

**Methods:** We included adults (≥18 years) starting ART through AfA from 1 January 2011 to 30 June 2017. We extracted demographic and laboratory variables and ART regimen at first AfA ART claim. We defined major CVE as hospitalisation claim for stroke, acute coronary syndrome, or coronary revascularization procedure. We calculated crude CVE incidence stratified by HIV viral load (VL) suppression at first AfA ART claim. We explored associations with major CVE with Cox regression.

**Results:** We studied 110932 patients: total follow-up 275191 person-years, median age 38 years, median CD4 count 277 cells/µL, and 67079 (60%) women. At first AfA ART claim, VL was suppressed in 29866 (27%). Median VL in those unsuppressed at first claim was 4.8 log10 copies/mL. 85145/110932 (77%) commenced tenofovir, emtricitabine/lamivudine, and efavirenz; 5123 (4.6%) commenced a protease inhibitor. 911 patients had major CVE: 555 (61%) strokes, 317 (35%) acute coronary syndromes, and 39 (4.3%) revascularization procedures. 7134 patients (6.4%) died. Major CVE incidence was 3.3 events per 1000 person-years follow-up (PYFU). Incidence in the first 6 months was 2.9 (95% CI 1.9 to 4.7) times higher in the unsuppressed than in the suppressed. Major CVE in the first 6 months was independently associated with older age, male sex, lower CD4 count and unsuppressed VL.

**Conclusions:** Our major CVE incidence is lower than that of a major cohort from Europe, USA and Australia (5.3 events per 1000 PYFU). Strokes were the predominant CVE in our cohort.

## O3

### Prevalence of anaemia among HIV/AIDS patients

**Sello, M.[1]* & Mphats'oane, T.[1]**

**m.sello@nul.ls; [1]National University of Lesotho, Faculty of Health Sciences, Department of Pharmacy.*

**Background:** Chronic intake of tenofovir-containing ART regimens is associated with a higher prevalence of chronic kidney disease (CKD). Anaemia occurs in people with CKD and tends to worsen as CKD progresses. *Hypothesis*: Chronic intake of tenofovir-containing regimens is correlated positively with anaemia in zidovudine-exposed and -unexposed HIV/AIDS patients.

**Objectives:** To determine the prevalence of anaemia amongst HIV/AIDS patients taking tenofovir-containing ART regimens.

**Methods:** A descriptive observational retrospective longitudinal study was conducted on 200 adult patients living with HIV/AIDS-infection, served at Paballong HIV/AIDS Care Center. The study included those patients who were initiated on tenofovir-containing antiretroviral regimens and those who were switched to tenofovir- from zidovudine-containing antiretroviral regimens due to anaemia. Data were analysed on a Microsoft Excel® 2010®. The study was ethically cleared by the National University of Lesotho Research and Ethics Committee.

**Results:** The results of the study revealed that in both tenofovir-initiated group (n=100) and zidovudine-switched group (n=100), there was a decrease in creatinine clearance from mean 94.0±19.0ml/min to 56.8±11.8ml/min. The decline was coupled with declines in haemoglobin concentration (14.4±0.86g/dl to 12.0±1.4g/dl) and red blood cell count (4.4±.037x 106/mm3 to 3.3±0.7 x 106/mm3). The prevalence of anaemia on tenofovir-initiated group was found to be 72% while 86% prevalence was obtained from zidovudine-switched group.

**Conclusions and recommendations:** Chronic use of tenofovir is associated with anaemia. Patients switched from zidovudine- to tenofovir-containing antiretroviral regimens do not recover from zidovudine-induced anaemia. We recommend close monitoring of haematologic parameters also in patients on tenofovir-containing antiretroviral regimens.

## O4

### The incidence and risk factors for chronic kidney disease in patients receiving tenofovir disoproxil fumarate-containing ART

**Kalemeera, F.***

**fkalemeera@unam.na; School of Pharmacy, University of Namibia.*

**Background:** Availability and accessibility of antiretroviral drugs has improved the quality and prolonged the length of life for HIV infected patients. However, TDF is associated chronic kidney disease (CKD). Because CKD increases the risk of cardiovascular disease and end stage renal disease, monitoring of renal function is required for early identification and management. However, the incidence of TDF-associated CKD in Namibia is not known, and the risk factors thereof have not been assessed.

**Methods:** This was a retrospective longitudinal study in patients who were receiving TDF containing ART at the Oshakati Intermediate Hospital between January 1, 2008 and December 31, 2016. For inclusion in the study the patient had to be ≥16 years; and had to have a baseline CrCl ≥60ml/min plus two or more other CrCl records. CKD was defined by a CrCl <60ml/min.

The incidence of CKD was calculated. A 25% decline in CrCl was considered clinically significant. Factors were assessed for association with the decline, and CKD by binary logistic regression, and Cox Hazard Proportional methods, respectively. The confidence interval was placed at 95%, and the *p*-value at <0.05. Data analysis was done with SPSS.

**Results:** 1382 patients met criteria for inclusion, 69.6% were female. A rapid decline in CrCl – that is >3ml/min/year - was observed in 30.9% (427) of the patients. This included 11.3% (n=156) who developed CKD. A lesser decline was observed in 40.1% (n=554), which included 8.7% (n=121) who developed CKD. Thus, CKD was observed in 20.0% (n=277), for an incidence rate of 9.8 per 100 patient years. The odds of developing CKD in the females were 1.691 (95%CI: 1.221 – 2.341; *p*=0.002). For every unit increase in the baseline CrCl the odds of experiencing a decline in CrCl were 1.069 (95%CI: 1.057 – 1.082; *p*<0.001); while the odds of developing CKD were 0.962 (95%CI: 0.949 – 0.975; *p*<0.001).

**Conclusion:** The incidence of CKD in our patients was high. Females were at a higher risk of experiencing CKD. A high baseline CrCl was prone to a decline in the follow-up CrCl, but was protective against the development of CKD.

## O5

### Haematological adverse effects associated with linezolid in patients with drug-resistant tuberculosis: An exploratory study

**Letswee, G.,[1] Kamau, H.,[1] Gaida, R.[1,2]* & Truter, I.[1]**

**raziagaida@gmail.com; [1]Nelson Mandela University, South Africa; [2]Human Sciences Research Council, South Africa.*

**Background:** To treat drug-resistant tuberculosis (DR-TB), repurposed drugs such as linezolid have been introduced into the regimen. However, the prolonged use of linezolid may be limited by severe adverse effects.

**Objectives:** To identify the incidence of haematological adverse effects associated with linezolid.

**Methods:** The study was retrospective and quantitative. Medical records of patients between 18 and 65 years, admitted to a DR-TB hospital in the Eastern Cape and prescribed linezolid were reviewed using a self-designed data collection tool. Data including age, gender, diagnosis, HIV status, daily linezolid dose and the results of various blood tests were recorded. The data were analysed in Microsoft Excel® using basic descriptive statistics.

**Results:** All 27 patients reviewed completed 12 months of linezolid therapy. Males constituted 59.3% (n=16) of the population and the average age was 36.0±9.0 years. Extensively drug-resistant (XDR)-TB was detected in 14 patients while the rest were found to be infected with multidrug resistant (MDR)-TB. All patients were prescribed 600 mg of linezolid daily for 12 months. Fifteen patients (55.6%) were living with human immunodeficiency virus (HIV) (stage three) and three were prescribed zidovudine. Seven patients exhibited haematological adverse effects including anaemia (n=6) and macrocytosis (n=1). All were HIV positive and three were receiving zidovudine. The adverse effects were noted an average of 30 days after the initiation of linezolid therapy and all were reversed after an average of seven days. Anaemia and macrocytosis was managed by reducing the dose of linezolid to 300 mg daily and, where required, blood transfusion. Patients remained on 300 mg of linezolid for the remaining treatment period.

**Conclusions:** Haematological monitoring should be weekly after linezolid initiation, and monthly thereafter, particularly for patients living with HIV and receiving zidovudine, due to potential compounding of adverse effects. Reduction of linezolid dosage to 300 mg was required to reverse adverse effects in all patients.

## O6

### Sulphadoxine-pyrimethamine dosing and risk of adverse birth outcomes among pregnant women using intermittent preventive therapy in low malaria transmission settings

**Mikomangwa, W.P.,[1]* Baraka, V.,[2] Minzi, O.M.S.,[1] Aklillu, E.[3] & Kamuhabwa, A.A.R.[1]**

*wpad.miko@gmail.com; *[1]Clinical Pharmacy and Pharmacology Department, Muhimbili University of Health and Allied Sciences, Tanzania; [2]National Institute for Medical Research, Tanga Medical Research Centre, Tanga, Tanzania; [3]Division of Clinical Pharmacology, Department of Laboratory Medicine, Karolinska Institutet, Karolinska University Hospital, Huddinge, Stockholm, Sweden.*

**Background:** The effects of various doses (optimal versus sub-optimal doses) of intermittent preventive treatment of malaria for pregnant women on maternal and fetal birth outcomes in areas with low prevalence of malaria (1.1%) not well known.

**Objective:** To determine the impact of the number of doses of sulphadoxine-pyrimethamine on maternal and fetal birth outcomes among pregnant women in Dar es Salaam, Tanzania.

**Methods:** Cross-sectional study involved pregnant women admitted in labor wards at Mwananyamala hospital. Those who met the eligibility criteria were recruited prior to delivery. The use of IPTp-SP was documented from antenatal clinic cards. Cord blood was taken and Birth weights were measured soon after delivery. Peripheral blood was taken for determining Hb level and malaria infection. Placenta biopsy was taken for histology. Nested PCR was used in determining submicroscopic placental malaria infection.

**Results:** A total of 1161 pregnant women participated in the study. The prevalence of maternal, fetal anemia and LBW was 44.5%, 10.9% and 5.3% respectively. Peripheral malaria was positive in 0.6% of participants. The overall prevalence of placental malaria was 2.9% (25/851).

Submicroscopic placental malaria was detected in 1.4% of 286 participants. The use of 0-2 doses of IPTp-SP was associated with 3 times increased risk of LBW compared to ≥4 IPTp-SP doses, AOR 2.996, 95% CI; 1.141-7.864, *p*-value 0.026. The use of 0-2 doses of IPTp-SP was associated with 1.5 times the risk of maternal anemia compared with ≥4 doses, AOR 1.492, 95%CI; 1.049-2.122, *p*-value 0.026. The use of 3 IPTp-SP doses was associated with 1.9 times the risk of foetal anemia compared to ≥4 doses, AOR 1.914, 95% CI; 1.119-3.272, *p*-value 0.018.

**Conclusion:** Three or more doses of SP for intermittent preventive treatment of malaria during pregnancy reduced the risk of low birth weight and maternal anemia in an area with low malaria transmission.

## O7

### Predictors of tuberculosis case-fatality under the DOTS program in a high burden setting

**Kibuule, D.,[1]* Shekuhungama, A.,[1] Rennie, W.T.[1] & Verbeeck, R.[1]**

**dkibuule@unam.na; 1School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek, Namibia.*

**Background:** Few studies in sub-Saharan Africa model predictors of death among tuberculosis (TB) patients under Directly Observed Treatment Short-course (DOTS) program.

**Objective:** To determine the predictors of death among TB cases under the DOTS program in Namibia.

**Methods:** A case-control study was conducted using a nationwide database, the Electronic TB register (ETR, 2005-2015). In addition, a hospital case-control was conducted over a 1-year period, 2017-2018 to validate the contribution of other clinical and socio-demographic covariates not included in the ETR database. The cases were events of death under DOTS program. The controls were cases with a successful outcome, i.e. cured and/or completed treatment. Multiple imputations of datasets were conducted to minimize bias due to incomplete data by case, item or value. Multivariate logistic modeling was used to determine the socio-demographic, clinical and treatment predictors of TB case-fatality were determined using odd ratio (aOR) in SPSS v23 software.

**Results:** Of the 67794 subjects included in the ETR based study, 9.5% (n=6456) were cases compared to controls (i.e. successful treatment outcome). Of the 124 subjects included in the hospital-based study, 54.8 % (n=68) were cases (i.e. died) compared to 45.2% controls, (i.e. patients cured of TB). The independent predictors of TB case-fatality under the DOTS program were testing negative for HIV coinfection OR=0.2 (95%CI: 0.1, 0.4, *p*<0.001) and TB diagnosis without a GeneXpert resistance testing, OR=3.4 (95%CI: 1.6, 7.5, *p*=0.002). The national ETR analysis also showed that HIV co-infection OR=7.2 (95%CI: 2.5, 20.9, *p*<0.001), increasing patients age OR=1.02 (95%CI: 1.01, 1.03, *p*<0.001) and non cotrimoxazole prophylaxis OR=2.2 (95%CI: 1.2, 4.1, *p*=0.013) as independent predictors of death. As a group, region of DOTS implementation (p<0.001) and the type of DOTS provider (*p*<0.001) reduced TB case fatalities.

**Conclusion:** Clinical and diagnostic factors including HIV co-infection, co-trimoxazole and lack of sputum and/or drug-resistance testing may be predictors for death among patients treated under the DOTS program in Namibia. This calls for strengthening and strict clinical monitoring among patients initiated on DOTS to minimize deaths among TB patients.

## O8

### Medication related problems among HIV/AIDS patients on antiretroviral therapy at a national referral hospital in Kenya

**Opanga, S.,[1]* Thuo, P.,[1] Oluka, M.N.,[1] Guantai, A.N.,[1] Kurdi, A.,[2,3] Godman, B.[2] & Bennie, M.[2]**

**sylvia.adisa@gmail.com; [1]School of Pharmacy, University of Nairobi, Kenya; [2]Strathclyde Institute of Pharmacy and Biomedical Science, University of Strathclyde, Glasgow, UK; [3]Department of Pharmacology, College of Pharmacy, Hawler Medical University, Erbil, Iraq.*

**Background:** Medication Related Problems (MRPs) are unwanted events or circumstances that occur during drug therapy and interfere with desired therapeutic outcomes. HIV/AIDS patients are usually prescribed complex antiretroviral drug regimens in addition to other medications. This predisposes them to medication related problems, which are increasingly becoming a major cause of antiretroviral therapy-related morbidity and mortality.

**Objective:** To evaluate the prevalence and risk factors of MRPs among adult HIV/AIDS patients on antiretroviral therapy at Kenyatta National Hospital (KNH).

**Methods:** A cross-sectional study was performed at the Comprehensive Care Center (CCC) at KNH, where patients on antiretroviral drugs are seen. Data was collected through patient interviews and evaluation of patient records over a period of two months. MRPs were identified and classified according to the Hepler-Strand classification. Descriptive and bi-variable data analysis was conducted.

**Results:** A total of 248 patients were recruited in the study, of which 62% were female and 38% male. MRPs were present in 118 (47.58%) of the 248 patients. MRPs identified were sub-therapeutic dosage (31.88%), untreated indications (21.26%), adverse drug reactions (17.87%), and failure to receive drugs (15.46%), drug interactions (5.31%), overdose (4.35%), improper drug selection (2.42%) and drug use without an indication (1.45%). The risk factors for sub-therapeutic dosage were poor adherence (*p*<0.001), on transit patients (*p*<0.001) and social/ marital problems (*p*=0.0001). For untreated indications, risk factors were clinician error (*p*<0.001), financial constraints (*p*<0.001) and stigma (*p*=0.0002). Mix up due to complex regimens (*p*=0.001) was the main risk factor for adverse drug reactions.

**Conclusion:** The prevalence of MRPs in adult HIV/AIDS patients was high (47.58%). The most prevalent MRPs were sub-therapeutic dosage, untreated indications and adverse drug reactions. There were no documented interventions by a pharmacist. This needs to be addressed.

## O9

### Patient-related factors leading to uncontrolled blood pressure in patients taking antihypertensive medication in Mafeteng, Lesotho

**Mafisa, R.K.,[1]* Joubert, R.[1] & Rakumakoe, D.[1]**

**fifimafisa@gmail.com; [1]Medicine Usage in South Africa, Faculty of Health Sciences, North-West University, Potchefstroom Campus, South Africa.*

**Background:** Research done in Lesotho revealed that approximately 75% of the population receiving antihypertensive treatment have uncontrolled blood pressure.

**Objectives:** To determine blood pressure control status of

patients in Mafeteng Government Hospital and patient-related factors leading to uncontrolled blood pressure in patients taking antihypertensive medication in Mafeteng, Lesotho.

**Methods:** The research study was conducted using an observational, cross-sectional study design. It was an all-inclusive study targeting hypertensive patients receiving treatment at the outpatient department in Mafeteng Government Hospital. It was ethically approved at North-West University and by the Lesotho Ministry of Health. Data were acquired from prescription booklets and face-to-face interviews through structured questionnaires. It was captured into Microsoft Excel® 2016 spreadsheet and analysed using the Statistical Package for Social Sciences® V25.0.

**Results:** The study enrolled 176 participants and 80.1% were females. Mean age of participants was 61.2 ± 12.9 years. Their mean systolic blood pressure was 145.2 ± 23.7 mmHg while mean diastolic blood pressure was 88.5 ± 11.9 mmHg. Sixty-one percent of participants had uncontrolled blood pressure. About 55.1% of participants were found to be optimally compliant and 63.1% of participants optimally kept follow-up appointments. Researchers found that 63.6% of participants consumed salt moderately while 3.4% consumed little amounts of salt. Over 80.0% of participants admitted to have adapted lifestyle changes. About 30.1% had other diseases alongside hypertension and 60.4% (n=53) of those had diabetes mellitus.

**Conclusions:** Blood pressure control in Mafeteng is low. Medication compliance and appointment keeping need improvement. The hospital needs to improve on factors such as medication compliance and conforming to appointments. Although most patients seem to be engaging in lifestyle changes, most do not watch their salt consumption. Therefore, careful patient monitoring and patient education in both hypertension and diabetes mellitus can help in improving blood pressure control through addressing factors such as medication compliance, lifestyle modifications and salt intake restriction.

## O10

### Prescribers' experiences of, and attitudes to, use of morphine for palliative care at a tertiary hospital in Zambia

**Robertson, E.,[1]* Bambala, A.,[2] Kalungia, A.C.,[3] Marshall, S.,[4] Mbozi, P.[5] & Munkombwe, D.[3]**

**e.robertson@surrey.ac.uk; [1]School of Veterinary Medicine, University of Surrey, Guildford, United Kingdom; [2]Pharmacy Department, University Teaching Hospitals, Lusaka, Zambia; [3]Department of Pharmacy, University of Zambia (UNZA), Lusaka, Zambia; [4]Brighton and Sussex Medical School (BSMS), University of Sussex, Falmer, Brighton, United Kingdom; [5]Cancer Diseases Hospital, Lusaka, Zambia*

**Background:** Increased incidence of non-communicable diseases in an ageing population, alongside mortality from HIV, means the need for palliative care in Africa is increasing. In Zambia, integration of palliative care within primary care services is in its early stages, and medical doctors working in secondary and tertiary level hospitals are permitted to prescribe morphine. However, it is not known what influences their decision to use it for analgesia in patients with severe or terminal illness.

**Objective:** To explore doctors' experiences of, and attitudes to, use of morphine for palliative care at a tertiary hospital in Zambia.

**Methods:** A qualitative, exploratory case study was undertaken. Semi-structured interviews were used to collect data from 14 medical doctors working at a tertiary hospital in Lusaka, Zambia, regarding their experiences and attitudes to prescribing morphine for palliative care. Thematic analysis of interview transcripts was carried out to establish common themes in the data. The study was approved by BSMS and UNZA research ethics committees.

**Results:** All participants agreed that doctors were becoming more comfortable with the prescribing of morphine, although experiences were notably different for doctors working in oncology, compared to other departments. Themes of difficulty discussing end-of-life, poor recognition of pain, and fear of patient addiction, were more prominent in the responses of non-cancer doctors. Morphine use was generally restricted to cancer and sickle cell disease patients, with non-cancer doctors rarely prescribing morphine for outpatient use. Training in pain management, and the presence of a palliative care team, were perceived to be facilitators to morphine prescribing.

**Conclusions:** Although there is an increased willingness to prescribe morphine, limited knowledge of pain management, especially for non-malignant disease, underlies many of the findings in this study. Opportunity exists for professional development in pain management, to further improve the acceptance and use of opioids in palliative care.

## O11

### Possible changes in prescribing patterns of central nervous system medication in HIV/AIDS patients in the private medical scheme environment in South Africa

**Wafawanaka, F.,[1]* Lubbe, M.S.,[1] Kotze, I.[1] & Cockeran, M.[2]**

**floidywafawanaka@gmail.com; [1]Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, Potchefstroom, South Africa; [2]Statistics, School of Computer, Statistical and Mathematical Sciences, North-West University, Potchefstroom, South Africa*

**Background:** Central nervous system (CNS) disorders are often not diagnosed on time and are under-treated in patients living with human immune virus/acquired immune deficiency syndrome (HIV/AIDS).

**Objectives:** To determine over an 11-years period, possible changes in the prescribing patterns of CNS medication in HIV/AIDS-patients.

**Methods:** A longitudinal research design was followed to analyse retrospective medicine claims data from a closed cohort (N = 308) of HIV/AIDS-patients (identified with ICD-10 codes B20-B24) obtained from a South African pharmaceutical benefit management company's database. The study period was 11 years, from 1 Jan. 2005 to 31 Dec. 2015. Measurements included: i) different types of active pharmaceutical ingredients according to pharmacological groups; ii) number of medicine items per prescription; iii) number of prescriptions per patient.

**Results:** In this study, 86.68% (n = 267) of HIV/AIDS-patients claimed one or more CNS prescriptions during the study period. The mean number of items per prescription per patient increased marginally from 2005, 1.22(0.46) [1.15-1.28] to 2015, 1.25(0.59) [1.16-1.33] ($p$ = 0.0004; Cohen's $d$-value < 0.8). The mean number of prescriptions per patient did not change significantly from 1.56(1.57) [1.34-1.78] in 2005 to 1.93(2.11) [1.65-2.22] in 2015 ($p$ >0.05). The majority of patients received an antidepressant during 2005 (49.68%) and 2015 (73.05%) which indicates an increase of 47.06% over the study period ($p$ > 0.0002). Number of patients who received a sedative hypnotic, an anxiolytic or an anti-epileptic drug increased with 45.0% ($p$ = 0.0262), 54.55% ($p$ = 0.0112) and 89.94% ($p$ = 0.0219) respectively over the study period. Most prescribed active

ingredients group was selective serotonin reuptake inhibitors (escitalopram, citalopram, fluoxetine, bupropion).

**Conclusions and recommendations:** Major changes took place in CNS medication prescribing in privately-insured HIV/AIDS patients. The increase in the prescribing of antidepressants, sedative hypnotics, anxiolytics and anti-epileptic drugs should be further investigated.

## O12

### Data quality of Namibia's Pharmaceutical Management Information System: findings and implications

**Kagoya H.R.,[1]* Kibuule, D.,[2] Wuletaw, C.,[3] Rennie, W.T.[2] & Mitonga-Kabwebwe, H.[1]**

**kharrietrachel@yahoo.com; [1]School of Public Health, Faculty of Health Sciences, University of Namibia, Namibia; [2]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Namibia; [3]Division Pharmaceutical Services, Ministry of Health and Social Services, Namibia.*

**Background:** A reliable pharmaceutical management information system (PMIS) enhances health care strategic planning and delivery. Few studies evaluate the data sufficiency of PMIS data on nationwide medicine utilisation indicators.

**Objective:** To determine the quality (patterns and level of bias) of data based on PMIS indicators in a national database.

**Methods:** A population-level analysis was conducted to determine the level of data bias in a nationwide PMIS database, 2007-2015. The bias was determined by level missingness (i.e. random or systematic) and extreme outliers of data by variable, cases and values variable using missing data analysis approach (SPSS). Quality for an indicator was set at < 5% of missing data for an indicator and 80% of the complete variables for the data set.

**Results:** Of the 544 PMIS entries with 12 PMIS indicators from 38 public health facilities, 100% (12, n=12) indicators had missing data and 50% (6, n=12) had extreme values. Over 75% (9, n=12) of the data on PMIS indicators was 'missing completely at random' (MCAR, <5%) i.e. missing data are randomly distributed in the dataset, with no specific relationship to other values in the dataset. Data for three (3) of the 12 PMIS indicators were missing more than 5% hence considered to be of less than desired quality. The three indicators with their corresponding level of missing data were: average number of prescriptions (6%), annual expenditure per capita for pharmaceutical and clinical supplies (5%), and Population per pharmacist's assistant (5%).

**Conclusions:** All the indicators had missing data; the level missingness and outlier PMIS indicators, cases and values were high but missing at random. Integrate and strengthen quality assurance across all levels of data handling to minimize systematic and random errors in PMIS data.

## O13

### Anticholinergic drug burden among ambulatory elderly patients in a Nigerian tertiary healthcare facility

**Fadare, J.O.,[1]* Aina, F.O.,[2] Obimakinde, A.M.,[3] Osasona, O.E.,[4] Araromi, E.J.[1] & Theophilus, A.A.[1]**

**joseph.fadare@eksu.edu.ng; [1]Department of Pharmacology and Therapeutics, Ekiti State University College of Medicine, Ado-Ekiti, Nigeria; [2]Department of Family Medicine, Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria; [3]Family Medicine Unit, Department of Community Medicine, College of Medicine, University of Ibadan and Family Medicine Department, University College Hospital, Ibadan, Nigeria; [4]Department of Medicine, Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria.*

**Background:** The use of medicines with anticholinergic activity among elderly patients has been associated with adverse clinical outcomes. There is a paucity of information about anti-cholinergic drug burden among Nigerian elderly population.

**Objectives:** To determine the anticholinergic drug burden among elderly Nigerian patients.

**Methods:** This was a retrospective cross-sectional study conducted among elderly patients (aged 65 and above) who visited the general outpatients' clinics of the Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria between March and June, 2017. Information extracted from the case files included patient's age, diagnosis, and list of prescribed medications. Medicines with anticholinergic activities were identified and scored using the anticholinergic drug burden calculator (http://www.acbcalc.com).

**Results:** The medical records of 400 patients were included in the final analysis with females accounting for 60.5% of the study population. The mean age was 73 ± 7.4 years with only 6 patients older than 85 years. Majority of patients were diagnosed with one medical condition while 154 (38.5%), 24 (6%) and 3 (0.8%) had two, three and four different diagnoses respectively. The total number of prescribed medicines was 4.1 ± 1.5. Polypharmacy was identified in 152 (38%) of the patients while 147 (36.8%) had medicines with anticholinergic activity prescribed. Two hundred and fifty-one (251/62.9%) had anticholinergic burden score of zero (0), 79 (22.3%) had scores between 1-2 while 60 (15.1%) patients had scores of 3 and above. There was significant correlation between the total number of prescribed drugs, number of comorbid conditions ($r$ = .598; $p$<.000) and number of drugs with anticholinergic activity ($r$ =.196; $p$<.000).

**Conclusion:** The anti-cholinergic burden in elderly Nigerian patients was low when compared with reports from developed countries. Based on the positive and significant correlations found in this study, a reduction in the number of prescribed medicines may lessen the anticholinergic burden among the elderly.

## O14

### Childhood cancers in a section of the South African private health sector: Analysis of medicines claims data

**Otoo, M.N.,[1]* Lubbe, M.S.,[1] Steyn H.[1] & Burger, J.R.[1]**

**frianne2005@yahoo.com; [1]Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, Potchefstroom 2520, South Africa.*

**Background:** Notwithstanding the rarity of childhood cancers, increases in the incidence of childhood cancers have been observed in recent times. Current epidemiological studies of childhood cancers in South Africa are lacking.

**Objectives:** This study aimed at describing the epidemiology of childhood cancers in a section of the private health sector of South Africa, using medicines claims data.

**Methods:** This study followed a longitudinal open cohort study design. The cohort comprised of children <19 years diagnosed with cancer between 2008 and 2017, on the medicines claims database of a South African Pharmaceutical Benefit Management company. Cases were identified using ICD-10 diagnostic codes C00 to C99, together with a medicine claim reimbursed from oncology

benefits. Data were analysed by age, gender, geographical area and malignancy type. Epidemiological trends were also analysed.

**Results:** During the 10-year period, 183 new cases of childhood cancers were recorded on the database. There were more incident cases in males (69.4%, n = 127) than females. Leukaemias were the most frequently diagnosed cancers (39.3%, n = 72). The mean age of the study population was 9.96 (SD = 5.37) years. The 5-9 years' age group recorded the highest number of new cases (35.5%, n = 65) and Gauteng had the highest number of incident cases (51.4%, n = 94) among the provinces. Average annual new cases increased from 14.5 cases from the period 2008-2011 to 22.7 for the period 2015-2017. Prevalence of cancers over the study period also followed similar trends.

**Conclusions:** The results obtained, with respect to gender, age and malignancy type, are consistent with observed trends in other countries and the increasing number of new cases confirms the observed increase in the incidence of childhood cancers. Cancer control strategies should be implemented and appraised for their effectiveness, to help reduce the burden of childhood cancers.

## O15

### Compliance to the South Africa's National Antimicrobial Resistance Strategy Framework

**Engler, D.,[1]* Meyer, H.[1] & Schellack, N.[1]**

**deirdre.engler@smu.ac.za; [1]Sefako Makgatho Health Sciences University, South Africa.*

**Background:** Inappropriate use of antimicrobials (AMs) in primary care and hospital settings is a known key driver of resistance. South Africa's National Antimicrobial Resistance (AMR) Strategy Framework (hereafter referred to as the Framework) was launched in 2014 with the purpose of providing a structure that includes antimicrobial stewardship programmes (AMSP) to manage AMR.

**Objectives:** To identify current AMS- and Pharmaceutical and Therapeutics Committee (PTC) activities, aimed at the improvement of AM prescribing and prevention of AMR, and to investigate the implementation of AMSPs, in line with the Framework, at selected study facilities.

**Methods:** The study had a descriptive research design, using a self-administered questionnaire. The study sites included 18 community health centres (CHCs) (two per province), one referral hospital per province and all nine national central hospitals in South Africa. One health care professional (HCP) from each facility that was permanently employed, knowledgeable on AMR or responsible for AMSPs or a member of the PTC, were included.

**Results:** All but one province participated in the study. Twenty-six (70.3%) HCPs participated in the study: five (19.2%) were doctors, 16 (61.5%) were pharmacists and five (19.2%) were of the nursing profession. More than half of the participants (n=14; 53.8%) were in a managerial position at their facilities. The overall compliance to the Framework was 65%. The CHCs (n=9) were 44% compliant to the Framework. The average compliance amongst the referral hospitals was 70%. The national central hospitals had a compliance of 77%. Six facilities had a compliance of less than 50% (13% - 46%), and six facilities were more than 80% compliant (84% - 91%). As per province, KZN had the highest compliance of 80% and the North-West the lowest with 51%.

**Conclusion:** Although some facilities comply well with the Framework, the overall compliance remains sub-optimal. With the National Health Insurance proposing to use PHC as entry level, it is important to investigate the poor performance of CHCs and focus on the challenges public health care facilities are facing.

## O16

### Drug and vaccine utilization among pregnant women in the Iganga Mayuge Health and Demographic Surveillance Site (IMHDSS), Uganda

**Stark, J.H.,[1,2] Galiwango, E.,[3] Chemelski, M.,[2] Kim, G.,[2] Tran, L.,[2] Robinson, E.,[2] Ukachu, C.,[2] Wool, E.,[2] Weibel, D.,[4] Huang, W.-T.,[5] Kochhar, S.,[6] Hardy, J.R.,[7] Bailey, S.,[1] Darakjy, S.[1] & Kajungu, D.[3]***

**dan.kajungu@gmail.com; [1]Worldwide Safety and Regulatory, Pfizer, New York, NY, USA; [2]College of Global Public Health, New York University, New York, NY, USA; [3]Makerere University Centre for Health and Population Research, Iganga Mayuge Health and Demographic Surveillance Site, Iganga, Uganda; [4]Department of Medical Informatics, Erasmus Medical Center, Rotterdam, Netherlands; [5]Office of Preventive Medicine, Taiwan Centers for Disease Control, Taipei, Taiwan; [6]Global Health Care Consulting, India; [7]ECC Population Health Group, University of South Florida, Tampa, FL USA.*

**Background:** Knowledge of the utilization of vaccines, medications and traditional use of herbal medicines during pregnancy provides critical information to support systematic safety assessment in pregnant women and their offspring. Though widely characterized in developed countries, less information on utilization is available in low and middle income countries, particularly in Uganda where population assessment has not been performed.

**Objective:** To describe vaccine, drug, and herbal medicine utilization during pregnancy in the Iganga Mayuge health and demographic surveillance site (IMHDSS).

**Methods:** The IMHDSS is located in Eastern Uganda and consists of 65 villages with a total population of 89,000 living in 16,000 households. Within the IMHDSS there are 15 government-accredited health centers and one public hospital that provide ante-natal care (ANC) services to pregnant women. From January 9-17, 2017, a convenience sample of pregnant women was recruited to complete an interview with local field researchers after the ANC visit at each of the 15 health centers and public hospital.

**Results:** Three hundred and fifty-one pregnant women completed the survey (230 recruited from health centers and 121 from the hospital). Among women who completed the survey, 50% were in the third trimester of pregnancy, 41% in the second trimester, and 5% in the first trimester. Seventy-eight percent of women reported having received at least one dose of tetanus toxoid vaccine during the current pregnancy. The most common reported pregnancy symptoms, infections, and chronic diseases including the proportion of women who used drugs to treat the condition were: pain (symptom = 77%; drug use = 41%), nausea (symptom = 71%; drug use = 61%), common cold (condition = 60%; drug use = 86%), urinary tract infection (condition = 28%, drug use = 64%), and cardiovascular disease (condition = 17%; drug use = 34%). Approximately 54% of women reported using herbal medications.

**Conclusions:** Reported drug use throughout the duration of pregnancy is high in the IMHDSS and appropriate pharmacovigilance systems are needed to monitor potential adverse outcomes in the mother and child.

## O17

### Evaluation of oral amoxicillin/clavulanic acid use in public sector primary health care facilities of the Cape Town metropole district, Western Cape

**Coetzee, R.[1] & Johnson, Y.[2]***

**Yasmina.Johnson@westerncape.gov.za; [1]University of the Western Cape, South Africa; [2]Western Cape Government Health, South Africa.*

**Background:** Standard Treatment Guidelines (STGs) aim to promote rational medicine use, optimise patient care and minimise harm. Inappropriate use of antimicrobials increases the risk of resistance. High consumption of amoxicillin/clavulanic acid at primary care (PHC) level in the Metropole District, Western Cape suggested inappropriate use. The average Defined Daily Dose was 5.32 per 1000 outpatient prescriptions per day.

**Objectives:** To determine whether co-amoxyclav was prescribed at PHC level according to recommendations described in the STGs and Essential Medicines List PHC (2018) in the public sector in the Cape Metropole District, Western Cape.

**Method:** We conducted a retrospective, cross-sectional, multi-centre prescription review in April 2019. We selected a convenience sample of 32 community health centres/day centres in the Metropole District. All available prescriptions for co-amoxyclav dispensed during the review period were included in the study. We extracted clinical and demographic data including sex, age, diagnoses, dose, duration, co-morbidities and relevant clinical information. We compared indications for co-amoxyclav prescriptions to the PHC STGs' indications for co-amoxyclav: urinary tract infections in children or pregnant women, diabetic foot, severe pneumonia, animal/human bites, and recurrent otitis media. The threshold for appropriate prescribing in accordance with the STGs was set at 90%.

**Results:** A total of 734 prescriptions were reviewed. The mean age of the sample population was 43.39 ± 18.01 years; and 459 (62.5%) [CI95: 59.0% – 66.0%] were females. Co-amoxyclav was prescribed for the diagnoses indicated in the STGs in 117 (15.9%) [CI95: 13.3% - 18.6%] cases. Inappropriate prescribing involved mainly uncomplicated urinary tract infections in adults, acute bronchitis and tonsillitis. Penicillin allergy was noted in 26 (3.54%) [CI95: 2.2% - 4.9%] cases.

**Conclusions and recommendations:** Appropriate use of co-amoxyclav at PHC level was well below the set threshold. This poses a serious risk of resistance emerging. Antimicrobial stewardship and STG implementation should be strengthened.

## O18

### A point prevalence survey of antimicrobial utilization across public healthcare sector facilities in South Africa

**Skosana, P.P.,[1]* Schellack, N.,[2] Meyer, J.C.[2] & Godman, B.[2]**

**phumzile.skosana@smu.ac.za; [1]Sefako Makgatho Health Sciences University, South Africa; [2]Strathclyde Institute of Pharmacy and Biomedical Science, University of Strathclyde, Glasgow, UK.*

**Background:** Antimicrobial use is growing worldwide, driven mainly by rising demands in low- and middle-income countries. One strategy to improve antimicrobial use in hospitals is the instigation of point prevalence surveys (PPSs) to provide accurate data on current antibiotic utilisation and resistance patterns, using a standardised methodology to plan future interventions.

**Objectives:** To quantify antimicrobial usage in public sector hospitals and community healthcare centres (CHCs) in SA; identify and classify which antimicrobials are used; and use mHealth techniques to collect data on antimicrobial utilization.

**Methods:** A quantitative observational and descriptive PPS of antimicrobial consumption was conducted. All files for inpatients present in the ward at 8H00 on the day of data collection and the files for one day at the CHCs were surveyed. Data were collected using the Knack® application and exported to MS Excel® for descriptive analysis.

**Preliminary results:** In total, 2093 patient files were reviewed at six hospitals in three provinces in SA. Gender distribution was almost equal, males (49.3%) and females (50.4 %). Overall, 43.5% of the patients were on antimicrobials, both as prophylaxis and as treatment. For 98% of patients, microbial cultures and/or sensitivity tests were not done before initiation of antimicrobials. Amoxicillin/clavulanic acid was the most commonly used drug with the one hospital having ampicillin as their first antibiotic of choice. The most common indication for antimicrobial use was for skin and soft tissue infections (12.3%).

**Conclusion:** Forty-three percent of patients were on antimicrobials. Amoxicillin with an enzyme clavulanic acid was the most commonly used drug. The most common indication was for skin and soft tissue infections (12.3%). Using mHealth enables data availability and antimicrobial surveillance in line with the goals of the World Health Organization.

## O19

### Comparison of malaria treatment outcome of generic and innovator's anti-malarial drugs containing artemether–lumefantrine combination in the management of uncomplicated malaria amongst Tanzanian children

**Kilonzi, M.,[1] Minzi, O.,[1] Mutagonda, R.,[1] Sasi, P.,[2] Kamuhabwa, A.[1] & Aklillu, E.[3]**

**manasekilonzi@yahoo.com; [1]Department of Clinical Pharmacy and Pharmacology, School of Pharmacy, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania; [2]Department of Clinical Pharmacology, School of Medicine, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania; [3]Division of Clinical Pharmacology, Department of Laboratory Medicine, Karolinska Institutet, Karolinska University Hospital-Huddinge, Stockholm, Sweden.*

**Background:** In 2006, artemether–lumefantrine, specifically Coartem® was approved as the first-line drug for treatment of uncomplicated malaria in Tanzania. Due to poor availability and affordability of the innovator's product, the government of Tanzania in 2013 prequalified the use of generic anti-malarial drugs, whereby Artefan® was the first to be approved.

**Methods:** This was an equivalence prospective study that aimed to determine the effectiveness of anti-malarial generic Artefan® in comparison with innovator's product Coartem®. Patients aged 6 to 59 months with uncomplicated malaria were recruited and randomized to either receive Artefan® or Coartem® as a control. Participants were required to revisit clinic five times as follow up to monitor treatment outcome as per World Health Organization recommendations. On each visit, thick and thin blood smears, dried blood spot, haemoglobin concentrations and auxiliary temperature were performed and documented.

**Results:** Out of 230 recruited participants, 200 met inclusion criteria and were randomized equally to receive

Artefan® and Coartem®. The overall PCR uncorrected cure rates were 80% for Artefan® and 75% for Coartem® (p = 0.44). Adequate clinical and parasitological response were 82.1% for Artefan® and 74.7% for Coartem®, and there was no early treatment failure (ETF) observed in both arms of treatment. Both drugs showed excellent early parasite clearance, whereby no participants had peripheral parasitaemia on day 3. Late clinical failures (LCF) were 3.6% for Artefan® and 1.3% for Coartem® (p = 0.31), and late parasitological failure (LPF) were 15.4% for Artefan® and 22.7% for Coartem® (p = 0.32). Mean haemoglobin (g/dl) concentrations observed on day 28 were higher compared to day 0 for both drugs, although not statistically significant. Only one (1.3%) participant on Artefan® had temperature ≥ 37.5 °C on day 3.

**Conclusion:** The findings of this study indicate that both Artefan® and Coartem® are equivalent and effective in the management of uncomplicated malaria amongst children in the Coast part of Tanzania.

## O20

### The association between antiretroviral therapy (ART) failure with a wildtype virus and adherence in second-line ART regimen: A secondary analysis of prospectively collected data

**Mantshonyane, L.,[1]* Gross, R.,[1] Barr, K.,[2] Roy, J.[2] & Levy, M.[2]**

**Lentizo81@gmail.com; [1]Perelman School of Medicine; [2]Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania, USA.*

**Background:** Recent studies show that patients who switch to second-line antiretroviral therapy (ART) without a resistant virus experience worse outcomes compared to those with a resistant virus. This is often attributed to possible differential better adherence by patients who switch to second-line with a resistant virus. We conducted a secondary analysis of prospectively collected data to investigate whether the resistance status of a virus the patient fails first-line ART with, is independently associated with their adherence to and virologic failure in a PI-based second-line ART regimen. We *a priori* postulated that patients who switch to without resistance will display worse adherence to second-line ART.

**Methods:** Participants aged at least 18 years from eight countries for whom first-line ART had failed with HIV-RNA concentrations greater than 1000 copies per ml were enrolled. We sequenced the reverse transcriptase (RT) and protease (PR) regions of the HIV genome on stored plasma samples which were collected at enrolment during the A5234 clinical trial study. We measured adherence with electronic monitors and compared it between patients with and without significant resistance at first-line ART failure.

**Results:** Switching to second-line ART with a virus resistant to first-line ART was associated with better adherence to second-line ART: OR 5.28, $p<0.01$ and was also protective against second-line virologic failure: OR 0.41, $p<0.01$.

**Conclusion:** Patients switching with a resistant virus adhere better in second-line ART. Both this better adherence and the beneficial effect of lamivudine resistance, particularly one caused by the M184V/I mutations are protective against second line virologic failure

## O21

### Pregnancy and CYP3A5 genotype affect day 7 plasma lumefantrine concentrations

**Mutagonda, R.F.,[1] Minzi, O.M.S.,[1] Massawe, S.N.,[2] Asghar, M.,[3] Färnert, A.,[3,4] Aklillu, E.[5] & Kamuhabwa, A.A.R.[1]***

**enali2012@gmail.com, akamuhabwa@muhas.ac.tz; [1]Department of Clinical Pharmacy and Pharmacology, School of Pharmacy, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania; [2]Department of Obstetrics and Gynecology, School of Medicine, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania; [3]Division of Infectious Diseases, Department of Medicine, Solna, Karolinska Institutet, Stockholm, Sweden; [4]Department of Infectious Diseases, Karolinska University Hospital; Stockholm, Sweden; [5]Division of Clinical Pharmacology, Department of Laboratory Medicine, Karolinska Institutet at Karolinska University Hospital, Huddinge, Stockholm, Sweden.*

**Background:** Variation on day 7 lumefantrine (LF) plasma concentrations in pregnant women treated with artemether-lumefantrine (ALu) has been reported in different studies. However, effects of drug metabolizing enzymes and ATP-binding cassette B1 (ABCB1) transporters on the variation of day 7 LF concentrations and malaria treatment outcome in pregnant and non-pregnant women are not well characterized.

**Objectives:** To investigate the effect of pregnancy and pharmacogenetic variation on day 7 LF plasma concentration and therapeutic responses in malaria-infected women.

**Methods:** A total of 205 pregnant and 72 non-pregnant women with uncomplicated Plasmodium falciparum malaria were enrolled in the study between May 2014 and December 2017. Patients were treated with ALu, and followed up to day 28 to monitor clinical and parasitological response using microscopy, genotyping by qPCR and nested PCR. CYP3A4, CYP3A5 and ABCB1 genotyping were done. Day 7 plasma LF concentration and the PCR-corrected adequate clinical and parasitological response (ACPR) at day 28 were determined.

**Results:** The mean log day 7 plasma LF concentrations were significantly lower in pregnant than non-pregnant women (geometric mean ratio = 1.40, 95% CI =1.120—1.745, $p$ = 0.003). Pregnancy, low body weight and CYP3A5*1/*1 genotype were significantly associated with low day 7 LF concentration ($p$ < 0.01). PCR-corrected ACPR was 93% (95%CI = 89.4—96.6) in pregnant women and 95.7% (95% CI = 90.7–100) in non-pregnant women. Patients with lower day 7 LF concentration had a high risk of treatment failure (median 667 vs. 178.1 ng/mL, $p$ < 0.001).

**Conclusion and recommendations:** Pregnancy, low body weight and CYP3A5*1 allele are significant predictors of low day 7 LF plasma exposure. Further studies are recommended to explore possibility of ALu dosage adjustment in pregnant women in order to maintain the minimum required therapeutic day 7 LF plasma concentration.

## P1

### Complementary and alternative medicine for pain: Usage, outcomes and cost

**Truter, I.,[1]* Naidoo, N.T.,[1] Cakwebe, V.,[1] Collett, B.,[1] Moloti, S.,[1] Moreko, L.[1] & Mpintshi, L.[1]**

**ilse.truter@mandela.ac.za; [1]Drug Utilization Research Unit (DURU), Department of Pharmacy, Nelson Mandela University, South Africa.*

**Background:** Pain can place a significant economic burden on patients and healthcare systems. Complementary and Alternative Medicine (CAM) therapies are often used to treat pain. CAM has largely been ignored in medicine utilisation and pharmacoeconomic studies as an area of research.

**Objectives:** To determine the usage, outcomes and cost of CAM in pain management in South African consumers.

**Methods:** A consumer survey was conducted at shopping centres in South Africa in 2017. A total of 219 consumers completed the survey. Convenience sampling was used. Microsoft Excel was used to analyse data, and basic descriptive statistics were calculated.

**Results:** Most of the 219 respondents were female (57.1%) and between 18 and 29 years old (40.6%). The most common pain conditions were lower back pain (37.0% of consumers), followed by abdominal pain (26.0%) and upper back pain (18.7%). The most common CAM therapies used for pain were vitamin and mineral supplements (34.2% of consumers), massage therapy (30.6%), herbal medicine (29.7%), prayer therapy (25.6%) and relaxation (15.1%). Seventy-two percent of consumers indicated that it was worthwhile to use CAM therapies for pain before consulting a medical practitioner. More than half (55.68%) of consumers said they did not inform their medical practitioners about the CAM therapies they are using. Of the 219 consumers, only 12.73% indicated that their medical insurance scheme covers the cost of a CAM practitioner consultation, and only 14.63% that their medical insurance scheme covers CAM products sold by a pharmacy.

**Conclusions and recommendations:** Most consumers who experienced pain did use a CAM therapy and considered it to be of value. Although pharmacies are selling CAM products for pain, medical insurance schemes are not readily paying for CAM practitioner consultations or CAM products. Since most therapies are out-of-pocket expenses, a follow-up study should be conducted to quantify these expenses.

## P2

### Consumption of psychotropic medicines at a referral hospital in Namibia: findings and implications

**Kafula M.N.,[1] Ugburo, E.[2] & Kibuule, D.[1]***

**dkibuule@unam.na; [1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek Namibia; [2]Intermediate Katutura Hospital, Windhoek, Namibia.*

**Background:** The burden of mental illnesses including depression and psychosis in Namibia is estimated at 25.6% and is expected to double by 2025. This has been paralleled by a rise in consumption of psychotropic medicine in public health care. There is conflicting data on cost-effectiveness of psychotropic medicines such as antidepressants in mental care.

**Objectives:** To determine the consumption rate of psychotropic medicines at a regional referral hospital in order to provide guidance for rational use.

**Method:** A retrospective descriptive design was utilized to determine the consumption rate psychotropic drugs at Katutura hospital over a 6-year period, 2011-2017. Data on consumption of psychotropic medicines were obtained from the Facility Electronic Stock (FESC) records that the main pharmacy of the hospital. The main outcome measurements were consumption of medications by Daily Defined Dose (DDD) and cost by type of psychotropic. Data were entered into SPSS v22 for descriptive analysis.

**Results:** Of the 580 351.4 DDD of psychotropic drugs consumed during 2011-2017, 30.2% were antipsychotics, 9.2% antidepressants and 6.8% anxiolytics. The cost of the psychotropic over the 6 years was N$ 1,613,287.52 which were due to antipsychotics (48.8%) and anxiolytics (47.9%) use compared to antidepressants (6.8%). Imipramine (62%) and fluoxetine (55.8%) were the most consumed antidepressants by DDD and cost respectively. Chlorpromazine (74.6%) and haloperidol (68.4%) were the most consumed antipsychotics by DDD and cost respectively. Diazepam (79.4%) and hydroxyzine (94.2%) were most consumed sedative-hypnotics by DDD and the cost respectively.

**Conclusion:** The consumption in DDD of psychotropics was highest with conventional medicines, and the financial burden is due to use of new agents which are expensive. There is a need to evaluate the cost-effectiveness of conventional versus new psychotropics to optimize treatment outcomes at minimal costs.

## P3

### Changes in the incidence and prevalence of HIV/AIDS in the South African medical schemes' environment: 2005 to 2015

**Wafawanaka, F.,[1]* Lubbe, M.S.,[1] Kotze, I.[1] & Cockeran, M.[2]**

**floidywafawanaka@gmail.com; [1]Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, Potchefstroom, South Africa; [2]Statistics, School of Computer, Statistical and Mathematical Sciences, North-West University, Potchefstroom, South Africa.*

**Background:** The private medical schemes environment in South Africa is profoundly influenced by the human immune virus/acquired immune deficiency syndrome (HIV/AIDS) pandemic.

**Objective:** To determine changes in the incidence and prevalence rate of HIV/AIDS in the private medical schemes environment from 2005 to 2015 in South Africa.

**Method:** Retrospective medicine claims data from an open cohort of HIV/AIDS patients were obtained from a database of a Pharmaceutical Benefit Management (PBM) company from 1 January 2005-31 December 2015. The cohort included all patients with a diagnosis-code for HIV/AIDS (ICD-10 codes B20-B24) and who claimed antiretroviral medication. Both HIV/AIDS incidence and prevalence rates were measured per 1 000 medical schemes beneficiaries for each year. Data were stratified by gender, age group and province.

**Results:** The proportion of HIV/AIDS patients increased from 0.63% (2005) to 2.10% (2015). The prevalence rate of HIV/AIDS patients per 1 000 medical scheme beneficiaries increased from 6.3 (2005) to 20.5 (2015) per 1 000 medical scheme beneficiaries. The incidence rate of HIV/AIDS also increased 2.3 times from 2005 to 2015. In 2015, both the prevalence and incidence rates of HIV/AIDS were higher in males than in females. Gauteng had the highest HIV/AIDS prevalence rate (422.4 per 1 000 medical scheme beneficiaries), followed by the Western Cape (149.4), and KwaZulu-Natal (118.4) in 2015.

**Conclusions and recommendations:** There is an increased trend in the treatment of HIV/AIDS patients under the prescribed minimum benefits of medical schemes. This may be due to improved data management systems of medical schemes and administrators, and increased beneficiary awareness of rights, as well as changes in care-seeking behaviour.

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## P4

### Trends in the psychopharmacological prescribing patterns among bipolar disorder patients in the South African private health sector

**Akinrogunde, A.,[1] Burger, J.R.,[1] Cockeran, M.[2] & Lubbe, M.S.[1]***

**martie.lubbe@nwu.ac.za; [1]Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, Potchefstroom, South Africa; [2]Statistics, School of Computer, Statistical and Mathematical Sciences, North-West University, Potchefstroom, South Africa.*

**Background:** Psychopharmacological treatment of bipolar disorder (BD) seems to be complicated due to its fluctuating nature. Because most BD patients cannot tolerate the untoward effects of therapy, treatment guidelines should be adaptable, with consideration of the individual patient characteristics, sociocultural context of the patient and availability of treatment resources.

**Objective:** To investigate, over a six-year period, the possible changes in the psychopharmacological prescribing patterns among privately-insured South African patients diagnosed with BD.

**Method:** The study followed a longitudinal open cohort design to analyse retrospective medicine claims data of patients identified with the diagnosis code ICD-10, F31, for BD, on reimbursed medicine claims, from 1 Jan. 2010 to 31 Dec. 2015. Measurements included: i) different types of active pharmaceutical ingredients; ii) monotherapy vs. combination therapy; iii) number of medicine items per prescription; and iii) number of prescriptions per patient.

**Results:** The study population consisted of 3627 patients in the index year (2010) and increased to 4332 in 2015. The average number of medicine items per prescription stayed constant at 2 medicine items per prescription per patient throughout the study years. The number of prescriptions per patient increased observably from 7.08(5.63) [6.94-7.23] in 2010 to 7.50(5.59) [7.37-7.63] ($p$ = .0001, Cohen's $d$-value = .4) in 2015. The proportion of patients on combination therapy increased from 44.6% (2010) to 48.7% (2015). The most prevalent combination therapy in 2010 and 2015 was lamotrigine in combination with quetiapine or with a selective serotonin re-uptake inhibitor, or with bupropion or with valproate. The proportion of patients receiving anticonvulsants (35.4% *vs.* 34.7%), antidepressants (31.9% *vs.* 36.1%) and atypical antipsychotics (16.2% *vs.* 23.2%) as monotherapy increased significantly ($p$ = .0001).

**Conclusion and recommendation:** Major changes took place in the psychopharmacological prescribing during the study period. The increase in combination therapy and the constant high use of antidepressants as monotherapy should be further investigated.

**Source of funding:** The National Research Foundation (Grant number 85315).

## P5

### Trends in the incidence and prevalence of bipolar disorder and its coexisting chronic disease list conditions in the private health sector of South Africa, 2010-2015

**Akinrogunde, A.,[1] Burger, J.R.,[1] Cockeran, M.[2] & Lubbe, M.S.[1]**

**martie.lubbe@nwu.ac.za; [1]Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, Potchefstroom, North West, South Africa; [2]Statistics, School of Computer, Statistical and Mathematical Sciences, North-West University, Potchefstroom, North West, South Africa.*

**Background:** Individuals with bipolar disorder (BD) possess a substantial burden of coexisting non-communicable diseases, suggesting the need for earlier detection and treatment of these conditions. The prevalence of coexisting chronic conditions or non-communicable diseases in BD patients has not been reliably delineated in the private health sector of South Africa.

**Objective:** To determine trends in the incidence and prevalence rate of BD and its coexisting chronic disease list (CDL) conditions over a six-year period.

**Method:** We conducted a retrospective, cohort study, analysing medicine claims data from 2010 to 2015. The incidence and prevalence rate of BD (ICD-10 code F31), and the number and type of CDL conditions coexisting in individual BD patients were determined. The incidence rate per 1 000 beneficiaries was determined using 2010 as index year.

**Results:** Prevalence rate of BD increased from 5.9 (2010) to 7.9 (2015) per 1 000 beneficiaries, whereas the incidence rate per 1 000 beneficiaries was 2.3 in 2011 *vs.* 2.1 in 2015. The proportion of BD patients with one or more coexisting CDL condition increased by 20.5% over the six-year period. BD patients newly registered with hypertension ($p$ < 0.0001), hypothyroidism ($p$ < 0.0001), hyperlipidaemia ($p$ < 0.0001), type 2 diabetes mellitus ($p$< 0.0001), epilepsy ($p$ = 0.0065) and rheumatoid arthritis ($p$ = 0.0253) increased.

**Conclusion:** Incidence of BD remained nearly the same, however, the prevalence, as well as the proportion of BD patients newly registered with hypertension, hypothyroidism, hyperlipidaemia, type 2 diabetes mellitus, epilepsy and rheumatoid arthritis increased significantly.

## P6

### Diabetes self-care among patients receiving care at a public referral hospital in Windhoek, Namibia

**Niyonzima, T.M.F.,[1] Rennie, W.T.,[1] Kibuule, D.[1] & Niaz, Q.[1]***

**qniaz@unam.na; [1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek, Namibia.*

**Background:** Diabetes is a public health burden in Africa, leading to 100, 000 deaths annually. The prevalence of diabetes in Namibia increased by 33.9% since 1990. Limited studies have explored the diabetic self-care practices in Namibia.

**Objective:** The level of knowledge, attitude and diabetes self-care practices among diabetic patients were determined.

**Methods:** A descriptive cross sectional survey was conducted at Katutura State Hospital using patient exit interviews to assess the level of knowledge, attitude and diabetic self-care practices. Knowledge was graded as adequate if ≥60% items on knowledge domain of data collection tool were answered correctly. Descriptive quantitative analysis was done in SPSS 22.0

**Results:** Of the 121 respondents, 56.2% were female. Only 86.7% were on diabetes medication the rest were newly

diagnosed, on lifestyle changes. The acceptance levels (≥60%) of knowledge, attitude and practice were 10.7%, (13/121), 7.4% (9/121) and 59.5% (72/105) respectively. The level of knowledge on self-care was significantly associated (p≤0.05) with patient's demographics (age, employment status), residence, tribe and marital status, as well as clinical (i.e. the year of diagnosis, number of comorbidities and complications.

**Conclusion:** The level of practice and knowledge on diabetic self-care among the patients at Katutura State Hospital is sub-optimal and driven by the socio-demographic characteristics. There is a need for interventions to improve self-care that are local context.

## P7

### Self-medication practices among health sciences students at the University of Namibia

**Van Wyk, M.L.,[1] Kibuule, D.,[1] Hango E.[1] & Niaz, Q.[1]***

**qniaz@unam.na; [1]School of Pharmacy, University of Namibia, Namibia.*

**Background:** Self-medication is a common practice worldwide as well as in Namibia. It remains a form of self-care, but can be harmful when used irrationally. Inappropriate Self-medication use is associated with serious adverse events and antimicrobial resistance.

**Objective:** The current study aimed to assess the Knowledge, Attitude and Practice of self-medication among medicine and pharmacy students at the University of Namibia.

**Methods:** A quantitative descriptive cross-sectional study was conducted among all years of study for pharmacy and medicine to assess their knowledge, attitude and practice of self-medication. One hundred and twenty-six students were randomly selected and data was collected using a structured self-administered questionnaire.

**Results:** The study's findings revealed self-medication prevalence of 76.1%. More females self-medicated 67.5%. More than half of the students consumed alcohol 55.6%. The self-medication practices were significantly associated with residence of student ($p$=0.003), consumption of psychoactive substances ($p$=0.006), emergency medicines ($p$=0.001) and year of study ($p$=0.040). More pharmacy students (53.6%) were knowledgeable of self-medication. Students had a positive attitude towards self-medication and favoured self-medication saying it was acceptable. The main ailments for seeking self-medication include flu, cough and cold (46%), headache (19%) and fever (6.3%). 23% of students used different forms of self-medication to combat stress like alcohol, cannabis, exercise and homeopathic medicines.

**Conclusion:** The study showed that self-medication is widely practiced among medicine and pharmacy students, therefore a need to make these students aware about the pros and cons of self-medication is of utmost importance to ensure safe and rational use of drugs.

## P8

### Evaluation of compliance to prescribing guidelines in public health care in Namibia: A qualitative study

**Niaz, Q.,[1]* Godman, B.,[2,3] Campbell, S.[3] & Kibuule, D.[1]**

**qniaz@unam.na; [1]School of Pharmacy, Faculty of Health Sciences, University of Namibia; [2]Department of Laboratory Medicine, Division of Clinical Pharmacology, Karolinska Institutet, Karolinska University Hospital Huddinge, Stockholm, Sweden; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK.*

**Background:** The World Health Organization estimates that over 50% of medicines are prescribed inappropriately and the main driver of antimicrobial resistance globally. Few studies have qualitatively evaluated prescribing patterns in Namibia as the country strives to continue to provide comprehensive healthcare.

**Objective:** To evaluate compliance to prescribing guidelines in public health care in Namibia using qualitative methodology.

**Methods:** A qualitative medicines use evaluation was conducted among prescribers at three levels of health care (i.e.: a hospital, health centre and clinic) using in-depth interviews following informed consent. The main outcomes were qualitative determinants for compliance to standard treatment guidelines (STGs). Qualitative data were analysed thematically.

**Results:** Of the 37 prescribers interviewed, the main themes underlying compliance to STGs were programmatic. The majority of the prescribers reported the simple indexing layout 77% (17/22), access to STGs 35.3% (6/17) and tailored information 29.4% (5/17) to health care cadre as the main factors driving use of the STG. The factors driving the use of the STG were categorized into six main thematic areas: (a) comprehensiveness of guidelines to cover common disease conditions at all levels of health care; (b) simple and well-structured STGs for or indexing disease conditions; (c) access availability of STGs by health workers; (d) availability of recommended STG medicines at the facility; (e) relevant information to health care cadre or health facility level; and (f) portability of the STG and objectivity of the information in the STG.

**Conclusion:** Given the sub-optimal levels of prescribing, a prescribing performance management system should be introduced in Namibia to improve prescribing. This will be monitored.

## P9

### Prevalence of potential drug-drug interactions in South African type 2 diabetes patients: Analysis of South African medicine claims data

**Mugaba, T.M.,[1] Burger, J.R.[1]* & Lubbe, M.S.[1]**

**johanita.burger@nwu.ac.za; [1]Medicine Usage in South Africa, Faculty of Health Sciences, North-West University, Potchefstroom, South Africa.*

**Background:** Patients with type 2 diabetes mellitus (T2DM) often have a high number of comorbidities, necessitating polytherapy to optimise patient clinical outcomes. Drug-drug interactions (DDIs), are consequently very common in therapy.

**Objective:** To determine the prevalence of potentially moderate to severe DDIs in South African type 2 diabetes patients, using medicine claims data.

**Method:** A cross-sectional design was followed. Medicine claims data for 3 390 T2DM patients (ICD-10 code E11), obtained from a South African PBM, were used to identify the last prescription (regarded as all medications dispensed within the last calendar month combined) per patient for 2016. Medicinal active pharmaceutical ingredients (APIs) were extracted using National Pharmaceutical Product Index (NAPPI) codes. DDIs between APIs were identified based on the classification system by Tatro (2015).

**Results:** A total of 45 179 API's were claimed at a median of 5 (1-10) medicinal API's per patient prescription. Biguanides (metformin) was the most commonly claimed oral API, at 64.1% followed by sulphonylureas (30.8%), insulins (2.6%) and meglitinides (0.1%). Patients mainly had

coexisting cardiovascular conditions. A total of 223 DDIs were identified, at a rate of 65.8 per 1 000 prescriptions. From these, 32.8 per 1 000 were between statins and calcium channel blockers, 12.7 per 1 000 between statins and macrolides, and 12.4 per 1 000 between statins and fibrates. APIs primarily involved in DDIs were simvastatin/verapamil (7.67 per 1000), atorvastatin/erythromycin and atorvastatin/verapamil both at 5.01 per 1000, atorvastatin or rosuvastatin/bezafibrate and atorvastatin/diltiazem at 3.84 per 1000 and bisopolol/digoxin at 3.24 per 1000. Insulin and pioglitazone had a potential DDIs prevalence of 2.6 per 1 000 persons, and metformin/ranitidine, 1.47 per 1000.

**Conclusions and recommendations:** Several potentially serious drug-interactions were identified, mainly including statins. Future research should focus on the clinical outcomes of these interactions in long-term users.

## P10

### Evaluation of core drug use indicators and prescription completeness in a private hospital in Mbabane, Kingdom of Eswatini

**Amu, A.A.,[1]* Girinshuti, G.[1] & Soyinka J.O.[2]**

**folarinamu@gmail.com; 1Eswatini Medical Christian University, Eswatini; [2]Faculty of Pharmacy, Obafemi Awolowo University, Ile-Ife, Nigeria.*

**Background:** Irrational use of drugs is a widespread problem at all levels of healthcare systems, resulting in increased mortality, morbidity, adverse drug reactions, poor patient outcomes and wastage of scarce resources.

**Objective:** To evaluate prescription completeness and rational drug use based on WHO/INRUD methodology at a private clinic in Mbabane.

**Methodology:** The study followed a descriptive, cross-sectional study design. Prescribing indicators and completeness of prescription filled were evaluated retrospectively, using WHO/INRUD methodology on 600 prescriptions randomly selected from 1st Jan- 31st December 2017. Patient care indicators were assessed prospectively by interviewing 90 patients at the facility. Health facilities were assessed through observation. The study was approved by the Eswatini National Health Research & ethics committee (MH/599C/IRB/000 9688/NHRRB 809/18).

**Results:** Average number of drugs per patient encounter was 3.38, about 52% of the drugs were prescribed by generic names. Percentage of encounters with an antibiotic/injection were 44.33%/24.33, respectively. Average consulting/dispensing time were observed to be 9 minutes/28 seconds, respectively. Percentage medicines adequately labelled/Percentage of patients who knew the correct drug dosage schedule they received was 63.33%/100% respectively and 100% of the prescribed drugs were dispensed. Percentage of key drugs and treatment guidelines available were 100% and 100% respectively.

**Conclusion:** Prescribing and dispensing practices in the private facility are fairly good as compared with WHO/INRUD optimal standards. However, there is a need to do more on some specific parameters, including average number of medicines per prescription, generic prescribing, prescribing of antibiotics and injectables, and patient medicines adequately labelled.

## P11

### Assessment of completeness of prescriptions and rational drug use indicators at Hlathikhulu Government Hospital, Kingdom of Eswatini

**Amu, A.A.,[1]* Sithole, B.[1] & Soyinka J.O.[2]**

**folarinamu@gmail.com; [1]Eswatini Medical Christian University, Eswatini; [2]Faculty of Pharmacy, Obafemi Awolowo University, Ile-Ife, Nigeria.*

**Background:** Despite complexity of drug use, a number of indicators have been developed, standardized and evaluated by the WHO/INRUD.

**Objective:** To evaluate rational drug use based on WHO/INRUD methodology at Hlathikhulu Government Hospital.

**Methods:** The study followed a quantitative, descriptive cross-sectional design. Prescribing indicators and completeness of prescription filled were evaluated retrospectively, using WHO/INRUD methodology on 600 prescriptions randomly selected from 1st Jan- 31st December 2017. Patient care indicators were assessed prospectively by interviewing 30 patients at the facility. Health facilities were assessed through observation. The study was approved by the Eswatini National Health Research & ethics committee (MH/599C/IRB/000 9688/NHRRB 841/18).

**Results:** The average number of medicines per prescription was 3.32. Prescriptions containing antibiotics/injectables were 60.7% and 7.8%, respectively. The proportion of the medicines prescribed by generic name/included in the essential medicines' list were 91.5%/98.8% respectively. Only 26.6% of the prescriptions were adequately labelled. Lesser time was devoted to consultation (3.03 minutes) and dispensing (2.66 minutes). Of the 30 patients interviewed, 83.3% knew the dosage regimen prescribed for them. Hospitals identification details were present on all prescriptions. Prescribers' details like name/signature were present in 100%, and 98%, respectively. The patient's names, age and gender were on 100%, 96.5% and 97.2% of prescriptions, respectively. Patients' weight was mentioned on 0.3%, allergy status was mentioned in 54.5% and address on none. Details of medication such as strength of medication/frequency of administration were included in 91.5% and 94.2% of prescriptions, respectively. Dosage form was indicated on 91.3% of the prescriptions.

**Conclusion:** Prescribing and dispensing practices in the Government facility are fairly good as compared with WHO/INRUD optimal standards. However, there is a need to do more on some specific parameters, including prescribing of antibiotics, the average number of medicines per prescription, and patient dosage form knowledge.

## P12

### Compliance to Standard Treatment Guidelines in the management of patients with drug-induced liver disease and nephrotoxicity at a regional hospital in the Ugu district, KwaZulu-Natal

**Ramasir, S.,[1] Chetty, S.1 & Oosthuizen, F.[1]***

**oosthuizenf@ukzn.ac.za; [1]University of KwaZulu-Natal, South Africa.*

**Background:** The Ugu district has the second highest incidence of tuberculosis (TB) in KwaZulu-Natal and the ninth highest in South Africa. KwaZulu-Natal has one of the highest rates of TB and HIV co-infection in South Africa. The presence of HIV complicates the management of TB especially with respect to overlapping toxicities and subsequent occurrence of adverse drug reactions (ADRs) like drug-induced liver toxicity and nephrotoxicity.

**Objectives:** The aim was to determine the level of compliance to treatment guidelines in the management of patients diagnosed with the drug-induced liver injury or nephrotoxicity.

**Methods:** A retrospective analysis of patient files were conducted at a regional hospital in the Ugu district (01 January 2016 to 31 July 2018). A total of 325 patient files met the inclusion criteria. Patient management was compared to guidelines prescribed by the Essential Medicines List (EML), Standard Treatment Guideline (STG), National Tuberculosis Management guidelines and National Consolidated Guidelines for the Management of HIV in Children, Adolescents and Adults.

**Results:** Management of drug-induced liver disease and nephrotoxicity, were 34% and 23% compliant to guidelines. Main areas contributing to non-compliance in DILI included failure to stop anti-tuberculosis medication (19%, n = 4), re-challenge with Rifafour® (24%, n = 5), and incorrect medication given or not given as prescribed (33%, n=7). Reasons for non-compliance in nephrotoxicity included failure to adjust anti-TB doses according to renal damage (82%, n =14), failure to adjust lamivudine doses (11%, n= 2) and concomitant nephrotoxic medication prescribed (5%, n = 1).

**Conclusion and recommendation:** Poor compliance to guidelines in terms of management of patients diagnosed with drug-induced liver disease and nephrotoxicity was found. The complex management and unclear guidelines makes adherence to the guidelines difficult and resulted in medical officers using different approaches to manage the same condition.

## P13

### Emergency hormonal contraceptive services at community pharmacies in Windhoek: A KAP study

**Maritz M.J.,[1] Mubita, M.,[1] Kibuule, D.[1] & Hango, E.[1]***

**ehango@unam.na; [1]School of Pharmacy, University of Namibia, Namibia*

**Background:** Despite universal access to contraceptives in Namibia, rates of unwanted pregnancies, illegal abortions and baby dumping remain high. Few studies explore the knowledge, attitudes and practices (KAP) of pharmacy cadres on enhancing the utilization of emergency hormonal contraceptives (EHC).

**Aim**: To explore the knowledge, attitude and dispensing practices of emergency hormonal contraceptives among community pharmacy staff in Windhoek.

**Methods**: A community-based descriptive cross-sectional study interviewed community-pharmacy staff for knowledge, attitudes and dispensing practices of EHC. The level of knowledge, attitude and practices were assessed using standardized items on a 5-point Likert scale, and an appropriate score set at >60%. Data were analyzed using SPSS 24. Bivariate analysis was used to determine association between knowledge, attitude and dispensing practices and the pharmacy staff sociodemographic characteristics.

**Results**: Of the 60 respondents, 96.7% were aware of EHC and 88% were knowledgeable on the use of EHC with a mean knowledge score of 77.8% ± 24.3 (acceptable knowledge score ≥ 60%). Attitude score of ≥ 60% was classified as positive attitude. Half of participants (n=30) had a positive attitude toward access to EHC (<60% on 10-point score scale). The dispensing practices were rated good for 63.3% of the respondents, mean score 67.2% ± 25.5. Nearly all the pharmacies (93.3%) stocked at least one brand of EHC pills. The knowledge of pharmacy staff increased with age and years of practice. There was statistically significant association between the participants' level of education and their attitude towards EHC's ($p$=0.047). The appropriateness of dispensing of EHC by pharmacy staff was associated with knowledge ($p$=0.035) and attitude ($p$= 0.019).

**Conclusion and recommendations:** Despite good knowledge and dispensing practices among pharmacy staff, the attitude remain negative. Therefore, there is a need for interventions aimed at educating pharmacy staff on the benefits of EHC.

## P14

### Health literacy and utility of medicines information leaflets among hypertensive patients in ambulatory care in developing countries

**Kudzinetsa, S.M.,[1] Mubita, M.,[1] Kalemeera, F.,[1] Godman, B.,[2,3] Hango, E.[1] & Kibuule, D.[1]***

**dkibuule@unam.na; [1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek; [2]Department of Laboratory Medicine, Division of Clinical Pharmacology, Karolinska Institutet, Karolinska University Hospital Huddinge, Stockholm, Sweden; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK.*

**Background:** Hypertension is a leading cause of morbidity world-wide, affecting 45% of Namibia's population, the highest in sub-Saharan Africa. Universal access to medicines information improves adherence to antihypertensive medication and outcomes.

**Objective:** To determine the level of access to and utility of medicines information leaflets (MIL) in hypertensive care at a referral hospital.

**Methods:** A hospital-based survey was conducted among hypertensive patients receiving care at Intermediated Ho

spital Katutura from the 8th-29thJune 2018. Patients were interviewed to assess their health literacy as well as access to and utility of MIL using standardized assessment tools (i.e. SIL, REALM and HLSI-SF). Quantitative data were analysed using SPSS v23 and qualitative thematic analysis to identify factors associated with the utility and access to the MIL. Ethical approval was obtained from the Ministry of Health and Social Services to conduct the study.

**Results:** Of the 139 respondents, 63% were female and a mean age of 32±4.3 years. The level of access to and utility of MIL were 32.4% and 34.6% respectively. The mean health literacy score was 58.5±18.5 (range: 16.7-100) and 48.8% of the patients did not know (<60%) basic information about their antihypertensive medication. The main factors associated with poor access and utility of the MIL were low health literacy level among the patients as well as limited availability, awareness of standard procedures on the use of MIL.

**Conclusion:** There is limited access and utility of MIL in antihypertensive care. Health literacy programmes and interventions to enhance access to and utility to medicines information are needed to improve medication adherence and outcomes.

## P15

### Online survey on human papillomavirus vaccination coverage in age-eligible girls attending private schools in South Africa

**Milondzo, T.,[1]* Meyer, J.C.,[2,3] Dochez, C.[4] & Burnett, R.J.[3,5]**

**tmlondzo@gmail.com; [1]Department of Public Health, University of Limpopo, Polokwane, South Africa; [2]Division of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, Pretoria, South Africa; [3]South African Vaccination and Immunisation Centre, Sefako Makgatho Health Sciences University, Pretoria, South Africa; [4]Network for Education and Support in Immunisation, Department of Epidemiology and Social Medicine, University of Antwerp, Antwerp, Belgium; [5]Department of Virology, School of Medicine, Sefako Makgatho Health Sciences University, Pretoria, South Africa.*

**Background:** The South African (SA) government provides free vaccination against cervical cancer for public sector school girls aged ≥9 years in Grade 4. While public sector first dose human papillomavirus (HPV) vaccination coverage is >80%, no data are available on age-eligible girls attending private sector schools.

**Objective:** To investigate HPV vaccination coverage of girls aged ≥9 years in grades 4-7 attending private schools in SA.

**Methods:** A sample size of 383 was aimed for, based on 90722 private school girls in grades 4-7 in 2018 and 50% vaccination coverage; calculated at 90% power and 95% confidence using Epi InfoTM v7.1.5.2 (Centers for Disease Control and Prevention, USA). A link to an online survey (Survey Monkey®, USA) was circulated to caregivers via an email sent to school principals of all private schools in four provinces enrolling girls in grades 4-7. Following a poor post-reminder response, a paid Facebook survey-linked advert targeting SA Facebook users aged ≥25 years nationally was run for 4 days, and placed on the SA Vaccination and Immunisation Centre's Facebook page for 20 days. Automated data analysis conducted by Survey Monkey® was validated by importing the Excel spreadsheet generated by Survey Monkey® into Epi InfoTM for descriptive statistical analysis. Turfloop Research Ethics Committee granted ethical clearance, and respondents consented to participation.

**Results:** In total 615 responses (448 post-Facebook advert) were received, with 413 providing data on receipt of HPV vaccination. Only 19.4% of the girls were vaccinated, of whom 38.8%, 42.5% and 18.8% respectively received 1, 2 and 3 doses.

**Conclusions and recommendations:** This survey suffers from selection bias, since the majority of respondents were Facebook users. Nevertheless, the results are concerning, and suggest that optimal herd immunity against cervical cancer may only be achieved through a school-based HPV vaccination programme that does not exclude private sector schools

## P16

### Seasonal influenza vaccination uptake amongst healthcare workers in selected Primary Health Care facilities in the Bojanala District in North West Province, South Africa

**Chukwu, B.O.,[1] Sibanda, M.,[1,2]* Meyer, J.C.,[1,2] Schellack, N.,[1] Burnett, R.J.[2,3]**

**mncengeli.sibanda@smu.ac.za; [1]School of Pharmacy, Sefako Makgatho Health Sciences University; [2]South African Vaccination and Immunisation Centre, Sefako Makgatho Health Sciences University, Pretoria, South Africa; [3]Department of Virology, Sefako Makgatho Health Sciences University, Pretoria, South Africa.*

**Background:** The World Health Organization and the South African National Department of Health recommend that healthcare workers (HCWs) receive the annual influenza vaccination in order to prevent occupationally acquired influenza, minimise absenteeism, and prevent the transmission of influenza to other HCWs, vulnerable patients under their care and the general public. Data on influenza vaccine coverage amongst HCWs from the North West Province are lacking.

**Objectives:** To determine the uptake of the influenza vaccine, and the knowledge of, and attitudes towards, seasonal influenza vaccination amongst HCWs in 30 primary healthcare facilities across the Bojanala District, North-West Province.

**Methods:** Thirty of the 118 facilities in the district were randomly selected. Data were collected over 8 weeks using a structured, self-administered questionnaire distributed to 282 HCWs present on the day of data collection. Data were captured using Microsoft Excel™ and imported to Epi Info™ 7 (Centers for Disease Control and Prevention, USA) for descriptive statistical analysis. All participants provided written informed consent.

**Results:** The study included 272 HCWs (response rate = 96.5%). Despite 62.1% and 57.0% of HCWs having positive attitudes and good knowledge respectively, only 28.7% had received the vaccine before the 2018 influenza season. Reasons for non-vaccination reported by HCWs included the vaccine not being offered to HCWs at any point (33.9%), lack of stock of the vaccine (13.2%) as well as HCW not having faith in the influenza vaccine (15.9%).

**Conclusions and recommendations:** The fact that most HCWs had generally good knowledge and positive attitude towards the seasonal influenza vaccine may point to an adequate theoretical understanding of the importance of influenza vaccination. This must still be translated to acceptance, and consequently high uptake of the vaccines by HCWs. In addition, interventions that will increase access to the influenza vaccine are needed for all HCWs in order to safeguard public health.

## P17

### Investigation of vaccination uptake and use in children under the age of 13 years in selected primary health care facilities in the Bojanala District, North West Province, South Africa

**Motha, T.,[1] Sibanda, M.,[1,2]* Meyer, J.C.,[1,2] Schellack, N.[1] & Burnett, R.J.[2,3]**

**mncengeli.sibanda@smu.ac.za; [1]School of Pharmacy, Sefako Makgatho Health Sciences University; [2]South African Vaccination and Immunisation Centre, Sefako Makgatho Health Sciences University, Pretoria, South Africa; [3]Department of Virology, Sefako Makgatho Health Sciences University, Pretoria, South Africa.*

**Background:** The Expanded Programme on Immunisation (EPI) is an important programme that plays a significant role in reducing child mortality in South Africa and the world. The Bojanala district of the North West province in South Africa is one of the poor performing districts during the 2016/17 period with a coverage of 66.7% for fully immunised children under the age of 1 year (FIC) which is over 25 percent points lower than the national target of 92.0%.

**Objective:** To investigate the uptake of scheduled EPI vaccines and seasonal influenza vaccine in children under the age of 13 years in selected primary health care (PHC) facilities across the Bojanala District in the North West

Province as well as to identify establish the reasons for children being either fully-, partially- or unvaccinated.

Methods: A descriptive study was carried out using an interviewer-administered structured questionnaire with caregivers of children up to the age of 13 years over an eight-week period. Thirty out of the 118 PHC facilities were randomly selected across the district. Consenting caregivers of children under the age of 13 with available Road to Health Cards (RtHCs) at the health facilities were randomly surveyed. Data were captured using Microsoft Excel™ and imported to Epi InfoTM 7 (Centers for Disease Control and Prevention, USA) for descriptive statistical analysis.

**Results:** A total of 421 caregivers were surveyed for the study. Vaccination coverage for individual vaccines ranged from 98.9% for the oral poliovirus vaccine birth dose, to 66.5% for pneumococcal conjugate vaccine third dose and the FIC was 68.4%. A total of 134 children were partially vaccinated and the main reasons for partial vaccination was vaccines unavailability (49.6%), time of immunisation inconvenient (16.9%) and mother too busy (14%). The influenza vaccine coverage was at a low 9.7%.

**Conclusion:** Because of the low vaccination coverage in Bojanala district, interventions that will increase the availability and access to these essential vaccines are needed in order to safeguard public health.

## P18

### Anticoagulation in sub-Saharan Africa: an audit at the War-PATH Ugandan and South African clinical study sites

**Mouton, J.P.,[2] Semakula, J.R.,[3]Allie, S., [2]Semakula, L.,[3]Jorgensen, A., [4]Hutchinson, C., [4]French, N., [4]Sekaggya-Wiltshire, C., [3]Blockman, M., [2]Lamorde, M., [3]Toh, C., [4]Pirmohamed, M., [4]Waitt, C.[3,4] & Cohen, K.[1]***

**karen.cohen@uct.ac.za; [1]Division of Clinical Pharmacology, Department of Medicine, University of Cape Town, South Africa; [2]Division of Clinical Pharmacology, Department of Medicine, University of Cape Town, South Africa; [3]Infectious Diseases Institute, Makerere University College of Health Sciences, Uganda; [4]Institute of Translational Medicine, University of Liverpool, United Kingdom.*

**Background:** Providing quality anticoagulation services in resource-limited settings is challenging. In sub-Saharan Africa this may be exacerbated by high infectious and noncommunicable disease burden, requiring the use of medicines that interact with warfarin.

**Objectives:** To describe current service provision, patient characteristics, and anticoagulation control, at anticoagulation clinics in South Africa and Uganda.

**Methods:** Between January and July 2018, we interviewed key clinic staff members about clinics' service provision using a structured questionnaire. We extracted demographic and clinical data from a convenience sample of patient records. We calculated time in therapeutic range (TTR) over a 3-month period using the Rosendaal interpolation method.

**Results:** We included 3 clinics in Cape Town (primary, secondary and tertiary) and 2 in Kampala (both tertiary). Care was rendered by nurses, medical officers, and specialists, with 7 to 50 patients seen per clinic day. All had on-site pharmacies. INR laboratory testing was done off-site at two facilities. Patients paid for INRs in Uganda. Three clinics currently use warfarin dose-adjustment protocols; none of these were validated. We reviewed 229 patient records. Most common indications for warfarin were venous thrombo-embolism (49%), atrial fibrillation (32%) and valvular heart disease (13%). Overall 12% were HIV positive. Cardiovascular comorbidity predominated. Diuretics, calcium channel blockers, beta blockers, HMG-CoA-reductase inhibitors, and ACE-inhibitors were the most common concomitant medicines. There were 13 patients on antiretrovirals that potentially interact with warfarin, and two on rifampicin-based tuberculosis treatment. Over six months' patients had a median of 4 clinic visits (interquartile range (IQR) 3-5) in Uganda and 5 (IQR 3-6) in Cape Town. Median TTR was 41% (IQR 14%-69%).

**Conclusions:** INR control was suboptimal despite frequent follow-up. Validated warfarin dosing algorithms were not in use. These audit results will inform further research underway to develop and validate a warfarin-dosing algorithm for use in this setting.

## P19

### Opinions of healthcare workers on warfarin use at a leading referral hospital in Kenya: a Delphi study

**Gakera, L.,[1]* Oluka, M.,[1] Opanga, S.,[1] Birichi, A.,[2] Kurdi, A.[3,4] Godman, B.[3,5] & Bennie, M.[3]**

**linagakera@gmail.com; [1]School of Pharmacy, University of Nairobi, Kenya; [2]Kenyatta National Hospital, Nairobi, Kenya; [3]Strathclyde Institute of Pharmacy and Biomedical Science, University of Strathclyde, Glasgow, UK; [4]Department of Pharmacology, College of Pharmacy, Hawler Medical University, Erbil, Iraq; [5]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden.*

**Background:** Warfarin is an anticoagulant used in the treatment of deep vein thrombosis to reduce the risk of developing pulmonary embolism. However, it has a narrow therapeutic margin. It can cause fatal bleeding. Treatment should be monitored regularly using the International normalized ratio (INR) test.

**Objectives:** The study aimed to collate the opinions of healthcare workers on four categories: risk assessment for patients on warfarin, dosing, monitoring of therapy and reversal of over-coagulation. Study area: The study was carried out at Kenyatta National Hospital cardiothoracic surgery, haemato-oncology and medical clinics.

**Methods:** Participants were purposefully sampled and recruited from a list of KNH specialists (cardiologists, physicians and clinical pharmacists) offering their expertise in the respective KNH clinics for a minimum of two years. They gave informed consent. The Delphi process involved three rounds of completing questionnaires. Data analysis: Qualitative data was analysed using ATLAS.ti scientific software. Quantitative data was analyzed using Stata® version 2013. Median and mean were used to present information concerning demographics of participants. Percentages and median were used to present the judgements concerning the Delphi statements.

**Results:** CHA2DS2-VASC score was the preferred method of assessing a patient's stroke risk factor while the HAEMORR2HAGES score was preferred for assessing the patient's bleeding risk. The initial dosage of warfarin was recommended at 5 mg per oral once daily. Baseline INR, full haemogram and pregnancy tests were the mandatory tests before initiating warfarin. An INR of between 2-3 was found to be ideal for most disease conditions requiring warfarin anticoagulation. INR levels greater than 5 were found to pose a bleeding risk.

**Conclusion:** 70% consensus was reached for most statements. We were able to collate opinions on safe warfarin use using the Delphi method.

## P20

### Facility-related factors contributing towards uncontrolled blood pressure in patients taking antihypertensive medication in Mafeteng, Lesotho

**Mafisa, R.K.,[1]* Joubert, R.[1] & Rakumakoe, D.[1]**

**fifimafisa@gmail.com; [1]Medicine Usage in South Africa, Faculty of Health, North-West University, Potchefstroom, South Africa*

**Background:** Blood pressure control in Lesotho has shown to be a huge problem as recent studies revealed that about 75% of hypertensive patients have uncontrolled blood pressure and medication adherence was relatively low.

**Objectives:** To determine blood pressure control and facility-related factors contributing towards uncontrolled blood pressure in patients taking antihypertensive medication in Mafeteng, Lesotho.

**Methods:** An observational, cross-sectional study design was used for this study. All outpatients at Mafeteng Government Hospital meeting the inclusion criteria were invited to participate. The research received ethical approval from North-West University and Lesotho Ministry of Health. Structured questionnaires were used to capture data from face-to-face interviews and prescription booklets. The data was captured into a Microsoft Excel® spreadsheet and analysed by Statistical Package for Social Sciences® V25.0.

**Results:** About 61.4% (N = 176) of participants had uncontrolled blood pressure. Approximately 25.6% of the participants received educational information about hypertension from healthcare professionals when visiting the hospital, whilst 56.8% got information from other sources including radio and television. About 21.0% of participants always received all their medication and 63.6% of the participants said they buy medication at retail pharmacies if is out-of-stock at the facility. The Chi-square test showed a significant relationship between blood pressure control and frequency of out-of-stock medication at p-value < 0.05. Healthcare professionals followed the Lesotho standard treatment guidelines in 92.0% of cases.

**Conclusions and recommendations:** Blood pressure control is low in Mafeteng. It seems healthcare professionals do not regularly educate patients about hypertension to put emphasis on medication adherence. Access to medication at the facility also seems to be a problem due to stock shortages, therefore, the Ministry of Health should review and improve medication access in health facilities. More research on the healthcare professionals' perspectives can be done to find out what they believe causes uncontrolled blood pressure.

## P21

### Assessment of processes influencing the implementation of current HIV/AIDS treatment guidelines in Lesotho

**Ramathebane, M.V.,[1,2]* Lubbe, M.S.[1] & Minnie, K.[3]**

**mv.ramathebane@nul.ls; mvramathebane@gmail.com; [1]Medicine Usage in South Africa, Faculty of Health Sciences, North West University, Potchefstroom, South Africa; [2]Department of Pharmacy, Faculty of Health Science, National University of Lesotho, Lesotho; [3]Quality in Nursing and Midwifery, Faculty of Health Sciences, North West University, Potchefstroom, South Africa.*

**Background:** Implementation processes consist of planning, engaging, executing, evaluating and reflecting. However, it is unclear if specific implementation processes were followed when the 5th edition of the HIV/AIDS treatment guidelines (published in 2016) were implemented in Lesotho.

**Objectives:** This study aimed at evaluating the processes involved in the implementation of the current HIV/AIDS treatment guidelines in Lesotho.

**Methods:** A cross-sectional study was implemented in the public healthcare sector of Lesotho. The study population consisted of healthcare professionals from the HIV/AIDS programme (N=5), DHMT (N=30) and from the PHC level (N=421). Researcher-designed structured questionnaires were completed during face-to-face interviews with participants of the HIV/AIDS programme and DHMT, while it was self-administered at PHC level. Data collection took place between May and December 2018. Ethics approval: Health Research Ethics Committee of the North-West University (NWU-00136-17-S) and the National Review Board and Ethics Committee of Lesotho (ID86-2017).

**Results:** The response rate at HIV/AIDS programme was 100%, at DHMT (90%; n=27) and at PHC level (28%; n=117). All participants at the HIV/AIDS programme (100%), 33.3% (n=9) at DHMT and 6.6% (n=8) at PHC level indicated that there was an implementation plan available. The majority of PHC participants (78.5%; n=95) indicated that they have a copy of the treatment guidelines and 65.3% (n=79) of them reported daily use thereof. All participants at the HIV/AIDS programme, 85% (n=23) at DHMT and 56% (n=68) at PHC level reported that there was supervision. Feedback was given to all participants at the HIV/AIDS programme (100%; n=5), 92.6% (n=25) at DHMT and 54.7% (n=71) on PHC level.

**Conclusions:** Although all participants at the HIV/AIDS programme verify the availability of an implementation plan, the majority of participants at the DHMT and PHC facilities did not confirm it. Supervision and feedback (evaluating and reflection) seems to be not a problem.

## P22

### Quality of DOTS-adherence counselling among hospitalized tuberculosis patients in a high TB-burden setting

**Shikongo, T.,[1]* Kalemeera, F.[1] & Kibuule, D.[1]**

**taatishikongo@gmail.co; 1School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek Namibia.*

**Background:** Non-adherence to tuberculosis treatment is a risk factor for multidrug-resistant tuberculosis (MDR-TB). Over 480 000 cases of MDR-TB were notified worldwide in 2015, leading to 250 000 deaths.

**Objective:** To assess the quality of the Directly Observer Treatment (DOTS) adherence counselling from the perspective of hospitalized TB patients.

**Methods:** A hospital based cross-sectional survey was conducted among patients hospitalized with MDR or drug susceptible tuberculosis (DS-TB). The quality of adherence counselling assessed using an interviewer-administered questionnaire based on the WHO counselling guidelines. Data were analysed using descriptive statistics, i.e. proportions. Ethical approval was granted by the Ministry of Health and Social Services of Namibia.

**Results:** Of the 50 patients (i.e. 25 with MDR-TB and 25 with DS-TB), 60% were male, 76% aged less than 45 years and 92% rate the direct observation of TB treatment as good or excellent. Only 40% of the patients received DOT adherence counselling over the last three months and 16% had not received counselling since admissions. The patient-related factors affecting the quality of DOT adherence

counselling were forgetfulness (22%) and/or treatment cessation (12%) upon feeling better, limited access to DOT services in the community rather than at the health facility and individual versus group counselling as well as the use of languages and messages that they understand and knowledge of DOT adherence.

**Conclusions:** The quality of DOT adherence counselling among hospitalized TB patients was sub-optimal, especially as related to the patient knowledge after receiving DOTS and adherence counselling. There is a need to for a standard operating procedure at the hospital to enhance adherence counselling among TB patients to optimize treatment outcomes.

## P23

### Improvement in Antimicrobial Hang Time - The Bokamoso Experience

**Maika, K.,[1] Mosenya, M.,[1] Moetedi, L.,[1] Khani, B.,[1] Nshakazhogwe, B.,[1] Qampi, M.[1] & Malone, B.[1]***

**keamogetse.maika@bokamosohospital.org; [1]Lenmed Health Bokamoso Private Hospital, Gaborone, Botswana.*

**Background:** Hang time is defined as the time interval between prescription of an intravenous antimicrobial and administration of first dose. It is recommended that administration occurs within one hour of prescription to optimize patient outcome. The Drugs and Therapeutics Committee (DTC) of Bokamoso Private Hospital recognized that hang time in excess of 4 hours occurred in more than 50% of prescriptions, with resultant negative patient impact.

**Objectives:** To identify barriers to attainment of hang time of less than one hour, and to implement strategies to overcome such barriers to optimize antimicrobial hang time.

**Methods:** Baseline assessment of hang time was performed by a specific pharmacist from 1-19 June 2018 on 76 antimicrobial prescriptions written in ICU, NICU, PICU and Paediatric Unit. Hang time monitoring tool was used to record time of prescription by the doctor and time of administration. Hang time monitoring continued after baseline to current.

**Results and Discussion:** Hang time compliance of less than one hour was 18% (14 out of 76 prescriptions) at baseline. Barriers to compliance were identified and multiple interventions were implemented - adoption of a specific antimicrobial prescription chart to record times of prescription and administration, prioritization of dispensing antimicrobials at pharmacy, education of nurses and doctors in these units by pharmacists, unit managers, and DTC, with monthly feedback of hang time results and deficiencies given to unit managers, nurses, doctors and DTC. Despite initial improvement to 29% in August 2018, hang time compliance regressed to 20% in October 2018. Additional strategies were employed, including involvement of all the hospital pharmacists on a rotational basis, simplification of the hang time recording tool, availability of antimicrobials as ward stock, weekly feedback to unit managers, personal letters to doctors urging recording of prescription time, and monthly feedback to multiple relevant hospital committees. Hang time compliance of less than one hour increased steadily from 38% in November 2018 (43 out of 112 prescriptions) to 74% (64 out of 87 prescriptions) in March 2019.

**Conclusions:** Significant Improvement in antimicrobial hang time has been achieved through the adoption of strategies directed at overcoming barriers. Initial strategies were unsuccessful and later strategies were increasingly successful.

## P24

### Effectiveness of antibiotic stewardship programs in primary health care in developing countries: A case study of Namibia

**Brinkmann, I.[1]* & Kibuule, D.[1]**

**irenebrinkmann78@gmail.com; [1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek, Namibia*

**Background:** Despite the implementation of antimicrobial stewardship programs (AMS), antibiotic resistance is a rising a major global concern, and the burden is estimated to increase from 21% in 2013 to 56% by 2026.

**Objective:** To assess the effectiveness of antimicrobial stewardship program in primary health care in a developing country, Namibia.

**Methods:** A cross-sectional study assessed the effectiveness of implementation of antimicrobial stewardship at 10 primary health care facilities in Windhoek, Namibia. From 1 to 31 October 2018, a SWOT analysis of each health facility was conducted through facility audits and interview of infection control focal persons to assess compliance to good antimicrobial stewardship practices and policies. The effectiveness of antimicrobial stewardship programs was assessed as compliance to standard practices. Ethical approval was obtained from the Ministry of Health and Social Services of Namibia.

**Results:** Of the 10 health care facilities assessed, 80% were community-based clinics compared to hospital-based primary health care centers. In addition, 90% of the focal persons n=10) were aware of systems and policies on good antimicrobial stewardship practice. The level of compliance to good antimicrobial stewardship practices was 30.8% at hospital-based primary health centers compared to community-based clinics 19.3 %( range: 9.1% to 36.4%). The main challenge is lack of policies and systems specific to antimicrobial use as well as commitment of financial and human resources to implement antimicrobial stewardship programs in primary health care.

**Conclusion:** The implementation of antimicrobial stewardship programs in primary health care is suboptimal. This negatively affects the global efforts to control antimicrobial resistance. There is a need to institutionalize the national guidelines for antimicrobial stewardship programs in primary health care in order to improve antibiotic use indicators.

## P25

### Antibiotic prescribing pattern and quality in patients admitted to a tertiary hospital

**Adedape A.D.A.[1,2] & Akunne O.O.[1]***

**onyinyeakunne@yahoo.com; [1]Department of Pharmacology and Therapeutics, University of Ibadan, Nigeria; [2]Department of Clinical Pharmacology, University College Hospital, Ibadan, Nigeria.*

**Background:** Rational prescription and use of antibiotics are necessary to prevent or minimize bacterial resistance to these agents.

**Objectives:** This study evaluates the pattern and quality of antibiotic prescription in a tertiary hospital in Nigeria with the aim of improving antibiotic stewardship in our hospital.

**Methods:** A descriptive analysis of prescriptions prospectively collected from patients admitted from January 2012 to July 2013 was carried out. Patients aged ≥13 years with at least one antibiotic prescribed for treatment of confirmed or suspected bacterial infection excluding

tuberculosis were included in the study. Patients' medical record was reviewed for information pertaining to age, sex, and diagnosis. Information on the name and class, number, frequency, mode of delivery and dosage of antibiotics prescribed was also collected.

**Results:** Out of the 1269 patient prescriptions evaluated, 812 included prescription containing an antibiotic. The mean age of patients=49.0±19.0 (Range=13-100years), Male=450 (55.4%). At presentation, only < 25% of the patients were diagnosed with an infection of bacterial origin. The average number of antibiotic prescribed per patient was 2 (range= 1-6). Of the 1602 antibiotics prescribed, cephalosporins was the most prescribed medication (N=368), ceftriaxone made up 85.5% of the prescription. Fluoroquinolones were in 358 prescriptions, Ciprofloxacin made up 94.1% of the prescription. B-lactamase resistant antibiotics were in 264 prescriptions, amoxicillin/clavulanic acid made up 98.5% of the prescription. The imidazole derivative, metronidazole, was in 157 prescriptions. Macrolides and sulfamethoxazole/ trimethoprim were in 56 prescriptions respectively. Amoxicillin (1), doxycycline (1), clindamycin (3) and meropenem (2) were the least prescribed antibiotics. The mode of delivery for 70% of the antibiotics was by injection. The total daily dose of 34.5% of prescribed antibiotics was below the recommended daily defined doses recommended by the WHOCC.

**Conclusions and Recommendations:** Accurate diagnosis of bacterial infection and prescription of optimal doses of antibiotics should be encouraged to prevent bacterial resistance. The incidence and potential causes of hospital-acquired bacterial infection in our population should be assessed.

## P26

### Antimicrobial prescribing patterns and compliance with guideline in the Critical Care Unit at a National Referral Hospital in Kenya

**Obegi, E.B.,[1]* Oluka, M.N.,[1] Okalebo, F.A.,[1] Opanga, S.A.,[2] Aywak, D.A.,[3] Guantai, A.,[1] Achieng, L.,[4] Kurdi, A.,[5,6] Godman, B.[5,7] & Bennie, M.[5]**

**emahobegi@gmail.com; [1]Department of Pharmacology and Pharmacognosy, School of Pharmacy, University of Nairobi, Kenya; [2]Department of Pharmaceutics and Pharmacy Practice, School of Pharmacy, University of Nairobi, Kenya; [3]Kenyatta National Hospital, Kenya; [4]Department of Clinical Medicine and Therapeutics, University of Nairobi; [5]Strathclyde Institute of Pharmacy and Biomedical Science, University of Strathclyde, Glasgow, UK; [6]Department of Pharmacology, College of Pharmacy, Hawler Medical University, Erbil, Iraq; [7]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden.*

**Background:** Antimicrobial resistance is a serious and growing threat to public health today. The irrational prescribing of antimicrobial agents is a major contributor to the development of resistant. There exists limited data on the patterns of prescribing in the Critical Care Unit in Kenya.

**Objective:** To determine the patterns of antimicrobial prescribing and the level of compliance to antimicrobial prescribing guideline.

**Methods:** A retrospective longitudinal study was conducted at the selected Critical Care Units of KNH. The study involved extraction of data from medical records of patients above the age of 13 years admitted to the Critical Care Units in the past year (2017) and were prescribed an antimicrobial agent during the hospital stay. Data was abstracted using a pre-designed standardized data collection tool. Descriptive statistics was used to analyze socio-demographic data and antimicrobial prescribing.

**Results:** A total of 309 patients' records were included in this study. The prevalence of antimicrobial prescribing was 98.4%. The antimicrobial agents commonly prescribed were ceftriaxone (36.8%), metronidazole (16.9%) and meropenem (12.4%). Only 35% of the participants were on a single antimicrobial agent while 36% (n=111) were on two. Less than 2% (n=5) of the participants had more than five antimicrobial agents. The proportion of patients who had a review or stopping of antimicrobial therapy documented in their medical records was 11.7% (n=36). There was guideline compliance in 40.9% of the study population.

**Conclusion:** There was a high prevalence of antimicrobial prescribing in the Critical Care Unit with low compliance to the available guideline. The hospital antimicrobial stewardship committee will need to instigate activities to address these concerns, including the review of the guideline and encouraging strict adherence.

## P27

### Antimicrobial stewardship: assessment of the knowledge, attitude and practice of Nigerian physicians

**Babatola, A.O.,[1,2] Olatunya, O.S.,[1,2] Obiako, R.,[3] Enwere, O.O.,[4] Sunmonu, T.A.[5] & Fadare, J.O.[6,7]**

**joseph.fadare@eksu.edu.ng; jofadare@gmail.com; [1]Department of Paediatrics, Ekiti State University College of Medicine, Ado-Ekiti, Nigeria; [2]Department of Paediatrics, Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria; [3]Department of Medicine, Ahmadu Bello University, Zaria, Nigeria; [4]Department of Medicine, Imo State University, Orlu, Nigeria; [5]Department of Medicine, Federal Medical Centre, Owo, Nigeria; [6]Department of Pharmacology and Therapeutics, Ekiti State University College of Medicine, Ado-Ekiti, Nigeria; [7]Department of Medicine, Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria.*

**Background:** Antimicrobial stewardship program (ASP) are part of successful interventions used in combating antimicrobial resistance (AMR).

**Objectives:** To assess the knowledge, attitude and practice of ASP by Nigerian physicians.

**Methodology:** Cross-sectional questionnaire- based study among physicians from five tertiary level hospitals in Nigeria. Participants were selected by stratified sampling. The questionnaire had sections on the general characteristics of respondents, practice of antibiotic prescribing, knowledge about antimicrobial resistance and components of antibiotic stewardship program. Data were analysed using SPSS version 25. The study was approved by the Research and Ethics Committee of the Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria.

**Results:** Three hundred and twenty-six (326) completed questionnaires were returned with male respondents (244;74.8%) accounting for the majority. Two thirds of respondents prescribed antibiotics almost on a daily basis with 144 (38.1%) and 119 (36.5%) of them reviewing the medications after 48 hours and 72 hours respectively. Only 103 (30.6%) of respondents worked in hospitals with an antibiotic policy. Samples of specimens were sent to the laboratory before commencement of treatment by 181 (55.5%) physician respondents. While 251 (77.2%) of respondents had medical microbiologists in their hospitals, only 33 (10.1%) often interacted with them while making the choice of antibiotics. Quinolones (241; 73.9%), third generation cephalosporins (236; 72.4%) and penicillins (201; 61.7%) were the most prescribed antibiotic classes by respondents. Majority of the respondents agreed that antimicrobial resistance is both a global and local problem (95.4% and 81% respectively). Regarding respondent's

knowledge of ASP, only 92 (28.2%) and 74 (22.7%) have heard or read about ASP prior to this study. Respondents had very good knowledge of the causes of AMR (82.5 – 95.4%) when compared to their knowledge of components of ASP (50.6 – 79.1%).

**Conclusion:** Significant gaps exist in the knowledge and practice of antimicrobial stewardship among Nigerian physicians. There is a need for educational programs for physicians and policy enforcement regarding antimicrobial stewardship in healthcare facilities.

## P28

### Prescribing of antibiotics by general practitioners in Sudan, 2018

**Mustafa, I.M.[1]***

**pharmkal@hotmail.com; [1]National Health Insurance Fund, Sudan.*

**Background:** The assessment of the magnitude of irrational use of antibiotics in Sudan, where pneumonia and septicemia are the main leading cause of death, will guide the decision makers to design effective interventions to improve the use of antibiotics and hence save lives and reduce the economic burden of disease.

**Objectives:** To determine the following: antibiotics most frequently prescribed; prescribing patterns of antibiotics by diagnosis and age of patients; the adherence of medical doctors to Standard Treatment Guidelines (STGs) of selected conditions related to antibiotics use; and to evaluate the cost of the antibiotics per encounter.

**Methodology:** Study design: A facility-based retrospective cross-sectional study was implemented. Setting: Five regions of Sudan as geographically defined by the National Health Insurance Fund. A multi stage sampling technique was used. Patient encounters were used to extract the data needed to calculate variables.

**Results:** Cephalosporins were the most antibiotics prescribed (30.7% out of 2400) followed by penicillins (28%). Urinary tract infections and pneumonia were the most prevalent cause for prescribing these two therapeutics classes, (46% and 31%) respectively. The average cost of antibiotics was 101.63 SDGs (95%CI 85.52, 117.73). Only 40.8% of antibiotics were prescribed according to Standard Treatment Guidelines that was most prevalent among children under 5 years old and the age group 5-10 years ($p<$ 0.01).

**Conclusion and recommendations:** The findings of the study revealed the magnitude of irrational use of antibiotics in Sudan. The Ministry of Health should develop and implement Antibiotics Stewardship Programmes. Future studies should determine the factors that drive the medical doctors to prescribe irrationally.

## P29

### Patterns of antibiotic resistance among bacterial isolates from skin and soft tissue infections at Nyangabgwe Hospital, Botswana from 2014 to 2018

**Molefhi, L.,[1]* Paramadhas, B.D.A.,[1] Mpinda-Joseph, P.,[1] Goicochea, M.C.A.,[1] Tiroyakgosi, C.,[2] Godman, B.[3] & Nthomiwa, N.[1]**

**Lebza1137@gmail.com; [1]Nyangabgwe Hospital, Francistown, Botswana; [2]Botswana Essential Drugs Action Program, Ministry of Health and Wellness, Gaborone, Botswana; [3]Division of Clinical Pharmacology, Karolinska Institute, Karolinska University Hospital, Huddinge, Sweden.*

**Background:** Skin and soft tissue infections often require acute treatment and inpatient admission. Associated bacteria and their antibiotic resistance patterns unknown.

**Objectives:** To determine the most frequent pathogens isolated from skin and soft tissues, as well as their antimicrobial resistance patterns.

**Methods:** Descriptive retrospective cross sectional review of the results of culture and sensitivity tests from January 2014 to December 2018 was performed. Data abstracted from lab microbiology database, including all isolations in the above-mentioned study period and analysed. The study site was a multi- specialty tertiary hospital and the in house lab accredited by SADCAS. Ethical approval granted REF NO: HPDME-13/18/1.

**Results:** Of the 648 isolated pathogens, *Staphylococcus aureus* was common 30.7% (n=199), followed by *Klebsiella pneumoniae* 23.5% (n=152) and *Escherichia coli* 17.3% (n=112). 79.5% (n=178) of *Staphylococcus aureus* were resistant to penicillin, to clindamycin at 8.7% (n=21) and cefoxitin at 6.8% (n=16). Tetracycline, erythromycin and cotrimoxazole had a non-alarming resistance frequencies of 18.5%, 16.5% and 16.6% (n= 45, 38 and 30) respectively. *Klebsiella pneumoniae* showed high resistance against ampicillin at 76.6% (n=105), cefazolin at 51.5% (n=70), cefotaxime at 59.6% (n=84) and cotrimoxazole at 55.0% (n=76). Others such as cefoxitin, piperacillin-tazobactam, amikacin and amoxicillin/ clavulanic acid at 6.5%, 18.7%, 8.1% and 6.7% (n=10, 28, 10 and 48) respectively could be considered safe therapeutic alternatives. Meropenem as the only carbapenem being currently used demonstrated 1.3% (n=2) resistance to *Klebsiella pneumoniae*. *Escherichia coli* demonstrated high resistance to beta-lactam antibiotics such as ampicillin at 76.6% (n=85), cefazolin at 55.3% (n=60), cefotaxime and ceftriaxone at 50.6% (n=55). Lower resistance was seen against meropenem at 1.0% (n=1) and amikacin at 1.6% (n= 2).

**Conclusions:** *Staphylococcus aureus, Klebsiella pneumoniae* and *Escherichia coli* were the principal pathogens isolated from skin and soft tissues, and their antimicrobial resistance showed very specific patterns for each of them.

## P30

### Trends in prevalence of bloodstream infections and antibiotic resistance at Nyangabgwe Hospital in Botswana

**Nthomiwa, N.,[1] Paramadhas, B.D.A.,[1] Mpinda-Joseph, P.,[1] Maruatona, M.B.,[1] Molefhi, L.,[1] Goicochea, M.C.A.,[1] Tiroyakgosi, C.[2] & Godman, B.[3]**

**naledinthomiwa@gmail.com; [1]Nyangabgwe Hospital, Francistown, Botswana; [2]Botswana Essential Drugs Action Program, Ministry of Health and Wellness, Botswana; [3]Division of Clinical Pharmacology, Karolinska Institute, Karolinska University Hospital, Huddinge, Sweden.*

**Background:** Blood-stream infections (BSIs) are the leading causes of mortality. Indiscriminate antibiotic use, poor IPC practices and use of invasive devices are associated factors. Knowledge on local bacterial and antibiotic resistance patterns are critical to inform antibiotic stewardship and IPC policies.

**Objectives:** Describe the prevalence of common bacteria from blood specimen and their antibiotic resistance patterns.

**Methods:** Descriptive retrospective cross-sectional review of results of blood culture and sensitivity tests from January 2014 to December 2018 was performed in a multi-specialty tertiary hospital lab that was accredited by SADCAS. The

sample reviewed were the entire culture positive results during the above period. Data abstracted from lab database and analysed. Prevalence of isolated bacteria, their antibiotic resistance presented. The study received ethical approval, REF NO: HPDME-13/18/1.

**Results:** Of the 928 isolates, 127, 104, 180, 252 and 265 were in 2014, 2015, 2016, 2017 and 2018 respectively. 56.2% were from neonates, 20.3% children and 16.6% geriatric patients. Coagulase-negative *Staphylococci* (CONS) commonest (40.5%) followed by Enterococci spp. (18.3%), *Klebsiella pneumoniae* (12.3%), *Staphylococcus aureus* (12.0%), *Escherichia coli* (7.2%), *Acinetobacter* spp. (4.7%), *Enterobacter* spp. (2.7%) and Pseudomonas spp. (2.2%). CONS, Enterococci spp., Staphylococcus aureus and *Acinetobacter* spp. increased and the rest declined from 2014 baseline. *Klebsiella* spp. and *Enterobacter* spp. increased in 2017 and 2016 respectively. ESBL-producing *Klebsiella* spp. and *E. coli* were 48% and 19.6%, respectively. KPC strains identified were 2.4% in 2017. 32.1% of Staphylococcus aureus were MRSA, 19.0% of Enterococcus spp. were VRE and the isolates increased over the years. *Acinetobacter* spp. resistance observed to most antibiotics tested.

**Conclusions:** More than three quarters of the isolates were from children with CONS as the commonest isolate. Interventions are necessary to reduce emergence and spread of MRSA, ESBL producing *Klebsiella* spp., VRE and *Acinetobacter* infections.

## P31

### Trends in prevalence of urinary tract infections and antibiotic resistance, and point prevalence survey to estimate the burden of CAUTI at Nyangabgwe Hospital in Botswana

**Mpinda-Joseph, P.,[1] Paramadhas, B.D.A.,[1] Goicochea, M.C.A.,[1] Maruatona, M.B.,[1] Nthomiwa, N.S.,[1] Molefhi, L.,[1] Tiroyakgosi, C.[2] & Godman, B.[3]**

**pnkmpinda@gmail.com; [1]Nyangabgwe Hospital, Francistown, Botswana; [2]Botswana Essential Drugs Action Program, Ministry of Health and Wellness, Botswana; [3]Division of Clinical Pharmacology, Karolinska Institute, Karolinska University Hospital, Huddinge, Sweden*

**Background:** Urinary Tract Infections (UTIs) are common in women and patients with urinary catheters increasing costs of care. Poor hygiene and IPC practices are commonly associated factors. Prevalence of UTIs and antibiotic sensitivities unknown to inform IPC and antibiotic stewardship programs (ASPs).

**Objectives:** To describe the prevalence of bacteria associated with UTI and their patterns of antibiotic resistance.

**Methods:** Descriptive cross sectional review of results of urine - culture sensitivity tests of inpatients and point prevalence surveys for CAUTI, on patients that had urinary catheters >48 hours were performed. Results included from January 2014 to December 2018 and April 2018 to April 2019 respectively from a multispecialty tertiary hospital. Data from lab database analysed; bacterial prevalence, patterns of key resistant strains presented. Ethical approval received REF NO: HPDME-13/18/1.

**Results:** Of the 438 isolates, 110, 67, 45, 86 & 130 were in 2014, 2015, 2016, 2017 and 2018 respectively. 66% from females. *E. coli* common (38.2%) followed by *Klebsiella* spp. (20.4%), *Candida* spp. (18.0%), *Enterococcus* spp. (10.2%), *Pseudomonas* spp. (7.0%) and *Proteus* spp. (6.2%). *Pseudomonas* spp. mostly from males. *Enterococci* spp., *Klebsiella* spp. and *Pseudomonas* spp. Increased, rest declined since 2014. ESBL producing *Klebsiella* spp. and *E. coli* were 52% and 11.3% respectively. While no KPC strains isolated, 14.3% of *Klebsiella* resistant to meropenem and 7.7% of *Enterococci* to vancomycin (VRE). CAUTI was 39% in April 2018, declined to 9.5% in August 2018. *Klebsiella* spp. and *Pseudomonas* spp. were common (22.7%) in CAUTI followed by *E. coli* (16.0%), *Enterococci* spp. (14.7%) and *Candida* spp. (6.7%).

**Conclusions:** Two thirds of isolates were from women. *E. coli* and *Klebsiella* spp. most common with ESBL strains increasing. A three quarter decline of CAUTI observed. Further studies and persistent interventions are necessary to reduce the emergence and spread of ESBL producing *Klebsiella* spp., *E. coli* and VRE.

## P32

### Efficacy and safety of combination therapy of praziquantel and dihydroartemisinin piperaquine for treatment of intestinal schistosomiasis in Tanzania

**Mnkugwe, R.,[1] Minzi, O.,[2]* Kinung'hi, S.,[3] Kamuhabwa, A.[2] & Aklillu, E.[4]**

**minziobejayesu@gmail.com; [1]Department of Clinical Pharmacology, School of Medicine, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania; [2]Department of Clinical Pharmacy and Pharmacology, School of Pharmacy, Muhimbili University of Health and Allied Sciences, Dar es Salaam Tanzania; [3]National Institute of Medical Research, Mwanza Research Centre, Mwanza, Tanzania; [4]Division of Clinical Pharmacology, Department of Laboratory Medicine, Karolinska University Hospital-Huddinge, Karolinska Institutet, Stockholm, Sweden.*

**Background:** Praziquantel alone has failed to control schistosomiasis. Inability of praziquantel to act on immature worms is one of the setbacks in the control of the disease. The objective of this work was to assess the efficacy of combining praziquantel and dihydroartemisinin piperaquine.

**Materials and methods:** A total of 639 S. mansoni infected children were randomized to receive either praziquantel (n=341) or praziquantel plus dihydroartemisinin piperaquine (n=298). Stool samples were analysed using Kato Katz and double read using microscopy. Efficacy was assessed by cure and egg reduction rates at 3 and 8 weeks. Adverse events were assessed within four hours of drugs administration.

**Results:** At 3 weeks, cure rates were 88.3% and 81.2% for combination therapy and praziquantel, respectively ($p$<0.014), at 8 weeks, there was a significant drop in the cure rates in praziquantel (63.9%) compared to 81.9% in the combination therapy ($p$<0.001). Combination therapy had higher cure rates at all levels of infection intensities ($p$>0.05). Egg reduction rates at 8 weeks were significantly higher in the combination therapy (93.6%) compared to 87.9% in the praziquantel ($p$=0.014). The arithmetic means of egg intensity were lower in the combination therapy at both follow up ($p$>0.05). Overall, 30.8% of the participants experienced mild and transient adverse events. Abdominal pain (20.1%) was the most reported adverse event in both groups. There was no difference in the occurrence of adverse events between treatment groups ($p$=0.163).

**Conclusion:** Combination therapy is safe, well tolerable, and more efficacious compared to praziquantel in treating intestinal schistosomiasis. The combination can be considered for use in areas with high transmission of the disease.

## P33

### Antibiotic consumption in inpatient care at a tertiary referral hospital in Namibia

**Nauyoma, E.,[1] Ugburo, E.,[2] Hango, E.,[1] Mubita, M.,[1] Kalemeera, F.[1] & Kibuule, D[1]***

**dkibuule@unam.na; [1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek Namibia; [2]Intermediate Katutura Hospital, Windhoek, Namibia.*

**Background:** Indiscriminate use of antibiotics is common in inpatient care. Few studies have explored the consumption rates of antibiotics in patient care settings in developing countries.

**Objective:** To determine rates and trends of antibiotic consumption in inpatient care setting.

**Methods:** A hospital-based period prevalence study assessed rates and trends of antibiotic consumption in inpatient wards at a regional referral hospital in Windhoek Namibia over a five months' period, December 2017 to April 2018. The main outcome measures were consumption rates measured by daily defined doses (DDD) and types of antibiotics by WHO/ATC classes.

**Results:** From the seven inpatient wards included, 992 patients were prescribed antibiotics. Antibiotic prescribing was highest in surgical/orthopedic (30.9%, n=307), gynaecology/maternity (27%, n=268) and medical/acute care (26.2%, n=260) wards. Of the 1442 antibiotics prescribed, 60.5% were beta-lactams (i.e. penicillins, 41% and cephalosporins, 36.4%) compared to macrolides (31.2%), nitro-imidazoles (22.7%), and aminoglycoside (9.9%) among others. There was consistently high use of beta-lactam antibiotics across the five months compared to other ATC classes of antibiotics. The antibiotic consumption by DDD were highest with metronidazole (DDD=1865), Augmentin® (i.e. amoxicillin/clavulanic acid, DDD=1245.5), ampicillin (DDD=1094), amoxicillin (DDD=882) and gentamicin (DDD=856.19). Cefotaxime (DDD=3.5), cefazolin (DDD=2) and benzathine penicillin (DDD=1.2) had the lowest consumption by DDDs.

**Conclusions:** The consumption of β-lactam antibiotics in inpatient care at the regional referral hospital is high. There is need to strengthen antimicrobial stewardship programs in inpatient care to minimize overuse of antibiotics in inpatient care, particularly with penicillins whose resistance has been described in Namibia.

## P34

### Prophylactic antimicrobial use and dose appropriateness for pediatric surgical patients in a Nigerian teaching hospital

**Oshikoya, K.A.,[1]* Ogunyinka, A.O.,[2] Adamaigbo, C.[2,3] & Olowo-okere, A.[4]**

**kazeemoshikoya@ymail.com; [1]Department of Pharmacology, Therapeutics and Toxicology, Lagos State University College of Medicine, Ikeja, Lagos, Nigeria; [2]Department of Clinical Pharmacy and Pharmacy Practice, Usmanu Danfodiyo University, Sokoto, Nigeria; [3]Department of Pharmacy, University of Benin Teaching Hospital, Benin, Edo, Nigeria; [4]Department of Pharmaceutics and Pharmaceutical Microbiology, Usmanu Danfodiyo University, Sokoto, Nigeria.*

**Background:** Surgical antimicrobial prophylaxis (SAP) guidelines balance the need to prevent incision site infection with the risks of adverse effects.

**Objective:** We described the types of surgical antimicrobial prophylaxis (SAP) used in children, assessed SAP compliance with existing international guidelines, evaluated the appropriateness of the antimicrobial doses compared with guidelines' recommendations, and determined the risk factors for antimicrobial under-dosing.

**Methods:** We performed a retrospective chart review of paediatric surgical patients aged ≤18 years, who underwent surgery at Usmanu Danfodiyo University Teaching Hospital, Sokoto, in Northwestern Nigeria, between 1 January 2014 and 31 December 2017 and administered antimicrobial prophylaxis. Compliance with five SAP bundle guidelines was evaluated. The appropriateness of the antimicrobial doses was categorized as under-dose, normal dose, or over-dose. Simple descriptive and comparative statistical analyses were performed. Risk factors for the three antimicrobial agents most frequently under-dosed were identified using univariate and multivariate analyses.

**Results:** Of the 303 patients that had surgeries, 296 (97.7%) received SAP but indicated in 287 (94.5%) of these patients. Complete compliance with SAP guidelines was achieved in 17 of 303 (5.6%) patients. Compliance with guidelines for appropriate antimicrobial selection, correct timing, re-dosing, and duration of use were achieved in 173/287 (60.3%), 18/296 (6.1%), 47/296 (15.9%), and 21/296 (7.1%) of patients, respectively. Appropriate antimicrobial dosing was achieved in 132/550 (24.0%) of the prescriptions. Of the 550 antimicrobial prescriptions, metronidazole accounted for 235 (42.7%) and cefuroxime accounted for 191 (34.7%), and there were 173 cases of over-dosing (31.5%) and 245 of under-dosing (44.5%). The risk of under-dosing was not predicted by any of the patients' demographic characteristics or by the appropriateness of the indications for antimicrobials.

**Conclusions:** We observed a very low rate of full compliance with international SAP guidelines. Correct timing, re-dosing, and duration of antimicrobial use were the most violated. Most antimicrobials were under-dosed. A need for national and institutional SAP guidelines is advocated.

## P35

### Incidence and risk factors for nephrotoxicity-associated with aminoglycoside therapy in hospitalized children at the National Referral Hospital in Kenya

**Nyaboke, E.,[1] Guantai, A.N.,[1] Oluka, M.N.,[1] Mutai, B.,[2] Kurdi, A.,[3,4] Godman, B.[3,5] & Bennie, M.[3]**

*[1]Department of Pharmacology and Pharmacognosy, School of Pharmacy, University of Nairobi; [2]Department of Paediatrics and Child Health, School of Medicine, University of Nairobi; [3]Strathclyde Institute of Pharmacy and Biomedical Science, University of Strathclyde, Glasgow, UK; [4]Department of Pharmacology, College of Pharmacy, Hawler Medical University, Erbil, Iraq; [5]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden.*

**Background:** Aminoglycoside (AG) antibiotics are routinely used in neonates, alone or in combination with beta lactam antibiotics for the treatment of various infections. However, they have a narrow therapeutic window and are nephrotoxic. The incidence of nephrotoxicity associated with AG therapy has not been determined among paediatric patients admitted at the Kenyatta National Hospital (KNH).

**Objective:** To determine the incidence and risk factors of AG-associated nephrotoxicity among children aged ≤5 years

**Methods:** This was a prospective cohort study targeted all children, aged ≤5 years, who were treated with AG during July 2018-September 2018 at the KNH. Baseline urea, electrolyte and creatinine levels were measured before initiation and at the end of aminoglycoside treatment. Longitudinal data on clinical conditions and treatment

outcomes of the children were collected.

**Results:** Overall, 195 children were included, of which 20 patients (10.30%) developed nephrotoxicity; of which 12 (60%) developed mild reversible nephrotoxicity ($p$=0.001), 5 (25%) developed acute kidney injury and 3 (15%) developed kidney failure. Neonates aged ≤ 28days (OR: 3.54; 95%CI: 1.6-8.2), low birth weight (OR: 4.73; 95% CI 1.8-12.5), neonates with neonatal sepsis (OR: 4.91; 95% CI 2.07-11.62) were at higher risk of developing nephrotoxicity. There was no significant difference in nephrotoxicity between those treated with amikacin and those treated with gentamicin.

**Conclusion:** Aminoglycoside therapy is a risk factor for the development of acute kidney injury in the pediatric population. Low birth-weight neonates and those with sepsis were at a higher risk of developing nephrotoxicity. Aminoglycosides should be used with caution in high-risk populations such as neonates, especially low birth-weight and asphyxiated neonates and those suffering from sepsis. Routine monitoring of kidney function should be considered within 72 hours of initiating aminoglycoside therapy.

## P36

### Determinants of aminoglycoside trough levels among paediatric patients in a large referral hospital in Kenya: a prospective cohort study

**Mulaa, Z.A.,[1]* Oluka, M.N.,[1] Okalebo, F.A.,[1] Opanga, S.A.,[1] Guantai, A.,[1] Achieng, L.,[2] Kurdi, A.,[3,4] Godman, B.[3,5] & Bennie, M.[3]**

**Zay.mulaa@gmail.com; [1]School of Pharmacy, University of Nairobi; [2]School of Medicine, University of Nairobi; [3]Strathclyde Institute of Pharmacy and Biomedical Science, University of Strathclyde, Glasgow, UK; [4]Department of Pharmacology, College of Pharmacy, Hawler Medical University, Erbil, Iraq; [5]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden.*

**Background:** Aminoglycosides are used in pediatrics for the management of severe infections. Routine measurement of aminoglycoside levels is required to monitor efficacy and toxicity; however, this is not routinely done in resource limited settings.

**Objectives:** To assess aminoglycoside trough levels and the factors associated with sub-therapeutic levels in pediatric patients at the Kenyatta National Hospital.

**Methods:** A prospective descriptive cohort study was conducted in the pediatric wards of the Kenyatta National Hospital between May and September, 2018. All pediatric patients aged 5 years and below receiving amikacin or gentamicin, whose caregivers gave consent were recruited. Patient records were reviewed daily by the principal investigator and aminoglycoside trough levels were determined on day three before the third dose of aminoglycosides. The main outcome variable was aminoglycoside serum trough levels. Univariate analysis and logistic regression was conducted and participants categorized in the sub therapeutic range or otherwise. Data were analyzed using STATA v.13. Ethical and institutional approval was obtained from KNH/UON Ethics and Research Committee.

**Results:** 140 patients were recruited into the study. The prevalence of aminoglycoside use was 57.12%. The most common indication for use was pneumonia 117 (83.45%). One hundred and ten patients were treated with gentamicin with a median dose of 53mg [21,70]/kg body weight for 7 days. Thirty patients were on amikacin with a median dose of 105 [85,210] for 7 days. Nearly all the patients on amikacin (90%) had serum levels below the therapeutic range (<3.4 microgram/ml) in contrast to only 30 patients on gentamicin (27%) (>2 microgram/ml). The predictors for sub-therapeutic levels were age <18 months (adjusted OR 0.36, 95% CI: 0.14 - 0.92), and weight <10kgs (adjusted OR 0.2, 95% CI: 0.07 - 0.53).

**Conclusion:** There was a high prevalence of under dosing in patients who received aminoglycosides particularly amikacin, therefore there is a need to review the existing aminoglycoside use protocols to include therapeutic drug monitoring.

## P37

### Adverse drug reactions of first-line tuberculosis regimens among patients in the DOTS program in Namibia: findings and implications

**Kibuule, D.,[1]* Tafadzwa, T.,[1] Godman, B.,[2,3] Rennie, T.[1] & Verbeeck, R.[1]**

**dkibuule@unam.na; [1]School of Pharmacy, Faculty of Health Sciences, University of Namibia; [2]Department of Laboratory Medicine, Division of Clinical Pharmacology, Karolinska Institutet, Karolinska University Hospital Huddinge, Stockholm, Sweden; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK.*

**Background:** Namibia achieved universal coverage of Directly Observed Treatment-Short course (DOTS) for tuberculosis in 2015. However, the safety of first line DOTS regimens is unknown in Namibia. This negatively affects treatment adherence and success rates.

**Objective:** To determine the prevalence, types and grades of adverse drug reactions associated with first line DOTS regimens in Namibia.

**Methods:** A hospital-based cross-sectional survey was conducted at Intermediate Hospital Katutura (IHK, a regional referral TB hospital) from 29 June to 29 August 2016. The main outcome measure was the prevalence, grades and factors associated with adverse effects among TB cases on first line DOTS regimens. Data on socio-demographic and clinical characteristics were abstracted from the patient treatment records, and through patient interviews. Descriptive and bivariate analysis were used to determine the incidence and grades, and factors associated with adverse drug reactions using SPSS software v 22.

**Results:** Out of 100 patients recruited in the study, 69% experienced at least one adverse drug reaction while on first line DOTS regimens. Type-A (i.e. predictable adverse drug reactions) were the most common and ranged from 9% to 69%. The rate of Type-B adverse drug reactions (i.e. Unpredictable reactions such as allergy and hypersensitivity reactions) was 26%. The most common Type A ADR were gastrointestinal disturbances (n=69/100, i.e. diarrhoea, nausea and/or vomiting), musculoskeletal (n=28/100, i.e. joint and muscle pains) and neurological (i.e. disturbed visual acuity, 10% and peripheral neuropathy, 9%). The frequency of adverse reactions was higher among TB patients with; HIV co-infection than those without (78.5%, $p$=0.003), low baseline body weight ($p$=0.002) and being on concomitant therapy with ART (76.2%, $p$=0.012) or cotrimoxazole (78%, $p$=0.005). The incidence of moderate to severe grade adverse reactions was less than 5%.

**Conclusion:** There is a high burden of adverse reactions associated with first line DOT regimens. There is need to incorporate active pharmacovigilance reporting in DOTS programme particularly among patients with HIV coinfection, underweight and antiretroviral treatment.

## P38

### Prevalence and management of dyslipidaemias in adult renal transplant recipients attending nephrology clinic at a tertiary hospital in Kenya

**Njau, E.W.,[1]* Opanga, S.,[1] Karimi, P.N.,[1] Kurdi, A.,[2,3] Godman, B.[2,4] & Bennie, M.[2]**

**wambuguesbon@gmail.com; [1]Department of Pharmaceutics and Pharmacy Practice, School of Pharmacy, University of Nairobi, Kenya; [2]Strathclyde Institute of Pharmacy and Biomedical Science, University of Strathclyde, Glasgow, UK; [3]Department of Pharmacology, College of Pharmacy, Hawler Medical University, Erbil, Iraq; [4]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden.*

**Introduction:** Dyslipidemia is a common modifiable risk factor for cardiovascular disease in renal transplant recipients and is usually multifactorial. This study aimed to assess the prevalence and factors associated with dyslipidemia in renal transplant recipients attending a nephrology clinic at a tertiary hospital in Kenya

**Methods:** This cross-sectional study was carried out on 110 adult renal transplant recipients on follow up at the nephrology clinic in Kenyatta National Hospital who were consecutively selected and interviewed after granting a written informed consent. A structured questionnaire was used to obtain data on sociodemographic characteristics, diet and exercise. Data on lipid profile, medication and comorbidities was abstracted from their medical files. Sample size was calculated using a modified Cochran formula as described by Naing *et al*. Ethical approval was obtained from Kenyatta National Hospital/University of Nairobi-Ethics and Research Committee (KNH/UON -ERC).

**Results:** The mean age of the participants was 43.4±13.4 with a male gender predominance. The overall prevalence of dyslipidemia was 72% and the most prevalent types were elevated LDL-C and elevated non-HDL-C each at 44%. In the bivariable model, factors that were significantly associated with dyslipidemia included weight gain (COR=22.67, CI=2.79-184.11; $p$=0.003), physical activity (COR=0.19, CI=0.04-0.93; $p$=0.040) and dietary modification (COR=0.06, CI=0.02-0.22; $p$<0.001). In the multivariable model only dietary modification (AOR=0.03, CI=0.003-0.32; $p$=0.004) was significantly associated with dyslipidemia.

**Conclusion:** The prevalence of dyslipidemia was high and the most prevalent types were elevated LDL-C and elevated non-HDL-C. Whereas dietary modification, engaging in physical activity and weight gain were significantly associated with dyslipidemia in the bivariable model, only dietary modification was significantly associated with dyslipidemia in the multivariable model.

## P39

### Acute haematocrit changes in the treatment naïve late-onset hypogonadism patient: A South African study that determined polycythaemia prevalence

**Du Plessis, J.M.,[1] Bester, H.L.,[1]* Julyan, M.[1] & Cockeran, M.[2]**

**herman.bester@lifehealthcare.co.za; [1]Medicine Usage in South Africa, Faculty of Health Sciences, North-West University, Potchefstroom; [2]Statistics, School of Computer, Statistical and Mathematical Sciences, North-West University, Potchefstroom.*

**Background:** The prevalence of polycythaemia among the South African male population with late-onset hypogonadism (LOH) is not known. The connotation between polycythaemia and cardiovascular events are well described in literature, where testosterone replacement therapy (TRT)-induced polycythaemia is the side effect most prevalent in patients that receive the parenteral formulation for LOH. This study has set out to determine the prevalence of polycythaemia among the TRT treatment naïve males.

**Objective:** The main objective was to determine the prevalence of polycythaemia in LOH TRT treatment naïve male patients. A haematocrit (HCT) percentage of >50% at month 3 after the treatment initiation phase constituted as pathognomonic for polycythaemia. The secondary measure was to evaluate the change between the pre- and post-treatment total testosterone (TT) levels.

**Method:** *Study design*: This was a descriptive, retrospective, observational study. The study made use of an all-inclusive sampling method. *Setting:* The study took place in a private urology practice in Emalahleni.

**Results:** The prevalence for polycythaemia was 34%. The rise in both HCT (n = 50) and TT (n = 49) was statistically significant with a $p$-value < 0.001. The mean HCT and TT increase respectively over the study period was 3.49% (standard deviation (SD) 4.46%) and 4.21 nmol/L (SD 6.47). The Cohen's $d$ effect size was 0.68 for TT and 0.73 for the HCT.

**Conclusions and recommendations:** Because of TRT-induced polycythaemia, prescribers are advised to screen for polycythaemia in patients that are treated with the parenteral depo-testosterone undecanoate formulation as per published guidelines. Furthermore, prescribers need to be aware of the statistical increase of haematocrit although the practical significance thereof is not yet determined. The TT increased to within the physiological range, which demonstrate the effectiveness of parenteral TRT.

## P40

### Medication-related problems among post-renal transplant patients at the renal unit of a referral hospital in Kenya

**Opanga, S.,[1]* Kariuki, C.,[1] Njau, E.,[1] Oluka, M.N.,[1] Guantai, A.N.,[1] Kurdi, A.,[2,3] Godman, B.[2,4] & Bennie, M.[2]**

**sylvia.adisa@gmail.com; [1]Department of Pharmaceutics and Pharmacy Practice, School of Pharmacy, University of Nairobi; [2]Strathclyde Institute of Pharmacy and Biomedical Science, University of Strathclyde, Glasgow, UK; [3]Department of Pharmacology, College of Pharmacy, Hawler Medical University, Erbil, Iraq; [4]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden.*

**Background:** Medication related problems are unwanted events or outcomes that may arise due to drug therapy. Post-kidney transplant patients are predisposed to medication related problems due to complex multiple medications they receive during therapy.

**Objectives:** The study aimed at determining the prevalence, types and risk factors for medication related problems in adult post renal transplant patients in a tertiary referral hospital in Kenya.

**Methodology:** A cross-sectional design was used. The study population consisted of adult patients above 18 years who had undergone renal transplant and were receiving treatment and follow up at The Kenyatta National Hospital during the study period. Patients who had undergone renal transplant surgery and consented to the study were included. The study excluded patients who were undergoing hemodialysis before kidney transplant, patients with chronic kidney disease who had not undergone kidney transplant, pregnant women, paediatric patients and patients who declined consent. Data was collected using a pretested questionnaire and descriptive and bi-variable analysis done using Microsoft Excel. The Hepler and Strand Classification

was used to classify medication related problems.

**Results:** A total of 50 post renal transplant patients were recruited into the study. There were more males than females (66%, n=34). The median age among the females was 46 years (25-70) while that among males was 36 years (18-71). The prevalence of medication related problems was 100%. The most common types of medication related problems were adverse drug reactions (40%), failure to receive drugs (23%) and drug interactions (16%). The risk factors for the development of medication-related problems were pill burden (41%), non-adherence (25%), adverse reactions (17%), inability to afford medication (14%) and medicine stock-outs (3%).

**Conclusion:** The prevalence of medication related problems was high. Adverse drug reactions, failure to receive drugs and drug interactions were the commonest medication related problems.

## P41

### Effect of TDF-containing regimens on kidney function in patients with a baseline CRCL less than 60ml/min: Namibia

**Kalemeera, F.[1]***

**fkalemeera@unam.na; [1]School of Pharmacy, University of Namibia.*

**Introduction:** The advent of antiretroviral therapy (ART) and early diagnosis of human immunodeficiency virus (HIV) has resulted in the appreciable reduction of morbidity and mortality among people infected with HIV. However, tenofovir disoproxil fumarate (TDF)–containing ART regimens are associated with a reduction in creatinine clearance. No evaluation has been conducted in Namibia on the relationship between TDF-containing ART and Creatinine Clearance (CrCl) among patients with moderate to severe reductions in CrCl.

**Methodology:** A retrospective longitudinal study conducted for the period January 2008 to December 2016, in which we evaluated the CrCl in patients with a baseline CrCl <60 ml/min, who were receiving TDF-containing ART. We identified patients who had experienced an improvement in CrCl and compared their characteristics with those whose CrCl did not improve. We assessed factors for association with improvement in CrCl using binary logistic regression. The confidence interval was set at 95% and the *p*-value at <0.05. We used SPSS.

**Results:** 389 patients were included; majority were female (n=294). Female vs males assessments showed no difference in age ($p$=0.340), weight ($p$=0.920), number who experienced an improvement (105 vs 39, $p$=0.349); or absence of improvement (189 vs. 56, $p$=0.349). The improvement group (male and females) had a lower baseline CrCl (45.9 vs. 55.0, $p$<0.001). The follow-up CrCl for the improvement and no improvement groups were 72.6 and 55.9. Multivariate analysis showed that the odds of increasing in CrCl were: 0.897 (0.859 – 0.936), $p$<0.001 for each unit rise in the baseline CrCl; 0.904 (0.880 – 0.923), $p$<0.001 for each year of follow-up; 1.218 (1.027 – 1.444), $p$=0.024 for each unit increase in haemoglobin; and 0.999 (0.998 – 1.000), $p$=0.016 for each unit rise in CD4 count. In regards to the rapid decline in CrCl the odds of it occurring were 0.412 (0.184 – 0.920), $p$=0.031 for each year of receiving TDF-containing ART.

**Conclusion:** Based on the criteria used for assessment of changes in CrCl, more improvement than decline in CrCl was observed. Improvement occurred more in patients with lower baseline CrCl, and occurred in the early period of ART with reduced odds of experiencing it with time.

## P42

### Time-to-onset of treatment for hypertension and hyperlipidaemia in South African diabetes mellitus patients: A survival analysis

**Obeng-Kusi, M.,[1] Burger, J.R.,[1]* Cockeran, M.[2] & Lubbe, M.S.[1]**

**johanita.burger@nwu.ac.za; [1]Medicine Usage in South Africa, Faculty of Health Sciences, North-West University, Potchefstroom; [2]Statistics, School of Computer, Statistical and Mathematical Sciences, North-West University, Potchefstroom.*

**Background:** Hypertension and hyperlipidaemia have high prevalence among diabetics. Medicine claims data have gained prominence in the study of drug-related events and outcomes. There is a paucity of publications on the time-to-onset of treatment for these conditions among South African diabetics.

**Objective:** To determine the time-to-onset of treatment for hypertension and hyperlipidaemia among diabetics using retrospective data of patients continuously enrolled (01/01/2008-31/12/2016) with a South African Pharmaceutical Benefit Management (PBM) company.

**Methods:** The study population comprised patients with ICD-10 diagnosis codes for type 2 diabetes mellitus (E11) who were receiving antidiabetic medication according to the National Pharmaceutical Product Index (NAPPI) codes provided by the Monthly Index of Medical Specialities (MIMS) classification code 19.1 (N = 2996). Among these patients, we then selected those who had ICD-10 codes for hypertension (I10, I11, I12, I13, I15, O10 and O11) who were receiving antihypertensive medications, and those who had hyperlipidaemia (E78.5), who received antihyperlipidaemics during the study period. The Kaplan-Meier approach was used to compare the survival experience of patients, with time to the commencement of treatment of hypertension and hyperlipidaemia, measured in days taking 2008 as index year. Patients were followed to 2016.

**Results:** A total of 494 patients (34.8% females) with an average age of 53.5 (SD 11.1) years were included. Of these patients, 35.0% had hyperlipidaemia and 45.6% hypertension. There was no statistically significant difference in age and sex among patients who started treatment for either of these conditions during the study ($p$=0.404; Cohen's $d$=0.132 for hyperlipidaemia and $p$=0.644, Cohen's $d$=0.059 for hypertension). Average time-to-onset of treatment for hyperlipidaemia was 2684.4 (SD 42.2) days compared to 2434.2 (SD 47.6) days for hypertension.

**Conclusions and recommendations:** Within an average of 6 years after an index period of 1 year free of disease, diabetics may commence treatment for hyperlipidaemia, hypertension or both.

## P43

### Factors associated with physical activity in type 2 diabetes mellitus patients at a public clinic in Gaborone, Botswana, in 2017

**Shiriyedeve, S.,[1] Dlungwane, T.P.[1] & Tlou, T.[1]**

**sununguraishiriyedeve@gmail.com; [1]Ministry of Health & Wellness, Botswana.*

**Background:** Physical activity plays a significant role in the managing of type 2 diabetes and is essential in reducing

morbidity and mortality associated with diabetes mellitus. A number of factors influence non-adherence to physical activity: social, personal, environmental and economic factors. Diabetes research conducted in Botswana has focused on behavioural change, treatment adherence and nutrition. The physical activity levels of type 2 diabetes patients and associated factors are not known.

**Objective:** The aim of this study was to assess the physical activity levels (PALs) and factors associated with physical activity in type 2 diabetes mellitus

**Methods:** The study was conducted at a public clinic in Gaborone, Botswana, in 2017. An observational cross-sectional study was conducted. An interview-administered questionnaire was used to assess the PALs and factors associated with physical activity in type 2 diabetes mellitus patients. Data were captured on Excel and exported to SPSS software version 25 for analysis. Chi-square test, Fisher's exact test and Pearson's moment correlation examined the relationship between participants' characteristics and their engagement in regular exercise. Ethical clearance was given by the University of KwaZulu-Natal Durban and Princess Marina Hospital.

**Results:** The majority of the study participants had low PALs (54.7%). The results showed a non-significant negative correlation between age and PAL ($r$ = –0.085) and between sitting time (sedentary time) and PAL (–0.098).

**Conclusion and recommendations:** Most type 2 diabetes mellitus patients had low PALs. Health-promoting activities are needed to promote physical activity and thus prevent complications associated with physical inactivity. Physical activity needs to be incorporated in the assessment of type 2 diabetes mellitus patients. There is a need for a resident physiotherapist, or exercise specialist at the diabetes clinics.

## P44

### Glycaemic, blood pressure and low-density lipoprotein-cholesterol control among patients with diabetes mellitus in a specialised clinic in Botswana: a cross-sectional study

**Mwita, J.C.,[1,2]* Francis, J.M.,[3,4] Omech, B.,[1,2] Botsile, E.,[2] Oyewo, A.,[2] Mokgwathi, M.,[1,2] Molefe-Baikai, O.J.,[1,2] Godman, B.[5,6] & Tshikuka, J.G.[7,8]**

**mwitajc@ub.ac.bw; [1]Department of Internal Medicine, Faculty of Medicine, University of Botswana, Gaborone, Botswana; [2]Department of Internal Medicine, Princess Marina Hospital, Gaborone, Botswana; [3]Wits Health Consortium, Wits Reproductive Health & HIV Institute, Johannesburg, South Africa; [4] Department of Global Health, Harvard University T H Chan School of Public Health, Boston, MA, USA; [5]Department of Laboratory Medicine, Division of Clinical Pharmacology, Karolinska Institutet, Karolinska University Hospital Huddinge, Stockholm, Sweden; [6]Liverpool Health Economics, University of Liverpool, Liverpool, UK; [7]Department of Family Medicine and Public Health, Faculty of Medicine, University of Botswana, Gaborone, Botswana; [8]Faculty of Health Sciences, National Pedagogic University, Kinshasa, the Democratic Republic of the Congo.*

**Objective:** Control of glycaemic, hypertension and low-density lipoprotein-cholesterol (LDL-C) among type 2 diabetes mellitus (T2DM) patients is vital for the prevention of cardiovascular diseases (CVD). The current study was an audit of glycaemic, hypertension, and LDL-C control among ambulant patients with type 2 diabetes mellitus in Botswana. Also, the study aimed at assessing factors associated with attaining optimal glycaemic, hypertension and LDL-C therapeutic goals.

**Methods:** *Design:* A cross-sectional study. *Setting:* A specialised public diabetes clinic in Gaborone, Botswana. Participants: Type 2 diabetes mellitus patients who had attended the clinic for ≥ three months between August 2017 and February 2018. *Primary outcome measure:* The proportion of patients with optimal glycaemic (HbA1c <7 %), hypertension (blood pressure <140/90 mmHg) and LDL-C (<1.8 mmol/L) control.

**Results:** The proportion of patients meeting optimal targets were 32.3% for glycaemic, 54.2% for hypertension, and 20.4% for LDL-C. Optimal glycaemic control was positively associated with age ≥ 50 years (AOR 5.79; 95% CI 1.08 - 31.14) but was inversely associated with an increase in diabetes duration (AOR 0.91; 95%CI 0.85 - 0.98). Being on an angiotensin-converting-enzyme inhibitor (ACE inhibitor) was inversely associated with optimal hypertension control (AOR 0.35; 95% CI 0.14 - 0.85). Being female (AOR 0.24; 95% CI (0.09 - 0.59) was inversely associated with optimal LDL-C control.

**Conclusion:** Patients with Type 2 diabetes mellitus in Gaborone, Botswana, presented with suboptimal control of recommended glycaemic, hypertension and LDL-C targets. These findings call for urgent individual and health systems interventions to address key determinants of the recommended therapeutic targets among patients with diabetes in this setting.

## P45

### Health-related quality of life and its determinants in asthmatic patients at a tertiary teaching and referral hospital in Kenya

**Alubisia, M.C.K.,[1] Opanga, S.,[1] Mugendi, G.A.,[1] Kurdi, A.,[2,3] Godman, B.,[3,4] & Bennie, M.[3]**

*[1]Department of Pharmaceutics and Pharmacy Practice, School of Pharmacy, University of Nairobi, Kenya; [2]Strathclyde Institute of Pharmacy and Biomedical Science, University of Strathclyde, Glasgow, UK; [3]Department of Pharmacology, College of Pharmacy, Hawler Medical University, Erbil, Iraq; [4]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden.*

**Background:** The majority of patients seek help from health care providers because they perceive their health and well-being to be impaired. Although clinical indices such as spirometry is considered an objective measure of asthma control, it correlates weakly with asthma symptoms and disease targeted health related quality of life (HRQoL). Since the impact of asthma on patients' quality of life cannot be directly inferred from clinical indices, it must be directly measured with standard questionnaires.

**Objectives:** To assess the HRQoL and its predictors in asthma patients who attended the Kenyatta National Hospital (KNH) chest clinic for their routine management.

**Methodology:** This was a cross-sectional study conducted among 140 consecutively sampled teenage and adult asthmatic patients who were on treatment for at least 3 months. Data was collected using the Asthma Quality of Life Questionnaire with Standardized activities (AQLQ(S)), Determinants of asthma control and HRQoL Questionnaire tools during a patient guided interview. Descriptive, bi-variable analysis and logistic regression was performed using STATA version 13.

**Results:** Asthma was found to be under control in 112 (80%) of the participants of whom slightly over half (53%) reported high HRQoL scores. All the 28 (20%) participants in whom asthma was uncontrolled had low HRQoL scores ($p$<0.001). The independent predictors of asthma control and HRQoL included occupational risk exposure ($p$=0.008), GERD ($p$<0.006), type 2 diabetes mellitus ($p$<0.006) and

cigarette smoking ($p$<0.029). Of the four HRQoL domains studied, the symptoms ($p$=0.004) and activity limitation ($p$=0.007) domains were significantly impacted by poorly controlled asthma.

**Conclusion:** Asthma-HRQoL outcome among patients was largely dependent upon the degree to which asthma was controlled.

## P46

### Comparison of adherence measures using administrative claims data

**Obeng-Kusi, M.,[1] Burger, J.R.,[1] Cockeran, M.,[2] & Lubbe, M.S.[1]**

**Martie.Lubbe@nwu.ac.za; [1]Medicine Usage in South Africa, Faculty of Health Sciences, North-West University, Potchefstroom.*

*[2] Statistics, School of Computer, Statistical and Mathematical Sciences, North-West University, Potchefstroom.*

**Background:** There are several measures for estimating medication adherence using administrative claims data. There is, however, no standard method for computing these measures and researchers are often faced with the challenge of deciding on an appropriate measure to use in various settings.

**Objective:** To compare adherence to montelukast among asthma patients, using seven different measures.

**Method:** Retrospective cross-sectional analysis of medicine claims data obtained from a privately-owned Pharmaceutical Benefit Management Company in South Africa. Continuously enrolled asthma patients (ICD-10 code J45), with at least two consecutive reimbursed claims for montelukast based on the MIMS classification code 10.4.2 between 1st January 2006 to 31st December 2015 were identified. Adherence rates were calculated using proportion of days covered (PDC) capped at 1, refill compliance rate (RCR), compliance ratio (CR), modified medication possession ratio (MPRm), continuous multiple interval of oversupply (CMOS) and the continuous single interval measure of medication acquisition (CSA) averaged over the period of observation and compared to the medication possession ratio (MPR) as reference.

**Results:** Adherence rates were calculated for 9141 asthma patients. The medication possession ratio (MPR), the continuous multiple interval measure of oversupply (CMOS) and compliance ratio (CR) yielded adherence values of 86%. The modified medication possession ratio (MPRm), refill compliance rate (RCR) and average continuous single interval measure of medication acquisition (CSA) produced adherence values of 96.90%, 117.15% and 129.0%, respectively, whereas the proportion of days covered (PDC) capped at 1 produced an adherence value of 76%.

**Conclusions:** The CMOS and CR were found to be most comparable to the MPR in terms of determining adherence using medicines claims data. Measures that used the entire study period as the denominator produced consistent results as compared to the measures that used the difference between claims dates as denominator.

**Source of funding:** The National Research Foundation (Grant number 85315).

## P47

### Medicines use measures: the case of fixed dose combinations (FDCs)

**Kairuz, T.,[1]* Burger J.[2] & Hollingworth S.[3]**

**Therese.Kairuz@newcastle.edu.au; [1]University of Newcastle, Australia; [2]Medicine Usage in South Africa, North-West University, South Africa; [3]University of Queensland, Australia.*

**Background:** The standardised consumption measure from WHO (defined daily dose [DDD]/1,000 population/day; www.whocc.no/atc_ddd_index) can facilitate cross-national comparisons to identify rational medicines use. There is some confusion when calculating use for fixed dose combination products (FDCs). In low- and middle-income countries drug shortages may necessitate the use of free-equivalent combinations (FECs) when FDC are not available.

**Objectives:** To illustrate calculations for free-equivalent combinations and fixed dose combination products using antihypertensives as an example.

**Methods:** This case study draws on WHO guidelines to calculate medicines use, using the defined daily dose [DDD]/1,000 population/day measure for a single and fixed combination product, given as: (i) Single ingredient product = [No. of prescriptions x Mass(dose) x Quantity (pack size)]/[DDD x Population x Time (days)] x 1000; vs. (ii) Combination product = [No. of prescriptions x Quantity (pack size)] / Dosing interval/day x Population x Time (days)] x 1000

**Results:** For 1,500 prescriptions/year of amlodipine 5mg (single product, DDD=5mg) in a population of 30,000, use would be 3.84 DDD per 1,000 population/day. This would be equal to use of the fixed dose combination product (amlodipine 5mg + valsartan 80 mg; dosing interval/day = 1) i.e. use = 3.84 DDD per 1,000 population/day. For valsartan 80 mg (single product, DDD=80 mg), use would also be 3.84 DDD per 1,000 population/day, equivalent to the FDC and amlodipine single product use.

**Conclusions and recommendations:** The use of fixed dose combination products which have a once-daily dosing regimen will equal the use of each of the single free equivalent products. Key variables are the DDD and the strength of the active ingredient(s). Researchers should be mindful when calculating medicines use metrics (sometimes referred to as consumption) for fixed dose combination products.

## P48

### An interrupted time series analysis of the second line antiretroviral policy change from lopinavir boosted with ritonavir to atazanavir boosted with ritonavir based regimens in Namibia

**Adenuga, B.A.,[1] Kibuule, D.[2,3]* & Bamitale, K.D.S.[3]**

*[1]Namibia Medicines Regulatory Council, Ministry of Health Social Services, Windhoek, Namibia; [2]Department of Pharmacy Practice & Policy, Faculty of Health Sciences, School of Pharmacy, University of Namibia, Windhoek, Namibia; [3]Department of Pharmacology and Therapeutics, Faculty of Health Sciences, School of Pharmacy, University of Namibia, Windhoek, Namibia.*

**Introduction:** Despite that ATV/r has a better safety profile than LPV/r, there is continued prescribing of LPV/r containing regimens in the Namibian public healthcare sector.

**Objective:** To determine the impact of the policy change on switching from LPV/r to ATV/r.

**Methods:** Monthly ART Patients by Regimen data from the MoHSS PMIS Dashboard was accessed for the second line LPV/r and ATV/r based regimens. Data collected were aggregated per month from January 2015 to March 2018. Results obtained were analyzed using R and Minitab.

Forecasts of the data between April 2018 and January 2019 were done using Microsoft Excel spreadsheet.

**Results:** A downward trend of 127 patients being enrolled on LPV/r based after ATV/r introduction and an upward level of 210 patients being initiated on LPV/r based regimens every month were observed before and after the implementation of the guideline in January 2017. Though, the implementation was not rapid, the rate of switching patients from previous second line regimens was rapid from March 2017.

**Conclusions and recommendations:** The policy change led to significant level and trend change in the number of patients switched from LPV/r based second line regimens to ATV/r based second line regimens.

## P49

### Empowering researchers to 'survive and thrive'

**Kairuz, T.[1]* & Nickloes, T.[2]**

**Therese.Kairuz@newcastle.edu.au; [1]University of Newcastle, Australia; [2]Symbiota Business Solutions, South Africa.*

**Background:** Economic and health consequences may arise from inappropriate treatment, such as overprescribing of anxiolytics. Inappropriate use of anxiolytics may mask depression. Anxiety and depression may co-exist and can lead to burnout. Academic environments are becoming increasingly stressful as lecturers manage numerous demands, and stress is associated with anxiety. Lecturers who are also registered health professionals are at highest risk of depression and burnout, from two demanding professions: teaching and health.

**Methods:** This study used skills in database searching to identify literature to examine university governance and stress among academics i.e. researchers and/or lecturers/university teachers. It identified conceptual articles, cross-sectional studies, quantitative or qualitative approaches, and mixed methods study design. Literature was synthesised through the lens of an academic who has been employed at universities in three countries and is registered as a pharmacist with the respective Pharmacy Councils. Insight was provided by a consultant with extensive experience at CEO level and who specialises in empowering employers and employees to increase sustainability, balancing 'financial bottom line' with the wellbeing of staff.

**Results:** Demands included expectations to attract funds for research; non-representative evaluation of teaching; unrealistic key performance indicators; and challenges associated with bureaucracy and technology. An apparent conflict emerged regarding the desire – and duty - to provide pastoral care when faced with the rising number of students and the decreasing staff-student ratio. The need for ethical leadership in the workplace, and authentic self-leadership by individuals, became apparent.

**Conclusion and recommendations:** Academics face a range of challenges in the workplace, which could lead to stress, anxiety, depression and burnout. Acknowledged recently by the World Health Organization as a 'workplace phenomenon', burnout warrants attention. University lecturers deserve to learn skills that could help them to cope optimally in the workplace.

## ABSTRACT INDEX

### ORAL PRESENTATIONS

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