Fourth Training Workshop and Symposium MURIA Group in conjunction with ISPE
18 – 21 June 2018
University of Namibia, Windhoek

Theme: Medicine utilisation research in Africa influencing patient care and policy

Aggregated Abstracts

Topics

Oral Presentations – Country Feedback

Feasibility of using point prevalence surveys to assess antimicrobial utilisation in public hospitals in South Africa; a pilot study and implications

Nokuthula N Dlamini[1], Johanna C Meyer[1], Danie Kruger[1,2], Amanj Kurdi[3], Brian Godman[3,4], Natalie Schellack[1]
[1]School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa
[2]Pharmacy, Private Hospital, Pretoria, South Africa
[3]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, United Kingdom
[4]Division of Clinical Pharmacology, Karolinska Institutet, Karolinska University Hospital Huddinge, Stockholm, Sweden

Background: There are concerns with rising antibiotic resistance rates across countries enhanced by inappropriate use of antibiotics. This includes the prescribing of antibiotics for predominantly viral infections such as URTIs including coughs and colds. There are concerns that pressure is being placed onto private practitioners to prescribe antibiotics for patients with URTIs particularly children. In addition, prescribe combination antibiotics such as amoxycillin and clavulanic acid rather than amoxycillin which increases resistance rates, which is discouraged in quality indicators (QIs) developed by WHO Europe and ECDC. In view of this, there is an urgent need to assess private practitioner prescribing of antibiotics for URTIs in Botswana. Subsequently suggest initiatives to address this if concerns. This could include developing prescribing guidance and QIs and none currently exist.

Objectives: Describe Antibiotic use among patients seen for URTI in the private sector as a first step towards informing future studies and interventions in the area

Methods: Descriptive, retrospective study of prescribing behavior among patients in the Associated Fund Administrators scheme, which administers two large medical aid funds in Botswana

Results: 311,953 acute prescription encounters were analysed incorporating prescriptions dispensed by private GPs (49%), Community Pharmacists (30%), Hospital Pharmacists (16%) and Medical Specialists (3.9%). Only 12% of pharmacy claims had a specific ICD10 code. Out of 216,256 encounters, 17.4% were for URTIs and 72.9% of these had at least one antibiotic dispensed. Beta-lactams dominated antibiotics prescribed and dispensed at 81.4% of total antibiotics, followed by macrolides (10.7%). Limited use of fluoroquinolones (0.5%) as restricted in Botswana. Within the beta lactam penicillins, combination penicillins including co-amoxiclav dominated (84.9% of total penicillin use despite use).

Conclusions: There are concerns regarding the high rate of inappropriate antibiotic prescribing. Future suggestions included strengthening current indicators to include new quality indicators, educational programmes among private medical practitioners and pharmacists, as well as utilising their help with designing future studies to address key issues.

Development of a web-based application to improve data collection for antimicrobial point prevalence surveys in the public health care system in South Africa; findings and implications

NN Dlamini[1], JC Meyer[1], D. Kruger[1,2], B Godman[3,4], A. Kurdi[4], M. Bennie[4], N Schellack[1]
[1]School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa
[2]Pharmacy, Private Hospital, Pretoria, South Africa.
[3]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, United Kingdom
[4]Division of Clinical Pharmacology, Karolinska Institutet, Karolinska University Hospital Huddinge, Stockholm, Sweden

Background: Surveillance of antimicrobial use is one of the main recommended strategies in combating growing antimicrobial resistance (AMR) rates and a key part of developing pertinent policies and initiatives to reduce growing AMR rates in South Africa and wider. However, determining antimicrobial utilisation at a patient-level among public hospitals in South Africa can be a challenge given personnel and resource constraints. There are also currently no standardized data collection tools. Most countries in Africa currently undertake antimicrobial utilisation surveillance using paper-based data collection tools including point prevalence surveys (PPS). Unfortunately, paper-based systems have disadvantages including the time taken to complete the forms and analyse the findings, increasing costs and manpower hurdles. Electronic tools offer many advantages including mobile and real time data collection and also the opportunity for rapid analytics.
Objectives: Develop and test a web-based application (APP) for future PPS studies to successfully address identified challenges.

Methods: A web based application (APP) was developed based on previous PPS in Botswana and South Africa using a paper-based data collection tool and tested during July 2017 in a leading public hospital in South Africa. The developed APP was also evaluated for data quality by measuring the number of errors, work flow, and time taken for the survey versus the previous paper-based system. User acceptance was also measured via a questionnaire to the data collectors.
Results: A total of 187 patients' files were surveyed in this leading hospital using the APP whilst also documenting the challenges and areas of improvement for the APP. The identified areas of improvement have now been incorporated into the revised APP for future studies. The data collectors agreed that surveying the patients' files took appreciably less time with the APP compared to the paper based tool, and should be used in the future. In addition, data analysis was hastened using the APP.
Conclusions: The APP development process has been successful and the APP is a potential tool for future PPS in South Africa and wider. The APP methodology is now being tested in new studies across South Africa to help instigate pertinent educational and other interventions to improve the future use of antimicrobials among public hospitals in South Africa.

A countrywide point prevalence study in South Africa – using technology to determine use and appropriateness

Natalie Schellack[1], Johanna C Meyer[1], Danie Kruger[1,2], Marion Bennie[3], Amanj Kurdi[3], Brian Godman[3,4]
[1]School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa
[2]Pharmacy, Private Hospital, Pretoria, South Africa. Email: Danie.Kruger@smu.ac.sa
[3]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, United Kingdom
[4]Department of Laboratory Medicine, Division of Clinical Pharmacology, Karolinska Institutet, Karolinska University Hospital Huddinge, Stockholm, Sweden.
Background: Antimicrobial resistance (AMR) is a serious world-wide health concern and a direct threat to future patient safety, with the misuse and overuse of antimicrobials increasing AMR rates. Consequently, it is imperative to measure current antibiotic utilisation within hospitals to guide future quality initiatives. However, data on antimicrobial utilization among public hospitals and primary health care centres (PHCs) in South Africa (SA) is currently lacking and needs to be addressed.
Objectives: To describe and quantify how AMs are currently utilised in selected public sector hospitals and PHC centres in SA; to determine how mHealth techniques can be used to monitor AM utilisation in selected public sector hospitals and PHC centres in SA; to assess current programmes among public sector hospitals and PHC centres to improve AM prescribing as part of AMSPs and pharmacy and therapeutics committee (PTC) activities; to develop interventions, including mHealth techniques, to enhance the role and activities of AMSPs and PTCs; to measure prescriber compliance to STGs for ID in public sector hospitals and PHC centres in SA; to develop interventions, including mHealth techniques, to monitor and enhance prescribing compliance to STGs; to determine the utilisation, uptake and timeliness of vaccines (EPI and seasonal influenza) in selected public and private sector facilities across SA, as part of an AMS strategy to reduce AMR; finally, to develop interventions, including mHealth techniques, that can be used to enhance the appropriate use of vaccines in selected public and private sector facilities across SA.
Methods: A web-based application tool was developed in South Africa based on previous PPS studies conducted in Botswana and South Africa using paper-based collection tools, and evaluated during July 2017. Key variables measured included antimicrobial utilisation patterns and appropriateness of treatment for sepsis in the Intensive Care Units (ICUs) and paediatric diarrhoea in the CHCs
Results: Preliminary results will include data from three provinces with 2455 patient files reviewed with all of their antimicrobial therapy and related results
Conclusions: The PPS method offers a standardized tool that can be used to identify targets for quality improvement programmes in hospitals. The development of a web-based application (APP) has allowed the team to collect large datasets throughout Southern Africa.

Point prevalence survey of antibiotic use and resistance at the biggest national referral hospital in Kenya: Findings and implications

Caleb Okoth[1], Sylvia Opanga[1], Faith Okalebo[2], Margaret Oluka[2], Amanj Baker Kurdi[3], Brian Godman[4,5,6]

[1]Department of Pharmaceutics and Pharmacy practice, School of Pharmacy, University of Nairobi, Kenya.; [2]Department of Pharmacology and Pharmacognosy, School of Pharmacy, University of Nairobi, Kenya; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, Strathclyde University, Glasgow UK; [4]Division of Clinical Pharmacology, Karolinska Institutet, Stockholm, Sweden; [5]Health Economics Centre, Liverpool University Management School, Liverpool University, UK.

Background and aims: A substantial amount of antibiotic use in hospitals may be inappropriate, potentially leading to the development and spread of antibiotic resistance, adverse effects, mortality and increased hospital costs. The objective of this study was to assess current patterns of antibiotic use in a leading referral hospital in Western Kenya. This would lead to the identification of opportunities for quality improvement in this hospital and across Kenya

Methodology: A point prevalence survey (PPS) was carried out with data abstracted principally from patient medical records supplemented by interviews from physicians when needed. The pattern of antibiotic use was analyzed by descriptive methods. Differences in antibiotic use and indications between the selected wards were compared using the Chi-square test or Fisher's exact tests.

Results: Among the patients surveyed in the PPS, 67.7% were on antibiotics. The most common classes of antibiotics prescribed were third generation cephalosporins (55%), imidazole derivatives like metronidazole (41.8%) and broad spectrum penicillins (41.8%). The most common indication for antibiotic use was medical prophylaxis (29%), with local guidelines advocating antibiotic prophylaxis in mothers after delivery of their child as well as in neonates with birth asphyxia and low weight at birth. Dosing of antibiotics was seen as generally optimal when assessed against current recommendations.

Conclusions: Whilst the dosing of antibiotics seemed adequate, there was high use of antibiotics in this hospital. This needs to be urgently reviewed with current appreciable empiric antibiotic use. Programmes are being instigated to address these concerns including developing antibiotic guidelines and formularies, especially for empiric use, as well as implementing antimicrobial stewardship activities.

Antibiotic prescribing patterns at a referral hospital in Kenya: A point prevalence survey

Lydia Momanyi[1], Margaret Oluka[2], Sylvia Opanga[3], David Nyamu[3], Amanj Kurdi[4], Brian Godman[4,5]
[1]Pharmacy Department, Rift Valley Provincial General Hospital, Nakuru, Kenya
[2] Department of Pharmacology and Pharmacognosy, School of Pharmacy, University of Nairobi
[3] Department of Pharmaceutics and Pharmacy Practice, School of Pharmacy, University of Nairobi
[4] Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK; [5]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden

Background: Antibiotics are important in prevention and treatment of infections and the reduction in associated morbidity and mortality. Inappropriate use can lead to antimicrobial resistance, rendering them ineffective. Studies have shown variations in antibiotic prescribing patterns across different patient populations within the same hospital.
Objectives: Our study aimed at establishing the prevalence and patterns of antibiotic use in a referral hospital in Kenya, with the aim of using the data for quality improvement.
Methods: A point prevalence survey was conducted at a referral hospital in Kenya in April 2017. All patients who received antibiotics were recruited from all departments. Descriptive and inferential data analysis was done to establish the patterns of antibiotic use and the associations between variables. Ethical approval was obtained from the Kenyatta National Hospital/ University of Nairobi Research and Ethics Committee.
Results: A hundred and seventy nine patients were enrolled in the study. The prevalence of antibiotic prescribing was 54.7%. The highest prevalence of antibiotic prescribing was found in critical care unit and isolation ward, both at 100%. Obstetrics and gynaecology department had the least prevalence at 20.8%. Penicillins (46.9%) followed by cephalosporins (44.7%) were the most prescribed antibiotic classes. A larger proportion of antibiotic prescribing was for treatment (75.4%) as compared to prophylaxis (29.0%). Majority (76.9%, n=52) of the patients on surgical prophylaxis were on prolonged duration (>1 day). Empiric prescribing accounted for 82.6% of the total antibiotic encounters while targeted treatment was recorded in 17.4%.
Conclusions: The study identified several areas for potential improvement in antibiotic prescribing such as the high prevalence of inpatient antibiotic use, prolonged duration of antibiotic use in surgical prophylaxis, extensive prescribing of broad spectrum agents such as ceftriaxone and the low prevalence of targeted antibiotic prescribing.

Appropriateness of antibiotic prescribing and compliance to guidelines at a referral hospital in Kenya: A point prevalence survey

Lydia Momanyi[1], Margaret Oluka[2], David Nyamu[3], Sylvia Opanga[3], Amanj Kurdi[4], Brian Godman[4,5]

[1]Pharmacy Department, Rift Valley Provincial General Hospital, Nakuru, Kenya; [2] Department of Pharmacology and Pharmacognosy, School of Pharmacy, University of Nairobi; [3] Department of Pharmaceutics and Pharmacy Practice, School of Pharmacy, University of Nairobi; [4]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK; [5]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden

Background: A large proportion of antibiotics globally are prescribed, dispensed or administered irrationally. This is partly due to lack of local guidelines or non-adherence to available antibiotic use guidelines. The irrational use of antibiotics results in wastage of scarce health care resources, increases the risk of adverse drug reactions and increases the potential of development of resistance. This leads to poor health outcomes.

Objectives: The aim of the study was to establish whether there was rational or irrational prescribing and adherence to guidelines in one of the referral hospitals in Kenya at a specific point in time.

Methods: A point prevalence survey was conducted at a referral hospital in Kenya in April 2017. Stratified proportionate random sampling technique was used to select eligible patients who were on systemic antibiotics. Data was abstracted from the patient medical records into a predesigned patient form. Associations between predictor variables such as socio-demographic factors and outcome variables such as rational prescribing and guideline compliance were determined using Chi square. Stepwise backward binary logistic regression was done to determine the independent predictors of rational antibiotic prescribing and guideline compliance. Statistical significance was set at 95% confidence

level and values with p≤0.05 were considered statistically significant. Approval to conduct the study was obtained from the Kenyatta National Hospital/University of Nairobi Research and Ethics Committee.
Results: A total of 179 patients were recruited into the study. There was rational prescribing in 33.9% (n=121) of all the 357 antibiotic encounters. The neonatal medical ward had the highest prevalence of rational prescribing (80%, n=12) while the critical care unit had the highest prevalence of irrational prescribing (100%, n=4). The most powerful predictor variables of rational antibiotic prescribing were the department (AOR=0.778, 95% CI=0.640–0.945, p=0.011), a diagnosis of a neonatal infection (AOR=5.992, 95% CI=1.985–18.094, p=0.001), a diagnosis of skin, soft tissue, bone and joint infection (AOR=6.221, 95% CI=2.053–18.847, p=0.001) and a diagnosis of no defined site such as sepsis (AOR=5.540, 95% CI=1.486–20.648, p=0.011). There was guideline compliance in 45.8% (n=82) of the study population. The most powerful predictors of guideline compliance were a diagnosis of a respiratory infection (AOR=7.141, 95% CI=2.950–17.287, p<0.001), a diagnosis of a neonatal infection (AOR=10.603, 95% CI=1.671–67.280, p=0.012) and a diagnosis of a skin, soft tissue, one and joint infections (AOR=5.606, 95% CI=1.730–18.162, p=0.004).
Conclusions: Rational prescribing was documented in only a third of all antibiotics prescribed. There was poor compliance to guidelines. Local guidelines were not available for a significant proportion of conditions. International guidelines were used in such scenarios.

Trends in Utilization of Parenteral Antibiotics from 2014-2016 at Nyangabgwe Hospital, Botswana.

L Molefhi[1], BD Anand Paramadhas[2], HR Phiri[3], P Mpinda-Joseph[4], C Tiroyakgosi[5], B Godman[6]

[1]Pharmacist Intern, Nyangabgwe Hospital, Francistown, Botswana; [2]Chief Pharmacist, Nyangabgwe Hospital, Francistown, Botswana; [3]Principal Pharmacist I, Nyangabgwe Hospital, Francistown, Botswana; [4]Infection Prevention and Control Coordinator, Nyangabgwe Hospital, Francistown, Botswana; [5]Chief Pharmacist, Botswana Essential Drugs Action Program, Ministry of Health and Wellness, Gaborone, Botswana; [6]Division of Clinical Pharmacology, KI, Karolinska University Hospital, Huddinge, Sweden

Background: There is a global rise in Anti-Microbial Resistance (AMR) and a decline in the development of new antibiotics. AMR has become a major obstacle to treat infectious diseases worldwide resulting in increased morbidity, mortality, length of hospital stay and healthcare cost. Increase in AMR is directly proportional to the consumption of antibiotics and irrational use. Hospital Antimicrobial Stewardship Programs (ASP) are crucial to improve local antibiotic use and Defined Daily Doses (DDD) are the cornerstone to measure antibiotic use.

Objectives: To determine the trends in utilization of antibiotics for improving its rational use at Nyangabgwe Hospital.

Methods: The study was conducted as part of the initiatives of the pharmacy led ASP to determine the DDDs of parenteral antibiotics. A retrospective cross sectional review of the pharmacy inventory records for parenteral antibiotic products issued to the wards was done for the years 2014 to 2016. The review excluded oral antibiotics and TB products. The utilization of antibiotics were reported as DDD/100 patient days. The site offers tertiary care with a bed capacity of 572 in northern Botswana.

Results: The top five largely consumed parenteral antibiotics are cefotaxime, metronidazole, ampicillin, amoxicillin clavulanic acid and gentamycin with 6.2, 4, 2.6, 2.6 and 1.8 DDD/100 patient days respectively. Piperacillin tazobactam, vancomycin and ceftriaxone, meropenem and cefuroxime had a DDD of 0.5, 0.5, 0.5, 0.4 and 0.2 per 100 patient days. Since 2014 major reductions in utilization were observed for most antibiotics with a mean reduction of 18.57% with clindamycin, piperacillin tazobactam, cefotaxime, metronidazole, ampicillin and gentamycin showing reductions of 50%, 44.4%, 25.3%, 21.57%, 13.33% and 5.26% DDD/patient days respectively by 2016. However amoxicillin clavulanic acid, ceftriaxone and meropenem showed an increase of 23.81%, 66.67% and 300% respectively. Limitations were inclusion of antibiotics consumed by paediatric wards and exclusion of oral antibiotics used for inpatients from due to challenges in sorting utilization data. It is not known if shortages of antibiotics lead to this reduction.

Conclusions: A decreasing trend in utilization of antibiotics observed subsequent to the Pharmacist initiated ASP in Nyangabgwe Hospital. Further improved data collection strategy and studies are necessary to ascertain the impact of potential shortages of antibiotics and instituted restrictive antibiotic use policies on the trends in antibiotic utilization.

Point prevalence survey to estimate the true burden of healthcare associated infections and their risk factors in Nyangabgwe Hospital, Botswana.

P. Mpinda-Joseph[1], BD Anand Paramadhas, G Reyes[3], S Souda[4], C.Tiroyakgosi[5], B Godman[6,7]

[1]Infection Prevention and Control Coordinator, Nyangabgwe Hospital, Francistown, Botswana; [2]Chief Pharmacist, Nyangabgwe Hospital, Francistown, Botswana; [3]Clinical Microbiologist, Nyangabgwe Hospital, Francistown, Botswana; [4]Senior Lecturer, Faculty of Medicine, University of Botswana; [5]Chief Pharmacist, Botswana Essential Drugs Action Program, Ministry of Health and Wellness, Botswana; [6]Division of Clinical Pharmacology, KI, Karolinska University Hospital, Stockholm, Sweden; [7]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK

Background: Increase in Healthcare Associated Infections (HAIs) reflect poor quality of care; a threat to patient safety with increased morbidity, mortality, length of hospital stay and healthcare costs. Though preventable, poor structural and resource capacities, overstretched workforce, high burden of infectious diseases and irrational antimicrobial use hinder prevention and control of HAIs. Often spontaneous reporting for surveillance does not reflect the true burden of HAIs due to under reporting in our setting.

Objectives: To estimate the burden of HAIs and their risk factors in Nyangabgwe Hospital.

Methods: A Point Prevalence Survey (PPS) involving all 15 wards of the hospital was conducted. Supervised by the hospital microbiologist, a multidisciplinary team of Infection Prevention and Control (IPC) focal persons were trained on a standardized data collection tool with CDC case definitions for accurate identification of HAI cases. The tool also included various risk factors as part of the data collection. The study site was an acute tertiary care hospital with a bed capacity of 572 in northern Botswana. A pilot survey was conducted in the previous year and the data collection tool was revised as required. The survey was completed in a single day in the month of November 2017. Data analysed in MS-Excel 2013 and data for most categorical variables were presented in percentages and absolute numbers.

Results: The bed occupancy rate was 60.7% (n=347) on the date of survey. More than 1 out of 10 patients 13.54% (n=47) were identified with HAIs. Of the identified cases 48.9% (n=23) were lab confirmed. The prevalence of HAIs in Adult Intensive Care Unit (AICU) was 100% (n=5), Private Ward housing the Nephrology Unit 50% (n=4), Special Care Baby Unit housing the Neonatal Intensive Care Unit (NICU) 41.94% (n=13), and Paediatric Medical Ward 33.33% (n=8) showed the highest prevalence. About one fourth of the HAIs were site unspecific, 19.1% (n=9) of the cases had surgical site infections (SSIs), 17% (n=8) ventilator associated pneumonia/complications, 10.6% (n=5) had infections on decubitus ulcer, 8.5% (4) had lab confirmed blood stream infections, and 6.4% (n=3) had urinary tract infections. On the risk factors 51% (n=178) of patients received antibiotics of which 79.2% (n=141) received injectable antibiotics. 32.48% (n=58) received more than 2 antibiotics. 48% (n=166) of patients were on peripheral catheter, 10% (n=35) on urinary catheter, 1% (n=5) on central venous catheter and 3% (n=9) on other catheters. 24% (n=83) received invasive procedure(s), 9% (n=32) previously hospitalized in the past 90days, and 3% (n=10) on Mechanical ventilator with 6.32patients/100 mechanical ventilation days.

Conclusions: Point Prevalence Surveys may be helpful to estimate true burden of HAIs where limited capacity is available for implementing spontaneous reporting for surveillance. Concerted efforts of staff for IPC are required in specialized patient care areas and procedures to reduce HAIs. Further studies to explore the capacity to promote IPC activities in the hospital are essential.

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

P Mpinda-Joseph[1], BD Anand Paramadhas[2], G Reyes[3], MB Maruatona[4], M Chise[5], BB Monokwane-Thupiso[5], S Souda[6], CTiroyakgosi[7], B Godman[8,9]

[1]Infection Prevention and Control Coordinator, Nyangabgwe Hospital, Francistown, Botswana; [2]Chief Pharmacist, Nyangabgwe Hospital, Francistown, Botswana; [3]Clinical Microbiologist, Nyangabgwe Hospital, Francistown, Botswana; [4]Nursing manager, NICU, Nyangabgwe Hospital, Francistown, Botswana; [5]Pediatrician, Nyangabgwe Hospital; [6]Senior Lecturer, Faculty of Medicine, University of Botswana; [7]Chief Pharmacist, Botswana Essential Drugs Action Program, Ministry of Health and Wellness, Botswana; [8]Division of Clinical Pharmacology, KI, Stockholm, Sweden; [9]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK

Background: Neonatal deaths account for 8% to 80% with about 42% occurring in the first week of life in developing countries. Complicated by difficulty in early diagnosis, clinically diagnosed sepsis were as high as 170/1000 live births while blood culture confirmed cases were as low as 5.5/1000 live births. Up to 71% of neonates are prone to blood stream infections (BSI) during intensive care due to risk factors such as low birth weight, gestational age, administration of parenteral nutrition and use of invasive devices and procedures. Indiscriminate antibiotic use coupled with poor infection prevention and control (IPC) practices, leads to high infection rates and emergence of drug resistant bacteria. The trends in the prevalence of neonatal BSI and antibiotic sensitivities are unknown in our setting to inform IPC initiatives and antibiotic stewardship programs (ASPs).

Objectives: Describe the trends in bacterial isolates from neonatal blood specimen and antibiotic resistance patterns for the most commonly isolated pathogens.

Methods: A retrospective cross sectional review of neonatal blood culture and sensitivity test results from January 2014 to December 2017 was done. Data abstracted from the hospital laboratory database; results sorted for the tested specimen from a 40 bed Special Care Baby Unit (SCBU) with 6 bed NICU were analysed using MS-Excel 2013. SCBU had an annual bed occupancy rate of 80 to 85% in a 572 bedded public tertiary hospital in northern Botswana. Prevalence of isolated bacteria and its resistance to antibiotics were presented in percentages.

Results: Of the total 366 isolates, 56.01% were from male neonates; 62.3% of blood cultures were ordered within the first week of life; Coagulase Negative Staphylococci (CONS) was the commonest organism (31.97%) isolated followed by Enterococci spp. (18.03%), Klebsiella pneumoniae (10.93%), Staphylococcus aureus (8.47%), Escherichia coli (7.38%), Acinetobacter spp. (4.64%), Enterobacter spp. (3.55%), Group-B Streptococci (2.46%), Streptococci viridans (2.19%) and Pseudomonas aeruginosa (1.09%). Prevalence of CONS, Enterococci spp., S. aureus and Enterobacter spp. has slightly increased and the rest has declined from the baseline in 2014. Extended Spectrum Beta Lactamase producing K. pneumoniae, Enterobacter spp. and E. coli were 55%, 15.38%, and 11.11% respectively. K. pneumoniae and E.coli showed an increasing trend of Extended Spectrum Beta Lactamase (ESBL) producing strains although no KPC strains identified. Of the S. aureus isolates 19.35% were methicillin resistant (MRSA) while 6.06% of Enterococcus spp. were resistant to vancomycin (VRE) and were isolated only in the year 2017. Acinetobacter spp. showed 100% resistance to meropenem, cephalosporins, aminoglycosides and fluoroquinolones. Candida spp. contributed 3.28% to positive isolates.

Conclusions: CONS, Enterococci spp. Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter spp. Pseudomonas spp. Enterobacter spp. (ESKAPE) organisms, E. coli and Streptococci spp. were the most isolated pathogens. Interventions are necessary to reduce emergence and spread of ESBL producing Klebsiella *pneumoniae*, VRE and prevention of Acinetobacter infections.

Investigation of foodborne pathogens and their antimicrobial resistance in humans, animals and the environment – a pilot project for Zimbabwe

Mtapuri-Zinyowera S[1], Tarupiwa A[1], Manangazira P[2], Musiyambiri M[3], Samende KB[3], Makaya P[4], Katsande P[4], Musari S[4], Gadaga MB[4], Hodobo T[4], Hove R[5], Chaibva V[5], Woods P[6], Yomisi S[17], Mubambi TK[17], Govore E[11], Chawira L[11], Mataranyika W[12], Mugona C[6], Makuni C[16], Manyonga R[16], Mukundu B[14], Chinowaita F[14], Nyoni TC[9], Dandira GE[13], Mubvumbi L[13], Mamvura N[21], Chimuti T[21], Nayoto, K[10], Gumbo P[8], Mugero C[8], Ngorimo T[7], Chigiya T[4], Manyembere G[18], Mafuko TLT[18], Macharaga J[7], Dube K[19], Matheu J[20], Mashe T[1, 22]

[1]National Microbiology Reference Laboratory; [2]Epidemiology and Disease Control - Ministry of Health and Child Care; [3]Government Analyst Laboratory; [4]Central Veterinary Laboratory - Ministry of Lands, Agriculture and Rural Resettlement; [5]Pharmacy Department - Ministry of Health and Child Care; [6]Department of Animal Science, University of Zimbabwe; [7]Harare Central Hospital; [8]Bindura Provincial Hospital; [9]Mpilo Central Hospital; [10]Irvines Zimbabwe; [11]Beatrice Road Infectious Diseases Hospital; [12]Marondera Provincial Hospital; [13]CIMAS Medical Laboratories; [14]PSMI Clinical Laboratory; [16]Lancet laboratories; [17]Environmental Management Agency Laboratory; [18]Harare City Water; [19]Food and Agriculture Organization; [20]World Health Organization; [21]Parirenyatwa group of Hospitals, [22]University of Pretoria, School of Medicine, Faculty of Health Sciences, South Africa

Background: In 2015 at the 68th World Health Assembly (WHA) a resolution was passed urging Member States to engage in the fight against antimicrobial resistance (AMR) by putting in place National Action Plans that are in line with the Global Action Plan. The World Health Organisation (WHO) together with the World Animal Health Organisation (OIE), and the Food and Agriculture Organization (FAO) and other partners, have developed tools that assist governments to develop AMR strategies with a 'One Health' approach. Zimbabwe immediately put in place a framework towards developing the AMR National Action Plan by starting with a situational analysis to help understand the situation around AMR. A multi-sectorial 18 member AMR Core Group was formed that has put in place these two documents. The country held another multisectorial meeting where 5 technical working groups (TWGs) were formed. The country is now at the implementation stage by putting in place an integrated surveillance system that is 'One Health,' that is within the operational plan of the Zimbabwe AMR National Action Plan (NAP).

Objectives: To establish a laboratory based antimicrobial resistance surveillance National Coordination Center (NCC). To sample and characterize foodborne pathogens namely *Salmonella* and *Escherichia coli.*

Methods*:* The National Microbiology Reference Laboratory was decided to be the National Coordinating Center (NCC) by the different stakeholders after a meeting of the 15 sentinel sites. These were 10 human labs (private, city health and government) that analysed blood, urine or stool samples from patients that came for care and treatment, 2 animal labs (Central veterinary lab {CVL} – Gov and ZimVet – Private poultry lab) cloacal samples were collected from poultry or cattle farms, 1 food lab (Government Analyst Lab) collected ready to eat food such as polony that were made from cattle or poultry and 2 environment labs (Government and City Health) collected water samples from wells, boreholes and other drinking water sources. The antibiotic discs that are being used for sensitivity testing are ceftriaxone, ampicillin, ciprofloxacin, ertepenem, tetracycline, cefepime and cotrimoxazole. In order to check for ESBL producing organisms, cefotaxime, ceftazidine and amoxicillin clavulanate are used.

Results*:* The isolates that were collected from September 2017 to May 2018 that are at the NCC and the CVL are as follows : Source-Human: *E.coli* 252, *S.typhi* 262, Non-typhoidal 65; Source-Environment: *E.coli* 27; Source-Food: *E.coli* 21; Source-Poultry: *E.coli* 648 and *Salmonella spp.* 171; and Source-Bovine: *E.coli* 368 & *Salmonella spp* 6. Total number of isolates: 1820.

Conclusions*:* Implementation of a One Health surveillance system is achievable, although requires coordination and appropriate resources including implementation of quality systems. There has been challenges in procurement of reagents and consumables therefore antimicrobial sensitivity needs to be done on these isolates. These results will inform policy concerning appropriate antibiotics to be utilised in the different sectors, including knowledge of the prevailing resistance patterns of certain antibiotics.

Selected Oral Presentations

Addressing the Under-reporting of Adverse Drug Reactions in Sub-Sahara Africa

Yohanna Kambai Avong[1], Bolajoko Jatau[1], James Okuma[1], Ritmwa Gurumnaan[1], Gbenga Ayodele Kayode[1], Eunice Bosede Avong[2], Ibrahim Ali[3], Nanfwang Danat[1], Charles Olalekan Mensah[1], Patrick Dakum[1]
[1]Institute of Human Virology Nigeria, Clinical, Abuja, Nigeria, [1]Institute of Human Virology Nigeria, Research, Abuja, Nigeria,
[2]National Agency for Food and Drug Administration and Control, Abuja, Nigeria
[3]APIN Public Health Initiatives, Abuja, Nigeria

Background: The World Health Organization (WHO) criterion for adequate reporting of Adverse Drug Reactions (ADRs) is 200 reports per million inhabitants per year. Sub-Saharan African countries are far behind in meeting this target because of acute shortage of trained healthcare workers. Thus, under-reporting and poor quality ADR reports are significant challenges in the region. In 2015, we utilized a WHO/TDR grant to design and implement a Pharmacovigilance Training Model so as to increase the accuracy and rate of reporting of ADRs in Nigeria. This abstract presents the findings and outcome of the model.
Objectives: The objective of evaluating the model was to assess participants' gain in knowledge and the expected outcomes, such as submission of ADR reports to the regulatory authority [National Agency for Food and Drug Administration and Control (NAFDAC)] and establishing pharmacovigilance centers.
Methods: We designed the "Structured Pharmacovigilance and Training Initiative" (SPHAR-TI) model, which was a 10 month modular course, based on the World Health Organization (WHO) accredited Structured Operational Research and Training Initiative (SORTI). Six key activities were implemented: a six day workshop for healthcare workers selected from the six geopolitical regions of Nigeria, using selection criteria; mobilized resources; monitored, evaluated and provided feedbacks to the participants; developed a reporting system; provided leadership and collaborated with the government. We evaluated the performance of the model using the knowledge gained by the participants and the number of correctly completed case notification forms (ADR reports) submitted to NAFDAC.
Results: Fifty-five out of 56 (98%) participants were trained and followed up for 12 months. More than three quarter of the participants have never received training on pharmacovigilance prior to the course. Yet, a significant gain in knowledge [mean pre vs post-tests = 20.4 Vs 27.8 ($P < 0.001$)] was observed after the participants completed the comprehensive training. In only seven months, 3000 ADR reports (with 100% completeness) were submitted, 2,937 facility based healthcare workers trained and 46 Pharmacovigilance Centres activated by the participants. Overall, a 273% increase in ADR reports submission to NAFDAC was observed.
Conclusions: Participants gained knowledge, which tended to increase the reporting of ADRs. The SPHAR-TI model could be an option for strengthening the continuous reporting of ADRs in public health programs, especially in resource limited settings with weak health systems.

Formulary management activities of public sector Pharmacy and Therapeutics Committees in the Gauteng Province of South Africa: An analysis of observations of Pharmacy and Therapeutics Committee meetings

Matlala M[1], AGS Gous, Meyer JC[1] & Godman B [2, 3]
[1]School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa
[2]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden
[3]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK

Background: The World Health Organisation (WHO) identified Pharmacy and Therapeutics Committees (PTCs) at district and hospital levels as one of the pivotal models to promote rational medicine use. Formulary development and management is one of the functions of PTCs as per WHO guidelines. This study aimed to describe the formulary management activities among PTCs in public hospitals in the Gauteng Province of South Africa (SA).

Methods: A quantitative, non-participatory, observational method was employed, whereby 26 PTC meetings were observed. Where permission was granted, meetings were recorded and transcribed verbatim. In instances where permission to record meetings was not granted, detailed notes of the meeting were taken and later compared to the minutes of the meeting from the PTC secretariat. Data were coded, categorised and themes identified using NVivo9™ qualitative data analysis software.

Results: More than half of the observed PTCs reviewed their formulary lists. There was variation in the review process amongst institutions providing different levels of care. Various aspects were considered for formulary management, including cost considerations, which focused mainly on acquisition costs, evidence-based evaluation of clinical trials, patient safety, clinical experience and changes in the National Essential Medicines List. Lack of expertise on the application of pharmacoeconomic analysis and evidence-based decision-making in formulary management were identified as some of the challenges at all PTC levels.

Conclusion: No previous studies from the Gauteng Province, SA, reported on how decisions are taken to include or exclude medicines onto formularies at public sector hospitals providing different levels of care. Different approaches are adopted at different levels of care when adding to- or removing medicines from the formulary lists. Future programmes should strengthen PTCs in specialised aspects of formulary management.

Compliance of Limpopo Province primary health care facilities to the ideal clinic standards as part of the *'Adopt a Clinic Project'* for community service pharmacists

TA Segolela[1], M Makhado[2], JC Meyer[1], EA Helberg[1] AND B Godman[3, 4]

[1]Department of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, SA

[2]Management Sciences for Health, South Africa

[3]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK

[4]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden

Background: In 2012, the National Department of Health conducted an audit at primary health care (PHC) facilities to assess compliance to the National Core Standards (NCS). Malpractices and deficiencies were evident and in response an Ideal Clinic programme was introduced in 2013, focussing on the delivery of quality health services, including pharmaceutical services. Limpopo Province introduced the 'Adopt a Clinic Project', with community service pharmacists (CSPs) in the province being allocated to a number of clinics to provide support to them in terms of pharmaceutical services during their CSP year, however for only one year.

Objective: To compare PHC facilities' compliance to Ideal Clinic standards, with specific reference to medicine rooms, during CSP support in 2014 and 2015, with the post-project compliance status in 2017.

Methods: An Ideal Clinic checklist was used to assess 28 PHC facilities within the 'Adopt a Clinic Project', for medicines availability and against 35 quality standards. Data were collected retrospectively from monthly clinic assessments during CSP support and prospectively on current medicines availability and compliance with the Ideal Clinic standards post CSP support. Data was entered on Microsoft Excel® before statistical analysis using SAS Release 9.4. The overall percentage compliance for each clinic was calculated, as well as the percentage compliance for each standard. Differences in compliance to standards during- and post CSP support were tested for statistical significance, using the Fisher's exact test.

Results: In 8 out of 35 standards assessed, an improvement or sustainability of at least 80% was recorded for 86% (24/28) facilities during CSP support. Notable improvements ($p<0.001$) were observed during CSP support in the following ideal clinic standards: Availability of issuing procedures (89%); Temperature monitoring (93%); No expired medicines on shelves (86%); Records of expired medicines (82%); Medicines uniformly labelled (82%); Stock cards for all items (82%); Accurate balance on stock card (86%); Frequent physical stock counts (89%). Improvements were not sustained post CSP support. The percentage compliance of these items declined from an average of 86% during CSP support to 58% post CSP support withdrawal.

Conclusions: Generally, there was a significant decline in compliance to quality standards on what CSPs had attained during their support. Allocating pharmacy personnel to support clinics may be one of the solutions to achieve compliance essential for National Health Insurance implementation.

Rational drug prescribing at the medical outpatient-department, Korle Bu Teaching Hospital, Accra, Ghana

Grace Owusu Aboagye[1], Daniel Kwame Afriyie[2], Brian Godman[3]
[1]Korle-Bu Teaching Hospital, Medical Department, Accra
[2]Ghana Police Hospital, Pharmacy Department, Accra.
[3]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK; [4]Division of Clinical Pharmacology, KI, Stockholm, Sweden; [5]Health Economics Centre, Liverpool University Management School, Liverpool, UK.

Background: Rational prescribing and use of medicines is vital in achieving desired therapeutic outcomes globally within finite resources. However, irrational prescribing and use of medications by prescribers and patients respectively, remains a major health challenge worldwide resulting in increased health costs, possible adverse drug reactions, morbidity, and sometimes deaths. Objectives: To investigate rational prescribing at the Outpatient Department of Medicine, Korle Bu Teaching Hospital (KBTH) using the WHO rational drug indicators

Methods: A cross-sectional retrospective study was conducted at the Department of Medicine, KBTH. Prescriptions written between October 2017 and February 2018 were sampled for analysis using WHO modified rational use indicator data collection form.

Results: Of 202 prescriptions randomly selected and analyzed, 822 drugs were prescribed. Prescribed drugs by generic names constituted 75.3%, 8.9% were antibiotics, 3.2% were injections, and 3.1% were fixed dose combinations. An average of 4.2 drugs per prescription was observed. The majority (91.3%) were prescribed from the Essential Drug List of Ghana and the Medicines Formulary List of KBTH. Drugs prescribed outside the WHO model list but in the Essential Drug List of Ghana were 12. The most commonly prescribed drugs were cardiovascular medicines mainly amlodipine, atorvastatin and lisinopril. Commonly prescribed antibiotics were azithromycin, and amoxicillin with clavulanic acid. Insulin pre-mixed (30/70) HM was the injection mostly prescribed, and metformin tablets was the frequently prescribed antidiabetic agent.

Conclusions: Antibiotics and injection use were rational according to WHO/ INRUD criteria. However, the high use of azithromycin and amoxicillin with clavulanic acid is a concern when assessed against WHO Europe and ECDC quality criteria. In addition, the high number of drugs per encounter is expected as most of the patients had chronic diseases with co-morbid conditions. Prescribers must also be educated on the need for generic prescribing, particularly prescribing fixed dose combinations which are within patients' financial means. In addition, develop new quality indicators based on the increasing prevalence of infectious and non-infectious diseases in Ghana.

Assessment of knowledge and perception on antimicrobial stewardship among physicians and pharmacists at University Teaching Hospitals in Zambia

Aubrey C. Kalungia[1]*, Haabingozi Mwambula[2], Derick Munkombwe[1]
[1]Department of Pharmacy, University of Zambia, Lusaka, Zambia; [2]Ndola Central Teaching Hospital, Ministry of Health, Ndola, Zambia

Background: In resource-limited settings, irrational antimicrobial use remains one of the key drivers of antimicrobial resistance (AMR). Antimicrobial stewardship (AMS) is among key strategies towards promoting rational antibiotic use. In Zambia, information is limited on healthcare providers' knowledge and perceptions on AMS.

Objectives: We assessed knowledge and perceptions on AMS among physicians and pharmacists at the University Teaching Hospitals (UTH) in Lusaka, Zambia.

Methods: A cross-sectional study was conducted at UTH for 3 months from April 2017 to June 2017. A pre-tested self-administered questionnaire was used to collect data. A total of 198 participants stratified into 137 physicians and 61 pharmacists practicing at the respective clinical departments in UTH completed the questionnaire. Data collected was analyzed using descriptive statistics in Stata 13 software (Stata Corp LLC, College Station, TX, USA). For statistical inference, a p-value < 0.05 indicated statistical significance. Ethical approval was granted by University of Zambia School of Medicine Research Ethics Committee (IRB00001131 of IORG0000774).

Results: About 51% (n = 70) physicians and 39% (n = 24) pharmacists did not know about AMS. Few physicians (9%, n = 12) and pharmacists (20%, n = 12) had good knowledge on basic principles of AMS. Knowledge on AMS was significantly associated with years of practice among physicians (χ^2= 26.73, p< 0.0001) and pharmacists (χ^2=10.96, p= 0.0042), and job position or practice level (χ^2= 41.67; p< 0.0001 and χ^2= 13.17; p= 0.0105, respectively). Only among physicians was knowledge associated with previous AMS training (χ^2= 18.16; p= 0.0001). Majority participants (93%, i.e. n = 129 physicians and n = 56 pharmacists) perceived AMR as a current problem in their daily practice. Overall, participants demonstrated

positive perception on AMS and all (100%) indicated the need for context-specific, active and robust educational interventions to enhance AMS in Zambia.
Conclusions: Despite positive perception, basic knowledge on AMS was relatively low among physicians and pharmacists at UTH in Zambia. Educational interventions, capacity building and best practices on AMS are required to address this gap. Mainstreaming strategies such as AMS training and practice is a must for Zambia to make strides towards averting AMR.

Strengthening antimicrobial stewardship using educational strategies: A proposed conceptual framework for professional capacity building in Zambia

Aubrey C. Kalungia[1*], Derick Munkombwe[1], Sarah Marshall[2], Samantha Lippett[3], Anja St-Claire Jones[3]
[1]Department of Pharmacy, University of Zambia, Lusaka, Zambia; [2]Brighton & Sussex Medical Schools, Brighton, UK. [3]Brighton & Sussex University Hospitals, NHS Trust, Brighton, UK
Background: Widespread antimicrobial resistance (AMR) is a major public health concern. In Zambia, data on the magnitude of AMR is limited although high rates of irrational antimicrobial utilization have been reported with most antibiotics prescribed without bacteriological tests and accessed without prescription. To address inappropriate antimicrobial use in Zambia, we must consider strategies to enhance the knowledge, practice and behaviours that positively impact on rational antimicrobial utilization. Our preliminary baseline data suggests knowledge and practice of antimicrobial stewardship (AMS) among healthcare professionals remains relatively low in Zambia with majority not having undertaken any training in AMS. This needs to be addressed
Objectives: Our proposed project seeks to: (1) Enhance AMS knowledge and capacity among health professionals in Zambia through a collaborative multidisciplinary educational intervention; (2) Train AMS champions and teams that will provide and sustain in-service trainings and capacity building, including support implementation of practical tools, protocols and systems to foster AMS practice at national and local institution levels.
Methods: Phase 1 of the proposed project will develop, using evidence-based multidisciplinary learning methods and behavioural change models, a context-specific and needs-based AMS training programme for health professionals. The training package will be developed in partnership with the Brighton-Lusaka Health Link, University of Zambia, Ministry of Health in Zambia, the Pharmaceutical Society of Zambia and the NHS trust UK. This educational intervention targets in-service health professionals (i.e. Medical Doctors, Nurses, Pharmacists and Biomedical Scientists) in Zambia. The initial target is to train 40 health professionals as AMS Champions and Teams. The cohort of participants will be drawn from four main tertiary level hospitals in Zambia as follows: University Teaching Hospitals, Levy Mwanawasa Teaching Hospital, Ndola Central Teaching Hospital and Livingstone Teaching Hospital, respectively. From each hospital, 10 participants (i.e. 3 medical doctors, 3 nurses, 2 pharmacists and 1 biomedical scientist) will be independently nominated to undertake the AMS programme and form implementing teams. The training package will utilize contact-based Trainer-of-Trainers' (ToT) workshop format.
Anticipated outcomes: Phase 2 of the project will equip and roll-out implementation frameworks and tools for AMS practice at health facility level. In this phase, outcome indicators of capacity built, including antimicrobial use indicators will be monitored and evaluated in the implementing sites at baseline and specified intervals. Outcomes of phase 1 are premised to inform basis for scaling up coverage. High coverage and high impact educational interventions using evidence-based best practices and behaviour change methods will be developed as part of Zambia's AMS strategy. Internal capacity building of multidisciplinary AMS teams will provide and sustain context-specific in-service AMS trainings (i.e. both contact-based and on-the-job trainings) and skills development going forward. Through the proposed educational intervention, AMS knowledge and practice is envisaged to be enhanced among health professionals in Zambia.
Conclusions: Leveraging educational strategies to improve knowledge and practice of AMS among health professionals is one strategy with potential to impact on efforts to reduce AMR in Zambia.

Self-medication using antibiotics at community pharmacies in low and middle income countries: A systematic review and meta-analysis

Sylvia Opanga[1], Jamlick Karumbi[2], Amanj Kurdi[3], Brian Godman[3, 4]
[1]Department of Pharmaceutics and Pharmacy Practice, School of Pharmacy, University of Nairobi, Kenya
[2]Department of Curative and Rehabilitative Services, Ministry of Health, Afya House, Kenya
[3]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK;
[4]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden

Background: Self-medication with antibiotics has become increasingly common in low and middle income countries. It has been identified as a key driver to antimicrobial resistance. Factors contributing to self-purchasing of antibiotics include: low socioeconomic status, lack of access to prescribers and weak legislation, among others.
Objectives: To establish the extent of antibiotic self-medication in low and middle income countries especially Africa and the impact of potential policies to address this.
Methods: Potential studies for inclusion in the review were identified through direct searches on the Cochrane Library, EMBASE, Scopus, University of Strathclyde Library and PubMed. Google Scholar was also used to complement our searches. The search terms used were "self-medication", "non-prescription", 'self-treatment', "antimicrobial", "antimalarial", "antibiotic$", "antibacterial" and combining them using Boolean operators. We searched for studies published between January 2007 and March 2018. Study results were summarized narratively for a sub-set of studies where the data on outcomes and methodology varied significantly. The quality of the available evidence about the pre-specified outcomes to support a given intervention was assessed Critical Appraisal Skills Programme (CASP) cross sectional study Checklist. Two reviewers independently assessed study quality; disagreements were resolved by discussion.
Results: A total of 64 potentially relevant articles were identified from literature searches. 21 studies were deemed eligible for inclusion. There is a huge variation in the prevalence of self-medication using antibiotics across low and middle income countries. It ranged from a low of 12% in Iran to as high as 93% in Uganda. Data on the type of antibiotics used for self-medication was not commonly reported. Some of the recurrent reasons for self-medication included inaccessible health facilities, long waiting time for consultation, familiarity of patients with symptoms, bad experience with doctors and ambiguous professional boundaries.
Conclusions: Generally the prevalence of self-medication with antibiotics was high, with variations across countries. Reasons for self-medication should be addressed to reduce the prevalence. Policies should be put in place to address these as there was scanty data on this.

Antibiotic prescribing patterns for URTIs among private practitioners in Botswana; findings and implications

M. Matome[1], J Kgatlwane[2], A Massele[3], B Godman[4,5,6]
[1]Managed Care, AFA, Showgrounds Office Park, Gaborone, Botswana; [2]School of Pharmacy, University of Botswana, Gaborone, Botswana; [3]Department of Biomedical Sciences, Faculty of Medicine, University of Botswana, Gaborone, Botswana; [4]Division of Clinical Pharmacology, Karolinska Institute, Karolinska University Hospital Huddinge, Sweden; [5]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK; [6]Health Economics Centre Liverpool University Management School, Liverpool, UK

Background: There are concerns with rising antibiotic resistance rates across countries enhanced by the inappropriate use of antibiotics. This includes the prescribing of antibiotics for predominantly viral infections such as URTIs including coughs and colds. There are concerns that pressure is being placed on private practitioners to prescribe antibiotics for patients with URTIs particularly children. In addition, prescribe combination antibiotics such as amoxycillin and clavulanic acid rather than amoxycillin, which increases resistance rates. Such practices are discouraged in quality indicators (QIs) developed by WHO Europe and ECDC. In view of this, there is an urgent need to assess private practitioner prescribing of antibiotics for URTIs in Botswana. Subsequently suggest initiatives to address this if concerns. Initiatives could include developing prescribing guidance and pertinent QIs as none currently exist.
Objectives: Describe antibiotic use among patients with URTIs in the private sector as a first step towards informing future studies and interventions in pertinent.
Methods: Descriptive, retrospective study of prescribing behaviour among patients in the Associated Fund Administrators scheme, which administers two large medical aid funds in Botswana.
Results: 311,953 acute prescription encounters were recently analysed incorporating prescriptions dispensed by private GPs (49%), Community Pharmacists (30%), Hospital Pharmacists (16%) and Medical Specialists (3.9%). Only 12% of

pharmacy claims had a specific ICD10 code. Out of 216,256 encounters, 17.4% were for URTIs and 72.9% of these had at least one antibiotic dispensed. Beta-lactams dominated antibiotics prescribed and dispensed at 81.4% of total antibiotics, followed by macrolides (10.7%). Limited use of fluoroquinolones (0.5%) as restricted in Botswana. Within the beta lactam penicillins, combination penicillins including co-amoxiclav dominated (84.9% of total penicillin use despite use).
Conclusions: There are concerns regarding the high rate of inappropriate antibiotic prescribing for URTIs including combination penicillins. Future suggestions included strengthening developing new quality indicators involving all key stakeholder groups, educational programmes among private medical practitioners and pharmacists, as well as utilising their help with designing future studies to address key issues.

Antibiotic prescription patterns of South African general medical practitioners for treatment of acute bronchitis

NBQ Ncube[1], GC Solanki[2], T Kredo[3], R Lalloo[4]
[1]School of Public Health, Department of Community and Health Sciences, University of the Western Cape, Cape Town, South Africa
[2]Towers Watson, Cape Town, South Africa; and Health Economics Unit, Department of Public Health, Faculty of Health Sciences, University of Cape Town, South Africa
[3]Cochrane South Africa, South African Medical Research Council, Cape Town, South Africa
[4]School of Dentistry, Faculty of Health Sciences, University of Queensland, Brisbane, Australia

Background: Antibiotic resistance is a significant public health problem. Prudent use of antibiotics is crucial in reducing this resistance. Acute bronchitis is a common reason for consultations with general medical practitioners, and antibiotics are often prescribed even though guidelines recommend not prescribing them for uncomplicated acute bronchitis.
Objectives: To analyse the antibiotic prescription patterns of South African (SA) general medical practitioners in the treatment of acute bronchitis.
Methods: The 2013 claims for members of 11 health insurance schemes were analysed to assess antibiotic prescription patterns for patients diagnosed with acute bronchitis. The patterns were assessed by type of bronchitis, chronic health status of the patients, sex and age group. The types of antibiotic prescribed were also analysed.
Results: Of 166 821 events analysed, an antibiotic was prescribed in more than half (52.9%). There were significant differences by type of bronchitis and chronic health status. Patients with viral bronchitis were more likely to be prescribed an antibiotic than those with bacterial bronchitis (odds ratio (OR) 1.17, 95% confidence interval (CI) 1.08 - 1.26). Patients with a chronic illness were less likely to be prescribed an antibiotic than those without (OR 0.58, 95% CI 0.57 - 0.60). More than 70% of the antibiotics prescribed were cephalosporins, penicillins and other beta-lactams.
Conclusions: Prescription rates of antibiotics for acute bronchitis by SA general medical practitioners are high. There is an urgent need to follow

Prevalence and facility-specific antibiogram of pathogens isolated at a private hospital in the Western Cape, South Africa

HM Snyman[1], JM Du plessis[1], JR Burger[1], and M Cockeran[1]
[1]Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, North-West University, Potchefstroom, 2531, South Africa

Background: Monitoring of local resistance and susceptibility trends of prevalent hospital-specific pathogens can assist clinicians in choosing optimal empiric antimicrobial therapy for patients in a specific geographical area.
Objectives: To identify the most prevalent pathogens and develop a facility-specific antibiogram of pathogen antimicrobial susceptibilities for a private hospital in Worcester, Inland and Coastal District of the Western Cape, South Africa.
Methods: A cross-sectional design was followed. Antimicrobial susceptibility for the most prevalent pathogens isolated per hospital unit, for an all-inclusive sample of final isolates for patients aged 18 years and older, on data from the databases ICNet® Clinical Surveillance Software and PathProvider® V.1.4, for the period 1 January 2015 to 31 December 2016, were identified and presented as a cumulative antibiogram. Antimicrobial therapy was deemed appropriate if the antimicrobial agents were administered as the first dose in a patient, of whom the bacteria isolate was susceptible to at least one of the administered agents. Data were analysed descriptively.
Results: A total of 1424 pathogens (908 gram-negative and 516 gram-positive) were isolated. Escherichia coli (34.5%) was the most prevalent organism among gram-negative and Methicillin-susceptible Staphylococcus aureus (MSSA) (31%) among gram-positive organisms. Gram-positive organisms revealed sensitivity to linezolid, teicoplanin, and vancomycin

of 98 to 100%. Among gram-negative isolates Escherichia coli, Klebsiella spp., Klebsiella pneumoniae, Proteus mirabilis, and Enterobacter cloacea showed 100% susceptibility to carbapenems, while Pseudomonas aeruginosa and Acinetobacter spp. illustrated susceptibility to carbapenems fluctuating from 75% to 98%.
Conclusions: This study demonstrated susceptibility rates among the most prevalent organisms for the private hospital in the Western Cape. Confirmed trends of carbapenem resistance were found among Pseudomonas aeruginosa and Acinetobacter spp**.**

Factors affecting adherence to anti-retroviral therapy by HIV patients treated at Raleigh Fitkin Memorial Hospital, Swaziland

Bongiwe Mncina[1], Mbali Dube[1], Adefolarin Amu[1], Julius Soyinka[2]
[1]Swaziland Christian University, Pharmacy Department.
[2] Obafemi Awolowo University, Ile-Ife Nigeria, Faculty of Pharmacy, Pharmaceutical Chemistry Department.

Background: The introduction of antiretroviral therapy (ART) and highly active antiretroviral therapy (HAART) has substantially improved the survival of persons infected with HIV but these drug regimens however are complex. Although there has been an increase in antiretroviral therapy (ART) coverage in the country, medication adherence is a persistent problem with multiple causes. The effectiveness of ART relies on a strict adherence to it. In other words, loose obedience, or non-obedience to ART can result in inadequate viral suppression, immunologic failure, rapid disease progression, and the development of drug resistance, hence, this study.
Objectives: To describe the level of knowledge of ART by PLWHA, the level of adherence to ART, the levels of non-adherence and factors that influence non-adherence to antiretroviral therapy.
Methods: A quantitative, non-experimental descriptive survey study design was employed to determine the factors that affect adherence to antiretroviral therapy of HIV positive patients. Participants in the study were all people currently enrolled on antiretroviral therapy at Raleigh Fitkin Memorial Hospital (RFM) Clinic in Manzini who gave written informed consent to participate. A multi-method approach was used to measure adherence and this included pill count, self-report and ability of participants to keep their hospital appointments. A semi-structured questionnaire was also used to get an in-depth knowledge and understanding on factors affecting patient's adherence to antiretroviral therapy. A thematic analysis was used to identify and group similar factors affecting adherence.
Results: The results indicated that most patients had challenges with 45% having a low pill count adherence, 60% reported to have missed their medication and 25% had missed their hospital appointments.
Conclusions: In order to ensure adequate management of patients infected with HIV, and to drastically reduce the development of resistance to available antiretroviral drugs, measures that can monitor strict adherence to ART need to be put in place.

Immunisation coverage and reasons for missed vaccinations in children aged 12–23 months in Tshwane Region 5 of Gauteng Province, South Africa

DN Montwedi[1], JC Meyer[1, 2], VV Nkwinika[2, 3], RJ Burnett[2, 3]
[1]Department of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa; [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: Although the annual South African official administrative fully immunised under one year-old immunisation coverage (FIC) figures are high, failure to vaccinate has been identified as a cause of recent vaccine-preventable disease outbreaks. While vaccine hesitancy contributes largely to sub-optimal FIC in high income countries, data from South Africa are lacking.
Objectives: To determine the FIC of children aged 12-23 months in Tshwane Region 5; To investigate reasons for missed vaccinations in partially or unimmunised children.
Methods: A household survey based on the World Health Organization's Vaccination Coverage Cluster Surveys reference manual was conducted amongst consenting caregivers of children aged 12-23 months with available Road to Health Cards (RTHCs),. Road to Health Cards were checked for missing vaccinations. Reasons for missed vaccinations were recorded digitally and in writing. Cell phone photographs of RtHCs were emailed to the supervisor. Data captured using Microsoft

Excel 2013 (Microsoft Office, USA) were imported to Epi Info™ 7 (Centers for Disease Control and Prevention, USA) for descriptive statistical analysis

Results: Of 8057 houses visited, 327 had eligible children with 276 (84.40%) consenting caregivers. FIC was 78.62% (217/276). Common reasons for missed vaccinations were: lack of awareness (40.68% [24/59]); caregiver too busy (23.73% [14/59]); vaccines unavailable (20.34% [12/59]); and inconvenient time of immunisation (13.56% [8/59]). One (1.7% [1/59]) caregiver had lost faith in vaccinations. Many houses/housing complexes were enclosed by security fencing, with access being denied by guard dogs, residents or security guards.

Conclusion: While a low prevalence of vaccine hesitancy was found, the results do not include caregivers who live in gated communities, who may be more affluent and educated, with higher rates of vaccine hesitancy. Efforts to increase FIC should take reasons for non-vaccination into account.

Adherence to oral anti-diabetic medicines among type 2 diabetes mellitus patients in the Volta Region of Ghana

Israel A. Sefah[a], Archibald NB. Okotah[b], Samantha Hollinworth[c], Brian Godman[d, e, f], Daniel Kwame Afriyie[g]

[a]Department of Pharmacy, Keta Municipal Hospital, Ghana Health Service, Ghana; [b]Volta Regional Health Directorate, Ghana Health Service, Ghana; [c]School of Pharmacy, University of Queensland, Wooloongabba, Australia; [d] Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, UK; [e]Division of Clinical Pharmacology, KI, Stockholm, Sweden; [f]Health Economics Centre, Liverpool University Management School, Liverpool, UK; [g]Ghana Police Hospital, Pharmacy Department, Accra, Ghana

Background: Type 2 Diabetes Mellitus (T2DM) is a growing public health concern across countries including Ghana. Poor adherence to medicines especially among patients with T2DM is a major concern as this increases morbidity, mortality and costs. Little is known about current adherence rates among patients with T2DM in Ghana to inform future policies.

Objectives: To assess current adherence to oral anti-diabetes mellitus medicines and associated factors among patients with T2DM in the Volta region of Ghana.

Methods: This was a cross-sectional study among 400 people with T2DM attending outpatient diabetes clinics of four randomly selected hospitals in Volta region between January and March 2015. We interviewed patients using a structured questionnaire to determine the self-reported reason (s) of non-adherence. We assessed adherence prevalence using the 8-item Morisky Medication Adherence scale. We performed multivariate analyses of adherence level and statistically significant variables.

Results: Adherence prevalence to oral anti-diabetics among T2DM patients was 47.8%. Adherence level was twice as high in patients with fasting blood glucose between 1 – 6mmol/L (aOR = 1.92, CI 1.11 – 3.32) compared to those with fasting blood glucose of above 10mmol/L, and about three-folds higher among patients with tertiary education (aOR=3.01 CI 1.44 – 6.269) versus patients with no formal education. The commonest self-reported reason for non-adherence was forgetfulness.

Conclusions: Adherence to oral anti-diabetic drugs among T2DM clients was suboptimal. Management of patients with T2DM must include strategies to identify non-adherent clients, and individualize diabetes care management to prevent long term complications with associated costs.

Characteristics and outcomes of patients attending a tertiary care diabetic centre in Botswana: Findings and implications

Thatoyaone Kenaope[1], Bene D Anand Paramadhas[2], Hlutywayo Rodney Phiri[3], Ronald Luke[4], Mareko Ramotsababa[5] Celda Tiroyakgosi[6], Hannelie Meyer[7], Brian Godman[8, 9], Amos Massele[10]

[1]Boitekanelo College, Gaborone, Botswana; [2]Chief Pharmacist, Nyangabgwe Hospital, Francistown, Botswana; [3]Principal Pharmacist I, Nyangabgwe Hospital, Francistown, Botswana; [4]Medical Doctor, Donga Diabetic Center, Nyangabgwe Hospital, Francistown, Botswana; [5]Family Physician & Hospital Superintendent, Nyangabgwe Hospital, Botswana; [6]Chief Pharmacist, Botswana Essential Drugs Action Program, Ministry of Health and Wellness, Gaborone, Botswana; [7]Department of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa; [8]Division of Clinical Pharmacology, KI, Stockholm, Sweden; [9]Strathclyde Institute of Pharmacy and Biomedicial Sciences, Strathclyde University, Glasgow, UK; [10]Department of Biomedical Sciences, Faculty of Medicine, University of Botswana, Botswana

Background: Diabetes Mellitus (DM) is a complex metabolic disorder, requires chronic care to address defective insulin secretion, or action, to prevent complications. Untreated DM is associated with appreciable morbidity, mortality and costs due to both micro and macrovascular complications. DM is currently the seventh leading cause of death and an estimated 400 million people suffer worldwide. Estimates show 52,000 adult patients (3.8%) in Botswana are with diabetes. The profile of patient characteristics, instituted pharmacotherapy, laboratory tests and their therapeutic and clinical outcomes are unknown in most situations.

Objectives: To describe the patient characteristics, lab investigations, therapeutic and clinical outcomes of diabetic patients in a leading tertiary centre.

Methods: A prospective cross-sectional review of a randomly selected 494 out-patient hard copy records from an approximate monthly patient volume of 1350 patients was undertaken over a period of 30 working days. Frequencies for patient age, sex, type of diabetes (DM1 or 2), current medicines for DM, laboratory tests, diagnosis of coexisting hypertension, diagnosis of diabetic retinopathy, neuropathy and nephropathy; as well as CVA survivors were recorded. Mean doses of current antidiabetic medicines with standard deviations were calculated. The study site was a diabetic referral center - an extension of Nyangabgwe Hospital. Verbal consent was sought from patients during the pharmacy visits to access information and data were de-identified during collection.

Results: Nearly 70.7% of the patients in this study were females. Prevalence of DM2 was 98.6% with the highest (51.2%) observed among age groups 51-65years and a steady increase from ages 41 to 60. Most patients (83.2%) received metformin with a mean dose of 2026.8 ± 827.4mg followed by glibenclamide (48.79%) 11.96±6.46mg and the combination of both by 45.14% and 21.05% with added insulin. Only 0.4% of patients received a DPP-4 inhibitor vildagliptin. Coexisting hypertension was as high as (90.54%) among DM patients. 62.55% received fasting blood glucose and 22.14% random blood glucose tests during their current visit and only 16.4% received HbA1c tests in the past 3 months. 4.85% had optimal HbA1c values of 6 to 8%, probably due to the fewer tests. Prevalence of DM associated retinopathy was 10.33%, peripheral neuropathy 26.11% and nephropathy 4.86%. Patients who survived a cerebrovascular accident (CVA) was 1.01%.

Conclusions: A high proportion of women suffer from DM in this clinic and most patients receive metformin based pharmacologic therapy. Prevalence of hypertension among DM patients is very high, which is a concern as this will enhance mortality. Chronic shortage of HbA1c test hinders monitoring of blood sugar control between visits. High proportion of patients experience complications. Strengthening resource and laboratory capacity and revision of standard treatment guidelines are seen as necessary for improving outcomes. This is being followed-up.

Anti-diabetic medication adherence and associated costs among patients with type 2 diabetes in a tertiary healthcare facility, southeast Nigeria

Ezenduka CC[1, 2], Okoronkwo IC[1], Nwankwo C[1]

[1]Department of Clinical pharmacy & Pharmacy Management, Faculty of Pharma Sciences, Nnamdi Azikiwe University Awka, Nigeria
[2]Department of Health Administration & Management, Faculty of Health Sciences & Technology, University of Nigeria, Enugu campus (UNEC)

Background: Diabetes mellitus (DM) affects a significant proportion of the Nigerian population with substantial health and economic burden. Adherence to medication is critical to achieving effective control of diabetes, as poor adherence causes suboptimal glycaemic control and diabetic complications, increasing the disease health and economic burden

Objectives: The study aimed to assess the current state of adherence to anti-diabetic medication and associated costs among a population of patients with T2DM attending medical outpatients clinic in a tertiary healthcare facility, south east Nigeria

Methods: A cross-sectional study was carried out using a structured questionnaire incorporating the 8- item Morisky Medication Questionnaire, to determine adherence and associated factors of non-adherence to anti-diabetic medications among a population of outpatients who met required criteria at the Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi. Demographic characteristics, clinical and medication adherence information were collected from participants. Patients' records were reviewed to abstract information on drug use pattern and associated costs of medication. Data was analyzed with SPSS version 16 and GraphPad Prism version 5.03, summarized using descriptive statistics and multiple regression analysis.

Results: A total of 208 patients diagnosed with T2DM were interviewed using questionnaires while 300 prescriptions of anti-diabetic medications were analyzed. Mean age of patients was 53.5 (±0.5) years. Approximately 53% of participants were adherent while up to 47.1% were non-adherent to anti-diabetic medications. Socio-demographic, clinical and medication characteristics of participants showed no association with medication adherence. Multiple medication and associated cost were the most common factors associated with non-adherence. Average cost of prescription per diabetic patient amounted to N4, 654.58±2,185 ($13.30), at N186.18 ($0.53) per patient per day. Metformin was the most prescribed anti-diabetic medication, constituting up to 37% of the total cost of medication

Conclusions: There was sub-optimal adherence to anti-diabetic medication among the patients in the study facility. Multiple medication and associated high costs of medication contributed most to non-adherence suggesting scope for improved rational use of medicines to improve patient's adherence.

Glycaemic control among diabetic patients at Katutura State Hospital, Namibia

Munenguni Hilma[1], Mubita M[1], Kibuule D[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek

Background: Diabetes mellitus is a growing public health burden in Namibia, with a 6% of the population having the disease. Glycaemic control is one of goals to prevent micro and macrovascular complications and death. There is limited data on the prevalence of glycaemic control among diabetic patients in Namibia.

Aim: The prevalence of and factors associated with glycaemic control among diabetic patients at Katutura State hospital, was determined.

Methods: A facility-based cross-sectional survey was conducted among diabetic patients receiving diabetic care Katutura Intermediate hospital. Data on adherence using the Morisky criteria, random and fasting blood glucose and glycated haemoglobin (HbA1c) were abstracted from patients' health passports over a three months' period, June-August 2017. Quantitative data were analyzed using descriptive and inferential analysis using SPSS v2.3.

Results: Of the 100 patients, 39% had fasting blood glucose levels in normal range (<6.7mmol/L). The mean adherence to medication was 90.9%, with majority of the patients (%) having acceptable level of adherence (≥80%). Glycaemic control was significantly associated with the age of the patient (p=0.023), alcohol consumption (p<0.001), duration on treatment (p=0.014), belief that blood glucose level was well controlled (p <0.001) and adherence to medication by Morisky scale (p=0.021).

Conclusion: Despite good adherence to medication glycaemic control among diabetic patients receiving care at Katutura state hospital are sub-optimal. There is need for interventions for appropriate monitoring of glycaemic control using HbA1C rather than FBG to improve treatment outcomes.

Satisfaction, experiences and perceptions of hypertensive patients with primary healthcare services in Vhembe District, South Africa

EM Rampamba[1, 2], JC Meyer[1], EA Helberg[1] and B Godman[3, 4]
[1]Sefako Makgatho Health Sciences University, SA; [2]Tshilidzini Hospital Pharmacy, Limpopo Department of Health, SA; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK; [4]Division of Clinical Pharmacology, KI, Stockholm, Sweden

Background: The majority of hypertensive patients are managed at primary healthcare (PHC) facilities in South Africa. However, the quality of care as determined by patients using the PHC services can be a concern. Patients' satisfaction with healthcare services and the attitude of healthcare providers is linked to improved health outcomes including improved blood pressure (BP) control. As such, patient satisfaction with healthcare services has become an important measure of healthcare quality, with satisfied patients having greater adherence to their treatment and improved health-seeking behaviour, which in turn improves patient involvement in their treatment and outcomes.

Objectives: To assess satisfaction, experiences and perceptions of hypertensive patients within PHC services in South Africa as well as Health Care Providers attitudes, and to assess predictors of patient's satisfaction with hypertension management. The findings to be used to suggest areas for improvement if pertinent.

Methods: Face-to-face interviews in patients' own languages were conducted amongst hypertensive patients by pharmacists using a self-response questionnaire. The questionnaire probed patients 'experiences in terms of healthcare professionals(HCP) friendliness, and their assistance in making patients understand their disease and its pharmacological and non-pharmacological treatment, as well as assess hypertensive patients overall satisfaction with the PHC services. Patients were requested to indicate whether they agreed with the service experience or satisfaction statements. Statistical analysis were performed on SAS 9.4 version.

Results: Nighty six percent (238/ 249) of the patients were satisfied with the overall PHC services. The vast majority of satisfied patients (97.5% - n =230/ 236) could recommend a family member to be treated in the same facility compared to 61.5% (8, n=13) of the dissatisfied patients ($p<0.001$). 96.9% of the satisfied patients agreed that HCP assisted them to understand hypertension treatment compared to 84.0% (21, n=25); $p=0.014$ among dissatisfied patients. Almost all (98.4%) of the satisfied patients agreed that HCPs assisted them in understanding the side effects of their treatment compared to 86.7% (52/60)dissatisfied patients ($p<0.001$). Most of the patients perceived HCP to be friendly (94.8%, 235, n=249), and helpful (96.4%, 240, n=249) in helping them understand instructions on how to take medicines. Most patients, 96.9% (216/ 223) who acknowledged that HCPs assisted them to understand their hypertension treatment were satisfied with the overall services versus 84.0% (21, n=25) who disagreed ($p=0.014$). Again almost all patients, 98.4% (186, n=189) who agreed that HCP assisted them to understand their medication side effects were significantly satisfied, and 97.2% (105, n=108) of educated patients were satisfied with the overall services compared to the uneducated 94.2% (129/ 137) patients ($p=0.044$).

Conclusions: There was considerable satisfaction among hypertensive patients with the PHC services, with a significant relationship between patient satisfaction and understanding of hypertension treatment and hypertension medicine side effects. There was however no association between patients' satisfaction with the services provided at the PHC facilities and health care provider's attitudes and adherence to antihypertensive medication. These results are being followed up.

Proactive risk assessment of vincristine use process in a teaching and referral hospital in Kenya

E. Kipkurui Kurgat[1], I. Weru[2], D Wata[2], B. Godman[3, 4], A. Kurdi[3], A. N. Guantai[1]
[1]School of Pharmacy, University of Nairobi, P.O Box 19676-00202 Nairobi, Kenya; [2]Kenyatta National Hospital, P. O Box 20723-00202 Nairobi, Kenya; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK; [4]Division of Clinical Pharmacology, Karolinska Institutet, Stockholm, Sweden

Background: The chemotherapy use process is considered as potentially risky for cancer patients due to its complex process, use of agents with narrow therapeutic indices, multiple drug use and use of potentially toxic compounds adding to morbidity and mortality for patients with cancer. Vincristine, a "High Alert" medicine, has been associated with fatal but preventable medication errors.

Objective: To determine hazards associated with vincristine use process by performing proactive risk assessments using Healthcare Failure Mode Effect Analysis (HFMEA).

Methods: A multidisciplinary health team identified and evaluated potential failure modes based on vincristine use process flow diagram using a hazard scoring matrix in a leading referral hospital in Kenya treating patients with cancer. The hazard

score matrix was based on the published literature. Failure modes were prioritized using decision tree analysis in which recommendations to counteract the risks were determined.
Results: The processes evaluated were; prescribing, preparation and dispensing, transportation and storage, administration and monitoring of use. A total of 77 failure modes were identified over the 3 months period of the study, April to June 2017, of which 25 were classified as high risk. Thirteen were adequately covered by existing control measures while the other 12 required the development of mitigation strategies. Two of the 12 failure modes were single-point weaknesses.
Conclusions: Multiple medication errors, some with serious consequences, can occur at each stage of the chemotherapy use process making it a high-risk process. HFMEA is a useful tool to identify improvements to medication safety and reduce patient harm. The HFMEA process brings together the multidisciplinary team involved in patient care in actively identifying potential failure modes and therefore owning the recommendations made. This is now being followed up.

Use of Complementary and Alternative Medicine (CAM) in pain: A South African consumer survey

I Truter, NT Naidoo. J Botha, L Lerutla, S Matloa, S Opsahl, O Ralufhi, A Mazelem, Q Masango, C Ndai, M Nduna & S Zulu
Drug Utilization Research Unit (DURU), Department of Pharmacy, Nelson Mandela University, PO Box 77000, Port Elizabeth, 6031, South Africa

Background: Complementary and Alternative Medicine (CAM) is an increasingly common therapy used to treat pain. There is, however, limited information on the utilisation and types of CAM therapies for pain by consumers.
Objectives: The primary aim was to determine the types of pain, CAM therapies used and the reasons for use.
Methods: A consumer survey was conducted at shopping centres across South Africa in 2017. The questionnaire was adapted from a pain inventory questionnaire, with the focus on CAM. Convenience sampling was used. A total of 219 questionnaires were completed and analysed using Microsoft Excel®.
Results: Most respondents were female (57.1%), between 18 and 29 years old (40.6%), and 94.1% indicated that they experienced pain during the past year (respondents indicated on average 2.23 (SD=2.08) areas on their body where they suffered pain). The most common areas were the lower back (37.0% of respondents), followed by the abdomen (26.0%) and upper back (18.7%). Stress, weather and injury were common causes of pain. Most respondents (82.71%) were familiar with CAM therapies. Respondents used on average 2.76 (SD=3.15) CAM therapies. The most common CAM therapies used for pain were vitamin and mineral supplements (34.2% of respondents), massage therapy (30.6%), herbal medicine (29.7%), prayer therapy (25.6%), relaxation (15.1%), spiritual healing (14.6%) and yoga (12.3%). Traditional African Medicine and Dutch Remedies were used by 11.0% of respondents. Of the 173 respondents who indicated why they were using CAM, 29.48% indicated their background and education as a reason, 27.17% were of the opinion that conventional medicine was ineffective, and 6.94% indicated poor access to conventional medicine.
Conclusions: Respondents were familiar with CAM therapies, and most respondents who experienced pain did use a CAM therapy for pain. The study indicated a need to educate consumers about the various CAM therapies and their role in pain management.

POSTER PRESENTATIONS

HEALTHCARE STRENGTHENING

Knowledge, attitudes and practices of health care professionals towards adverse drug reaction reporting in public sector primary health care facilities in the Tshwane District, Gauteng Province, South Africa

HM Haines[1], JC Meyer[1], RS Summers[1], B Godman[2,3]

[1]Department of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa [2]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK; [3]Division of Clinical Pharmacology, KI, Stockholm, Sweden

Background: Health care professionals (HCPs) can play an important role in pharmacovigilance and adverse drug reaction (ADR) (ADR) reporting. In the Tshwane District reports on ADRs should be submitted to the Tshwane District Pharmacy and Therapeutics Committee meeting on a quarterly basis. To date, very few ADRs were submitted to the committee, hence the importance of determining the knowledge, attitude and practices of HCPs to understand why there is chronic under-reporting of ADRs. The findings could be used to direct future practice towards initiating programmes to promote ADR reporting in the Tshwane District and wider.

Objectives: To determine the knowledge, attitudes and practices of HCPs towards ADR reporting in primary health care (PHC) facilities in the Tshwane District, Gauteng Province of South Africa.

Methods: This study followed a descriptive, cross-sectional design using a quantitative methodology. Study sites included eight public sector Community Health Care Centres (CHCs) and 40 PHC facilities in the Tshwane District. A self-administered questionnaire was distributed to 218 HCPs, including medical practitioners, professional nurses, pharmacists and pharmacist assistants. Ethical clearance was obtained and HCPs provided written informed consent. **Results:** The final sample size was 200, with a response rate of 91.7%. Only 57.5% of HCPs were aware of an ADR-reporting and monitoring system in the district. Most HCPs understood the term ADR (75.6%) and 65% indicated the availability of ADR forms. Unfortunately only 16% of HCPs have ever reported an ADR and only 11% of HCPs were aware of the professional obligation to report ADRs. In addition, only 12% of HCPs knew where the ADR forms were kept in the facilities. When responses of all HCPs were combined, overall responses (74.5% [95% CI: 73.2% - 75.7%]) were positive or preferred in terms of their knowledge of ADRs and ADR reporting, overall positive attitude towards ADR reporting was 53.0% [95% CI: 51.8%-54.3%] and 19.8% {95% CI: 17.9%-21.8%] of responses were positive in terms of the practice of ADR reporting.

Conclusions: Although an appropriate attitude for ADR reporting existed, the actual frequency of ADR reporting was low. The lack of awareness of respondents about the existence of an ADR reporting system will affect the reporting process unless addressed. The findings suggest that underreporting of ADRs is associated with gaps in knowledge, attitudes and practices regarding pharmacovigilance amongst HCPs. There is a serious and urgent need for education and training of HCPs on ADRs, to create awareness and promote the reporting of ADRs amongst HCPs.

Prevalence and determinants of antibiotic related adverse drug reactions in Kenya: Spontaneously reported cases at the pharmacy and poisons board database

Miriam W Njoroge[1], Margaret Oluka[1], George Osanjo[1], Sylvia Opanga[2], Brian Godman[3,4], Amanj Kurdi[4,5]
[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]Division of Clinical Pharmacology, KI, Stockholm, Sweden; [4]Strathclyde Institute of Pharmacy and Biomedical Sciences, Strathclyde University, Glasgow, UK; [5]College of Pharmacy, Hawler Medical University, Erbil, Iraq.

Background: Background: Antibiotics are useful in the treatment and prevention of many infections. Despite this, they may cause adverse drug reactions (ADRs) which could further increase the morbidity, mortality and treatment costs. The national pharmacovigilance system of the Pharmacy and Poisons board in Kenya has a database in which all actual and suspected adverse drug reactions nationally from hospitals are reported and analysed.
Objectives: To describe the prevalence, characteristics, severity and outcome of antibiotic related adverse reactions between January 2010 and December 2015.
Methods: This was a retrospective cross sectional study in which all case reports of the reported antibiotic related ADRs were reviewed. Information on the patient demographics, types of antibiotics and concomitant drugs used, adverse reaction reported, the severity and outcome was abstracted and analysed using STATA version 13. Bivariate analysis and logistic regression were conducted to determine the risk factors associated with severity and outcomes of antibiotic related ADRs. Ethical approval was obtained from the Kenyatta National Hospital/ University of Nairobi Research and Ethics Committee and the Pharmacy and Poisons board.
Results: A total of 550 case reports were analysed. The majority of patients were female (62.3%, n=330), median age of 34 (IQR 22.0-45.0) years. The most commonly affected system was the integumentary system (60.9%, n=388), with skin rash as the most commonly reported ADR (39.7%,n=253). Cotrimoxazole contributed the majority of the adverse reactions (55.3%, n=304). Most of the reactions were mild to moderate (82.6%, n=440), leading to drug withdrawal for 79.1% (n=435). Sulphonamides and anti-TB drugs produced the most severe reactions (n=15.8%, n=84), while fatal reactions were only 1.5% (n=8). Older age was significantly associated with severity of the reported ADRs (p=0.003) while HIV status (p=0.011) and severity of the ADR (p=<0.001) were associated with poor outcomes. Causality assessment attributed 15.6% (n=86) of the ADRs to the suspected antibiotic while 56.5% (n=311) were probable.
Conclusions: There is a high burden of antibiotic related ADRS, most of which are skin related. HIV status and severity of the ADRs are associated with poor outcomes, and the elderly experience more severe ADRs

An audit of medicine shortages in Namibia

Hendrina P Gideon, Jennie Lates, Dave Hachey, Timothy W. Rennie
[1]MPharm Clinical Pharmacy, School of Pharmacy
[1]School of Pharmacy, University of Namibia

Background: Medicine shortages are a key impediment to access to public health care, particularly in resource constrained countries. Little is known of the drivers of shortages of essential medicines in Namibia's public and private health sectors.

Aim: The extent and drivers of medicine shortages in Namibia both in private and public sector were audited.

Method: An audit of medicines shortages among public and private health facilities was conducted using the National medicines and procurement policies/procedures as standards. Data on procurement processes per facility were collected from pharmacist incahrge using an online audit checklist/questionnaire developed by the School of Pharmacy. Data was entered in Excel® software for descriptive analysis.

Results: Of the 41 facilities that participated, all facilities (100%) reported shortages for at least two essential medicines in 2018. The medicine shortages were more common with antimicrobials (amoxicillin/clavulanic acid, albendazole) and chronic medication (zolpidem, Buproprion, propranolol, simvastatin). About 97% of pharmacist indicated that the unavailability of medicine resulted in therapy change.

Conclusions: Medicine shortages in Namibia are common and may cause treatment interruptions, poor service delivery and outcomes. This calls for a policy and a system for routine audits of medicine stock status in the facilities.

An audit of bedaquiline use at the Katutura Intermediate Hospital TB isolation ward

Anna M Shimbulu[1], Mwangana Mubita[1], Timothy Rennie[1], David M. Hachey[1, 2] & Lauren Jonkman[1, 3]
[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia
[2]Division of Health Sciences, Department of Family Medicine, Idaho State University
[3]School of Pharmacy, University of Pittsburgh

Introduction: Namibia is one of the countries with a high burden of TB disease. Bedaquiline (BDQ) is the first anti-tuberculous drug with a new mechanism of action in 40 years. It acts by inhibiting mycobacterial adenosine triphosphate synthetase and depleting cellular energy stores. The accelerated approval of BDQ was granted by FDA in 2012. BDQ is indicated for the treatment of adults with multidrug resistant pulmonary tuberculosis in combination with at least three other antituberculous agents. Bedaquiline was approved for use in Namibia in June 2017.

The audit standards (guideline recommendations) were as follows:

- Prescribing and administration of BDQ (Bedaquiline 400 mg OD for 2 weeks, then 200 mg X3 a week)
- Interactions of BDQ with ARVs (Ritonavir/lopinavir: avoid the use of bedaquiline in patients who are infected with DR-TB and HIV. Consider delamanid; Efavirenz/nevirapine/etravirine: consider delamanid)
- Monitoring (ECG: measure at baseline and monthly; LFTs: measure at baseline and every 3 months)

Objectives: The audit aimed to determine if the use of BDQ in terms of dosing, administration, interactions and monitoring was in line with recommendations of the guidelines for the management of drug-resistant tuberculosis in Namibia

Methods: Clinical records (medical notes, medication administration charts, health passports, clinical laboratory rest reports) of 12 MDR TB patients who were admitted TB isolation ward and on bedaquiline-containing regimens between June 2017 and April 2018 were reviewed to check compliance with the audit standards. 95% compliance was adopted as acceptable compliance.

Results: Out of 12 patients who clinical records were reviewed, only 8 patients had BDQ appropriately dosed (67% compliance). However, in terms of duration of therapy only 2 patients received BDQ for the recommended initial 2 weeks (17% compliance). 5 patients had completed BDQ therapy, out of these only 1 patient completed the recommended 24 months duration (20% compliance). Only 5 patients had HIV –MDR TB co-infection, out of these 4 had their therapy adjusted in view of drug interactions accounting for 80% compliance. With respect to echocardiography monitoring, only 3 patients (25% compliance) had baseline ECG undertaken. Follow-up ECG monitoring after BDQ therapy was commenced was done in 11 patients (92% compliance).

Conclusions: Compliance with most audit standards was generally poor. 100% compliance was not reported for any of the audit standards. There is need to improve compliance to guidelines on the use of BDQ in order for desired patient outcomes to be achieved.

Effectiveness of the antimicrobial stewardship programme at Lady Pohamba Private Hospital, Windhoek-Namibia

N Coetzee[1], M Tehillah[1], V Ashipala[1], D Kibuule[2]
[1]Lady Pohamba Private Hospital, Hospital Pharmacy, Windhoek
[2]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek

Background: In 2015, Lady Pohamba Private hospital implemented a pharmacist led antimicrobial stewardship programme to promote rational use of antibiotics. The adherence to policies for appropriate use of antimicrobials at the hospital has not been evaluated.
Objectives: The level of adherence to antimicrobial stewardship policies among prescribers at LPPH was determined.
Methods: A quantitative cross-sectional survey was conducted among inpatients who were prescribed an antibiotic on admission at the Lady Pohamba Private Hospital between March-May, 2018. Data on patient, clinical and treatment characteristics as well as drug sensitivity ordering prior and during admission were abstracted from patient's charts on discharge of the patient. Data were entered into SPSSv23 for quantitative analysis using descriptive statistics.
Results: Of the 180 patients admitted, 74.4% had CST completed, 90.4% were prescribed an antibiotic and 44.5% of these were administered intravenously. In addition, 95.6% of the prescriptions complied with the antibiotic guidelines with 5.8% of the patients prescribed antibiotics with similar spectrum of activity. The most prescribed antibiotics were combination penicillins (ATC/C) and ciprofloxacin (ATC/M) and clarithromycin and cephalosporin (ATC/D).
Conclusion: There is high adherence to antimicrobial stewardship programme. Pharmacists in both private and public hospitals should be empowered to implement antimicrobial stewardship in to promote rational and safe use of antimicrobials

Establishing and monitoring the introduction of an antimicrobial stewardship programme in Swaziland; findings and implications

Zinhle Matsebula[1], Bernd Rosenkranz[2], Helmuth Reuter[3]
[1]Fitkin Memorial Hospital, Ministry of Health, Swaziland; [2]Fundisa Academy, Medicine Development Programme, South Africa; [3]Department of Clinical Pharmacology, Stellenbosch University, South Africa

Background: Hospitalized patients at Raleigh Fitkin Memorial Hospital (RFMH), Swaziland, especially children, receive antibiotics in almost every prescription. Previous data suggest that inappropriate use results in higher antibiotic resistance rates, longer length of stay, and increased medication costs. Antibiotic Stewardship Programs (ASPs) reduce the inappropriate use of antibiotics and improve patient safety. Despite increased theoretical awareness about the benefits of these programs, in Swaziland, no ASPs exist and few comprehensive studies have evaluated their effect in paediatric settings.

Objectives: The primary objective was to establish an antimicrobial stewardship programme at the RFM hospital and to determine its effectiveness in combating the inappropriate use of antibiotics and management of AGE and its co-infections, targeting children less than 5 years old, and the secondary objective was to investigate the KAP (Knowledge, Attitude and Practises) of health care professionals on antibiotic use and antibiotic resistance, in order to increase awareness and facilitate the development of educational programs and strategies for the appropriate use of antibiotics.

Methods: This was a single-centre process improvement study with a pre-intervention phase followed the implementation of a multi-faceted intervention. Data were collected on the patient's charts, prescription of antibiotics for targeted conditions and the interventions made by the ASP. Medical chart review was performed to assess outcomes and compliance on the ASP's recommendations. During the 18 months study period, a total number of 213 children under the age of 60 months, meeting the inclusion criteria, were recruited. Eighty-seven children were recruited in the pre-intervention phase and 126 participants were recruited in the intervention phase.

Results: There was a decrease in the total number of prescribed and restricted antibiotics, in the pre-intervention phase. The length of admission was decreased in the intervention phase with no re-admissions observed. The most frequent recommendations were as follows, change dosing interval administration (42 cases, 28%), convert from intravenous to oral treatment (39 cases, 26%), change of prescribed antibiotics (21 cases, 9.3%). Most importantly, the number of deaths was decreased by 50% in the intervention phase. All deaths occurred in children with malnutrition. An improvement in the knowledge, attitude and practices was observed in the intervention phase of the study.

Conclusions: The data demonstrate that an ASP improves the appropriate use of antibiotics in hospitalized children. In addition, the ASP plays an essential role in providing leadership to prescribers and ensures that the appropriate antibiotics are used

Implementation and monitoring of decisions by Pharmacy and Therapeutics Committees in South African public sector hospitals

Mashaba TP[1], Matlala M[1], Meyer JC[1], Godman B [2,3]

[1]School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa; [2]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK

Background: There are concerns with the rational use of medicines in South Africa. To address this, the South African National Drug Policy has an objective to establish and strengthen Pharmacy and Therapeutics Committees (PTCs) in all hospitals in South Africa. However, little is known about the implementation of this policy.

Objectives: The study aimed to investigate the implementation and monitoring of decisions by PTCs in South African public sector hospitals.

Methods: The study employed a descriptive survey design using a quantitative research approach. An electronic questionnaire was emailed to a pharmacist, who normally forms part of the hospital PTC, in public sector hospitals in South Africa. The questionnaire included close-ended, open-ended, Likert scale and rating scale questions. Descriptive statistics were used to summarise categorical variables as frequency counts and percentages. Ethical clearance was obtained from Sefako Makgatho University Research Ethics Committee (SMUREC/H/171/PG: 2016) and permission to conduct the study was granted by the National and Provincial Departments of Health and the management from individual hospitals.

Results: The response rate to the survey was 32.3 %. Membership of all PTCs included a pharmacist, who in most cases (51.2%) held a secretariat position. Of the respondents, 63.8% stated that they were not using monitoring and

evaluation indicators to monitor PTC performance. Indicator data collected were said to be used mostly for providing feedback to the PTC (83.3%). Most (95.1%) hospitals implemented the decisions made in the PTC meetings; however, 62.0% of the pharmacists mentioned that guidelines on implementing PTC decisions did not exist in their hospital.
Conclusions: Guidelines on the implementation of decisions by PTCs are lacking in public sector hospitals. Most PTCs were not monitoring their performance especially through the use of indicators. Nevertheless, decisions taken in these PTCs were said to be evaluated and subsequently reviewed.

Compliance to continuing professional development policies among pharmacists practicing in Windhoek, Namibia

Stower E*, Naikaku E[2], Kibuule D[1]
[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia.

Background: Continuing professional development (CPD) improves the quality of health professional practice and services. Unfortunately, most developing countries such as Namibia lack formal and comprehensive systems to implement and/or monitor compliance to CPD policies. Non-compliance to CPD requirements compromises the competences of the professional to deliver quality health care.
Objectives: The level of compliance to continuous professional development policies among pharmacists practicing in Windhoek Namibia was determined.
Methods: A cross sectional observational of compliance to CPD requirements of the Namibia according to the Pharmacy Act, 2004 was conducted among pharmacists employed in both the public and private sectors in Windhoek. Pharmacist were interviewed on attitudes, practices regarding CPD in Namibia. Compliance to CPD in Namibia is the attainment of a minimum pf 30 Continuing education units (CEUs) per 12 months. Quantitative data were entered SPSS v22 for descriptive analysis. The level of compliance was determined using a 10-point score scale.
Results: Of the 140 pharmacists interviewed, 54% were male and from 68.6% employed in the private sector. The level of compliance to CPD requirements was 78%. The pharmacist demographics, working sector were not significantly associated with compliance to CPD requirements ($p>0.05$). On the other hand, the level of qualification of the pharmacist had a significant association to compliance with CPD where ($p=0.001$). Access to a formal CPD system, relevance and costs of the CPD were the main factors driving the attainment of CPD requirements.

Conclusion: Two out of every 10 Pharmacist do not comply with the annual CPD requirements. There is no formal system to support pharmacist to meet CPD-requirements. This calls for the implementation of a comprehensive system to implement and monitor CPD in Namibia.

Indicators and determinants of registration of medicines used in primary health care in Namibia

Isabella Moses, Naikaku E[1], Gaeseb J[2], Shifotoka KS[2], Kibuule D[1]
[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek
[2]Namibia Medicine Regulatory Council, Ministry of Health and Social services, Windhoek

Background: Access to essential medicines in primary health care is critical for achieving global target of "health for all". However, limited capacity and systems for registrations of medicines in most Low and middle-income countries such as Namibia remains a major barrier towards the target.
Aims: The indicators and the determinants of registration of medicines used in primary health care in Namibia was determined.
Methods: A retrospective review was conducted on dossier applications for medicines used in primary health care evaluated by the Namibia Medicine Regulatory Council. Data on registration process, product, and applicant were abstracted from the Pharmadex database and/or dossiers over a ten-year period, 2005-2016. Quantitative analysis was done using descriptive statistics in SPSS v22 for analysis.
Results: Of the 113 dossiers reviewed; 43% from Southern Africa Development Countries, all were generic products**,** 93% included in the essential medicine list, 55% were tablet formulations and 38% Antibiotics. Only 47% of the dossiers were approved and 40% were reviewed by fast tract. The mean time to first review was 18± months, and the review lasted 14 months. The number of PHC medicines was significantly associated with the dosage form ($p=0.049$), Nemlist classification ($p<0.000$); therapeutic class ($p<0.001$) and pharmacological class ($p=0.001$). Limited human resources, financing,

infrastructure/space for dossier storage and expert dossier assessors except for human products were the main challenges.

Conclusion: The turnaround time for registration of PHC medicines in Namibia is requires strengthening through human, financial and infrastructural resourcing. The adoption of an automated registration tracking system and outsourcing experts is required to improve efficiency in medicine registration.

A systematic approach to improve rational medicine use in Swaziland

NBQ Ncube[1], HA Bradley[2], RO Laing[3], H Schneider[4]

[1]School of Public Health, Department of Community and Health Sciences, University of the Western Cape, Cape Town, South Africa [2]Sch Public Health, Department of Community and Health Sciences, University of the Western Cape, Cape Town, South Africa [3]School of Health, Department of Community and Health Sciences, University of the Western Cape, Cape Town, South Africa AND Boston Univ School of Public Health, 801 Massachusetts Avenue, Boston, MA, 02118 [4]School of Public Health, Department of Community and I Sciences, University of the Western Cape, Cape Town, South Africa

Background: Medicines have the potential to save lives and are essential components of health systems. It is cruci countries to ensure that medicines are used rationally. The World Health Organization (WHO) states that medicines are rationally when patients are prescribed and dispensed correct affordable medicines in appropriate doses, and for an opti duration to meet individual patient and community needs. Irrational use of medicines is a global problem that resu mismanagement of patients, wastage of critical resources and unnecessary public health problems. Prescribing practices, v have an impact on how medicines are used, are influenced by economic, regulatory, educational, and managerial factors. Mi work has been done around the rational use of medicines in Swaziland; this study has the potential provide baseline inform on rational medicine use (RMU) practices in the country.

Objectives: The objectives of the study were to describe the RMU situation in Swaziland using quantitative and quali methods, assess policy around RMU and identify factors promoting/impeding RMU, and investigate the reasons for mec use practices.

Methods: The study has four phases. For phase I, quantitative (using the WHO/INRUD indicators as a standard reference qualitative methods were performed to understand and measure medicine use patterns. The study was conducted on s purposively sampled medicine managers from the Ministry of Health - National Department of Health, Central Medical S Management Sciences for Health/Systems for Improved Access to Pharmaceutical Services, and Facility medicine manag (qualitative aspects); and 32 randomly selected facilities (including hospitals, health centres and clinics) in Swaziland (quanti aspects**).**

Results: Quantitative - the national average indicators were as follows: number of medicines per prescription was 3.7; ge prescribing was 74%, percentage of prescriptions that had one or more antibiotics prescribed was 54; and the percenta prescriptions that had one or more injection prescribed was 10. Seventy five percent of the antibiotics prescribed were for conditions and 25% for chronic conditions. Qualitative – reasons for inappropriate prescribing included human resource i (low staff numbers, demotivated staff, nurses in clinics overwhelmed with clinical duties which leave them with no time inventory management which impacts on RMU), prescribing practices (large patient volumes and prescribers giving in to pa demands); and communication issues (poor and inadequate communication on stock availability between central medical s and facilities as well as between facilities).

Conclusion: There generally is irrational use of medicines in public sector facilities as indicated by the high INRUD indic and human resources, prescribing practices, and communication affect prescribing

Electronic Prescription Data to Improve Primary Care Prescribing (EPIPP)

MacBride-Stewart S[1,2] , Ryan M[2] , Marwick C[1] , Guthrie B[1]

[1]Division of Population Health Sciences, University of Dundee, Dundee, Scotland

[2]Prescribing and Pharmacy Support Unit, NHS Greater Glasgow and Clyde, Glasgow, United Kingdom

Background: Scottish General Practitioners (GPs) have been provided feedback by National Health Service Health Boards on their prescribing cost and volume since the 1950s. Responding to feedback often required GPs to manually search patient records and complete audits. Since 2014, Health Boards have used patient-level prescription data to measure and feedback on Potentially Inappropriate Prescribing (PIP). The aim of this study was to evaluate the impact of feedback to practices of patient-level PIP data.

Methods: Pragmatic, two-arm cluster randomised trial of feedback of patient-level PIP. All 235 general practices in one Health Board received the intervention. Practices were randomised to different PIP topics; either 'inappropriate asthma

prescribing' (measured by prescription to a patient of (a) more than 12 short-acting bronchodilator inhalers per year and (b) long-acting bronchodilator inhalers without inhaled steroids) or 'potentially inappropriate use of urinary antimicrobials' (measured by prescription to a patient of more than 6 specified antimicrobial courses per year). Practices were sent feedback on three occasions in 2015-2016. Each feedback report contained background information on the topic and suggested actions, details of patients identified with PIP and summary prescribing data for each patient. For each arm the mean number of patients with PIP relating to that report at the time of the first feedback (July 2015) and 6 months after the last feedback (January 2017) will be compared with the practices in the other arm who have received feedback on the other PIP topic. Analysis will account for clustering of patients within GP practices.
Results: All GP practices were sent their allocated reports. Two practices in each group were lost to follow up. Statistical analysis is ongoing and will be completed by August 2017 (n=117 bronchodilator report and n=114 UTI antibiotic report).
Conclusions: This study will identify whether patient-level feedback of potentially inappropriate prescribing improves prescribing.

Medicines Use Analysis and Feedback – a Scottish Health Board experience

MacBride-Stewart[1]
[1]National Health Service Greater Glasgow and Clyde Board, Glasgow, Scotland

Background: The National Health Service (NHS) in Scotland is 70 years young and many of the administrative processes in use today were introduced in 1912 with the precursor to the NHS known as National Health Insurance. NHS Scotland provides universal healthcare that is free to the user at the point of care and prescription charges that were introduced after 4 years of the NHS in 1952 to curb excessive prescribing were abolished in 2011.

Objectives: To describe the sources of information and methods used to analyse medicines use (MU) within one territorial NHS Board. To describe how this medicine use analysis has been used within the region to drive improvements in prescribing.
Methods: For NHS Greater Glasgow and Clyde (GGC) the following were described:

- the medicines supply process
- the various sources of MU, methods of MU analysis and the styles of MU feedback
- the implementation of initiatives to improve the quality of prescribing based on MU analysis feedback and evaluation

Results: The majority of prescribing is done by generalist practitioners (GPs) in the primary care setting. Hospital doctors only prescribe for inpatients and day-case patients; they do not prescribe for people seen at outpatients, rather they make recommendations to GPs to prescribe new medicines or change current treatments. In GGC 54% (£240mill per year) of medicine costs are from GP practices, 43% (£190mill) in hospital and 3% (£13mill) in other settings.
Of the 1.3mill resident population 71% are prescribed medicines at least once per year by their GP. Each month 2% of the resident population is treated in hospital as inpatients, 1% as day cases and 7% attend outpatient clinics.
The medicines prescribed by GPs and dispensed by community pharmacies are recorded nationally in the Prescription Information System (PIS) and the medicines administered and supplied within hospitals are recorded locally in the Medicines Use Information System (MUIS). In both the data is extracted and analysed using SQL via Business Objects and WebIntelligence. Prescribing indicators are the predominant method of analysing and reporting MU. These are developed nationally and locally to measure prescribing in a wide range of therapeutic areas. These indicators can measure different aspects of prescribing depending on how the prescribing is being measured and the denominator of the indicator. In the ambulatory care setting these indicators have been used within many initiatives to drive improvements in prescribing quality and cost effectiveness, most recently in antibiotics, analgesics, direct-acting oral anticoagulants, inhalers, food supplements, blood glucose test strips.
Conclusions: MU analysis is used to understand how medicines are used across Greater Glasgow and Clyde and to develop many different types of prescribing indicators across many therapeutic areas to use within initiatives improve the quality and cost effectiveness of prescribing.

Scotland's National Therapeutic Indicators

MacBride-Stewart S[1], Cormack J[2], Mair A[2], Hurding S[3].
[1]National Health Service, Greater Glasgow and Clyde Board, Glasgow, Scotland; [2]Scottish Government, Edinburgh, Scotland; [3]National Health Service, Lothian Board, Edinburgh, Scotland

Background: In 2010 the National Health Service (NHS) Scotland Quality Strategy from Scottish Government included plans to make best use of data to drive improvements in healthcare and medicines were identified as a priority area. In 2011 a team of prescribing advisers from the NHS joined the for Quality and Efficiency Support Team (QuEST) in the Scottish Government and they identified that each of the 14 territorial NHS Boards were creating their own ambulatory care prescribing indicators to influence prescribing by generalist practitioners. These indicators were often in the same therapeutic areas. The National Therapeutic Indicators were developed to introduce consistency in how these indicators were reported and to ensure consistency across Scotland in the therapeutic areas covered; releasing capacity in local teams.

Objectives: To describe the process of NTI development in 2012 and how that has changed in the last 6 years. To describe the types of indicators developed and the therapeutic areas covered in 2012 and how these have changed in the last 6 years.

Methods: To flowchart the process of NTI development and highlight the difference between the original and current methods. To tabulate the NTIs for each year from 2012 to 2016 highlighting the changes in the nature of the indicator and the therapeutic topics covered.

Results: In 2012 the development of the NTIs was done primarily by two of the prescribing advisers in the QuEST team. Since then the NTIs have been reviewed on an annual basis. In 2014 the nature of the prescription data changed allowing for patient-level analysis, allowing for newer NTIs that better identified patient safety concerns to be created.

To develop the NTIs for 2018 a reference group of prescribing advisers from across the territorial NHS Boards in Scotland, specialist pharmacists with an interest in the therapeutic topics covered by the NTIs and Generalist Practitioners (GPs) met four times between October and December 2017 to review the existing prescribing trends in all therapeutic areas across Scotland, the prescribing trends of the current NTIs and the prescribing indicators being used in other parts of the United Kingdom. The reference group were also consulted on how the 2018 NTIs would be published and made available in NHS Scotland. In 2012 there were 12 NTIs in 10 therapeutic areas; by 2018 this had increased to 28 NTIs in 19 therapeutic areas.

In 2017 a second reference group was created. Hospital doctors and clinical pharmacists reviewed prescribing indicators for use in hospital. Eight indicators in four therapeutic areas are proposed for use in 2018.

Conclusions: Scotland's NTIs have been available for 6 years and they continue to be used by territorial NHS Boards in Scotland. The process for their development continues to improve and it now has wider involvement from stakeholders across Scotland. Similarly the NTIs themselves continue to change; they now cover a wider range of therapeutic areas partly because of the availability of patient-level prescription analysis and the development of indicators for use in hospitals

Technologies for improving the medication use process

Mason Benjamin[1], Jim Stevenson[2], Andrea Bare[3]
[1]University of Michigan College of Pharmacy, Michigan, USA; [2]International Pharmaceutical Federation – Hospital Pharmacy Section; [3]William Davidson Institute at the University of Michigan, Michigan, USA

Background: Globally, the use of automated technologies to improve medicine use and outcomes has increased exponentially. However, despite the potential utility and cost-effectiveness of automated technologies, there are various aspects of the medication use process and practice settings where they have not been widely implemented.

Objectives: To discuss recent advances in technologies for each stage of the medication use process in the United States intended to optimize safety and outcomes.

Methods: A review of automated technologies used in the United states for the various stages of the medicines use cycle. These stages include medication prescribing, transcribing, dispensing, administration, and monitoring. Because these stages are universal to all hospital pharmacies, the hope is that this poster will help institutions from different regions or countries learn about recent medication use technologies and identify which may be beneficial to their hospital based on current priority areas.

Results: Various technologies have been introduced in the USA to improve efficiency in medicine use and utilization. However, new technologies can be an expensive investment, and can also cause initial workflow disruptions as healthcare workers will need to acclimate to the new technology by learning what changes it necessitates in their daily tasks.

Medication use technology adoption generally varies substantially from one hospital to the next, both within the same region and internationally. Part of the reason for this variation is that it is not always easy for hospital pharmacies to determine which technologies they should implement, and in which order they should prioritize them. Another factor influencing adoption differences is that the technologies which prove most useful for a given institution will inevitably vary based on its current strengths and the challenges it faces.

Conclusions: The implementation of automated technologies is increasing in the USA to improve medicine use and utilization. However, the implementation of automated technologies in other countries, particularly in primary health care settings, should be based on what is culturally and contextually acceptable to the users.

INFECTIOUS DISEASES[BG1]

Antibiotic prescribing pattern and appropriateness at the Ghana Police Hospital

Daniel Afriyie[a], Thomas Darkwah[a], Brian Godman[b,c,d]

[a]Ghana Police Hospital, Pharmacy Department, Accra, Ghana; [b]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK; [c]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden; [d]Health Economics Centre, Liverpool University Management School, Liverpool, UK.

Background: Antibiotics are vital in prevention, treatment and management of bacterial infections. Increasing reports of their misuse, abuse and antimicrobial resistance is of global concern. Periodic measuring and monitoring antibiotic use, and local surveillance of microbial epidemiology, is a key aspect of effective antibiotic stewardship to minimize potential antibiotic use challenges.

Objectives: This study aimed at describing antibiotic prescribing patterns and evaluating appropriateness at the Ghana Police Hospital.

Methods: A cross-sectional descriptive study to investigate antibiotic prescribing patterns and evaluate the appropriateness of prescriptions was conducted from April to September 2017. A data collection instrument was used to determine: demographics of patients, types and total number of antibiotics prescribed, total number of drugs prescribed, average number of drugs and antibiotics per prescription from prescriptions with antibiotics at the Pharmacy department. Appropriateness of prescribed antibiotics was assessed referencing national standard treatment guidelines and the British National Formulary. Data obtained were analyzed using descriptive statistics and results presented in percentages.

Results: Of the 205 patients cards/prescriptions assessed, 153 (74.6%) were from Outpatients unit, whilst 52 (25.4%) were In-patients. Male patients constituted 116 (56.5%) whilst females were 89 (43.5%). Proportion of ages of patients ≤ 19, 20 to 39, 40 to 59 and ≥ 60 years were 41 (20 %), 108 (52.7%), 46 (22.4%) and 10 (4.9%) respectively. Average number of drugs per prescription was 3.3 (694/205) whilst the number of antibiotics per prescription was 1.2 (237/205). Commonly prescribed antibiotics (oral and injectable formulations) which constituted 88.6% were: amoxicillin, amoxicillin-clavulanic acid, ciprofloxacin, cefuroxime, ceftriaxone, ceftriaxone-sulbactam, and metronidazole. Appropriateness of indication, dose, frequency and duration of prescribed antibiotics were 188 (91.7%), 163 (66.3%), 133 (64.9%) and 108 (52.7%) respectively. Overall appropriateness of prescribed antibiotics was 72.2 %.

Conclusions: Overall appropriateness of prescribed antibiotics was reasonable, although the high use of amoxycillin-clavulanic acid and third generation cephalosporins needs investigating alongside the need to adhere to standard protocols to ensure rational use of antibiotic and minimize resistance associated with non-adherence. This could include developing and implementing new quality indicators

Prevalence self-medication in acute respiratory infections in the informal settlements in Outapi Region, Namibia

Kamati M[1], Godman B[2,,3], Kibuule D[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Namibia; [2]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK; [3]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden

Background: Acute respiratory infections (ARI) are the leading causes of morbidity among under-fives. However, self-medication and "self-care" care practices remain common in household in informal settings. There is limited data of self-medication practices for acute respiratory infections among households in informal settlements in Namibia.

Aims: The prevalence and determinants of self-medication in acute respiratory infections in the informal settlement in Outapi township were determined.

Methods: A household-based survey was conducted in the of Tobias Hainyeko informal settlement in Outapi township. Data on the household, prevalence of ARI and health seeking behaviors were collected from the head of the households using an interviewer administered questionnaire. Only households with at least one episode of an ARI in the past 6 months prior to study included. Quantitative data was analyzed using descriptive statistics and associations using SPSS v22 software.

Results: Of the 100 households surveyed, 60% used self-medication for the acute respiratory infection. Self-medication was mostly used to manage symptoms of common cold and coughs. Consequently, most households kept medication to manage symptoms of common colds including cold/flu medication, paracetamol and decongestants. The main drivers for self-medication among households was a perceived diagnosis of the ARI as "minor or mild" and the long waiting hours and queues to receive care at public health facilities.

Conclusion: Majority of house-holds in informal settlements in Outapi township self-medicate in acute respiratory infections. There is need for outreach primary health care services to informal-settlements to screen and appropriately manage ARI among households.

Trends and predictors of loss-to-follow-up under the dots program in Namibia

Aiases P[1], Mubita M[1], Mavhunga F[2], Nunurai R[2], Rennie TW[1], Verbeeck R[1], Godman B[2,3], Kibuule D[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia; [2]National Tuberculosis and Leprosy Programme, Ministry of Health and Social Services; [3]Department of Laboratory Medicine, Division of Clinical Pharmacology, KI Stockholm, Sweden; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK

Background: In Namibia, one out of every twenty-five cases of tuberculosis is 'lost to follow-up' (LTFU). This has impacted negatively on national efforts to end the disease by 2035.

Objective: Trends and predictors of lost to follow-up under the DOTS program in Namibia were determined.

Methods: A retrospective analysis of a national-wide cohort of cases registered under DOTS program in Namibia from 2006-2015. The trends and predictors of LTFU among cases in the National Electronic Tuberculosis Register of the National TB and Leprosy Programme were respectively determined by interrupted time series and multivariate logistic regression analyses using R-Studio software.

Results: Out of 104,203 TB cases, 3775(3.6%) were LTFU. One quarter (26%) cases with poor outcomes were LTFU. The prevalence LTFU significantly declined from 2006-2015; this was greater during the first medium term plan period ($p=0.002$). The independent predictors of LTFU were: male sex ($p=0.004$), 15-24 age group ($p=0.03$); provider of treatment ($p<0.001$), intensive phase ($p=0.047$) and living in border/transit regions ($p<0.001$). HIV coinfection and TB regimen were not significant predictors of LTFU.

Conclusions: There were declining trends in LTFU in Namibia. DOTS programs should integrate the socio-economic interventions for youthful and middle aged male TB cases to abate LTFU.

Association between adherence and health-related quality of life in a cohort of HIV-patients at two public sector resource-limited clinics in South Africa

RV Vagiri[1], JC Meyer[1], AGS Gous[1] and B Godman[2,3]

[1]Department of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa; [2]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK; [3]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden

Background: South Africa's adoption of UNAIDS 90-90-90 targets and World Health Organisation's recommendation of antiretroviral therapy (ART) for all diagnosed people living with HIV (PLWHA) has resulted in greater access to ART. Health-related quality of life (HRQoL) has emerged as an important indicator of treatment outcomes with patients' increased chance of survival, as PLWHA are now not only concerned with survival, but also the HRQoL they are able to lead while on life-long ART. However, the success of ART depends on consistent and optimum adherence over a period of time. The relationship between HRQoL and long-term adherence to ART is still unclear, especially in the South African resource-constrained context.

Objective: To investigate the relationship between patients' satisfaction with aspects of HRQoL and adherence to ART over time.

Methods: A sample of 431 HIV-positive patients were followed at four-monthly intervals, at two resource-constrained clinics, for a period of 12 months. Adherence and HRQoL data were obtained using a patient-reported adherence rating scale and WHOQOL-HIV BREF respectively. The adherence and HRQoL responses for the four study visits were pooled into a combined sample (n=1631; excluding baseline data for 93 treatment-naïve patients). Adherence and HRQoL scores were regrouped in four-monthly intervals according to the patient's actual duration on ART, ranging 1-120 months. Patients were split into adherent (≥95%) and non-adherent (<95%) groups. The association between adherence and mean HRQoL at a specific time point on ART was investigated with a time-series analysis. Differences in mean HRQoL scores between adherent and non-adherent patients were compared with an independent sample t-test, with $p<0.05$ considered statistically significant.

Results: The sample was mostly female (76.1%), completed secondary education (74.2%), middle-aged (62.2%) and married (68.7%). Three-quarters (76.2%) of patients reported being ≥95% adherent during the study period. A gradual increase in the proportion of adherent (≥95%) patients was observed over time, from Visit 1 (69.5%) to Visit 4 (81.6%) after 12 months. A time-series analysis revealed that irrespective of the time on ART, adherent patients consistently reported better HRQoL. Significant differences in the overall mean HRQoL scores of the ART adherent (≥95%) and non-adherent (<95%) patients ($p<0.05$) were observed amongst patients on ART for the periods 9-28 months, 49-64 months and 81-120 months.

Conclusions: This study established a strong relationship between adherence to ART and HRQoL over time, with higher adherence being related to better HRQoL. Achieving consistent long-term adherence to ART is still a serious concern, and requires focus and attention from health care professionals and policymakers, for the development of appropriate interventions to enhance the HRQoL of PLWHA.

Comparison of zidovudine and tenofovir based regimens with regard to quality of life and prevalence of symptoms in HIV patients in Kenya

Jilian O. Etenyi[1], Faith A. Okalebo[1], Sylvia A. Opanga[2], Kipruto A. Sinei[1], George O. Osanjo[1], Amanj Kurdi[3,4], Brian Godman[3,5]

[1]Department of Pharmacology and Pharmacognosy, School of Pharmacy, University of Nairobi, Kenya; [2]Department of Pharmaceutics and Pharmacy Practice, School of Pharmacy, UoN, Kenya; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK; [4]College of Pharmacy, Hawler Medical University, Erbil, Iraq. [5]Division of Clinical Pharmacology, KI, Stockholm, Sweden

Background: Zidovudine and tenofovir form the back bone of antiretroviral therapy in Kenya, with sub-Sahara Africa having the highest prevalence of HIV worldwide. However, they have side effects which may adversely affect health related quality of life (HRQoL) and adherence. More women than men have HIV in sub-Sahara Africa; consequently, crucial to conduct studies in Africa

Objectives: Compare the Health Related Quality of Life of adult patients on tenofovir versus zidovudine based regimens in a leading referral hospital in Kenya to guide future management decisions.

Methods: Comparative cross sectional study conducted on adult out-patients on either tenofovir or zidovudine at Kenyatta National Hospital between 2015 and 2016. The Medical Outcome Study HIV Health Survey (MOS) was administered. Linear regression analysis was performed to identify determinants of HRQoL.

Results: Of the total 501 patients included, participants on zidovudine (39.9%, n=200) had a higher median Physical (PHS) and Mental Health Scores (MHS) (61.9, IQR: 59.5, 62.8) compared to those on tenofovir (60.1, IQR: 55.1, 62.3). Presence of any symptom of disease and stated inability to cope were negatively associated with PHS whilst having regular source of income improved PHS. Being on tenofovir, symptom of illness (β -1.24, 95 % CI; -2.253, -0.226), absence of pain (β 0.413, 95 % CI; 0.152, 0.674) and patient stated inability to cope with HIV (β -1.029, 95 % CI; -1.441, -0.617) affected the MHS. Patients on tenofovir and second line regimens also had more signs and symptoms of illness.

Conclusions: Participants on zidovudine based regimens had a better performance across all aspects of HRQoL, and should be actively considered in the future where pertinent.

Incidence rate and risk factors for tenofovir disoproxil fumarate associated nephrotoxicity in Namibia: A retrospective study

Kalemeera F[1], Godman B[2,3] Stergachis A[4] and Rennie T[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek, Namibia; [2]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, Strathclyde University, Glasgow, UK; [4]School of Pharmacy and School of Public Health, University of Washington

Introduction: Antiretroviral therapy (ART) has appreciably reduced morbidity and mortality associated with human immunodeficiency virus (HIV) infections. Despite this, ART has been shown to cause nephrotoxicity, especially TDF-containing ART, but the incidence rate has not been systematically reported in Namibia. The primary objective of this study was to estimate the incidence rate of clinical decline in EGFR in HIV-infected patients receiving TDF-containing ART, in Namibia. The secondary objectives were to evaluate the risk factors, and assess for any differences in the incidence of nephrotoxicity between the female and male patients.

Methodology: A retrospective cohort study was conducted among HIV infected adult patients who had initiated TDF-containing first line ART. The cohort consisted of patients who had baseline eGFR, sex, follow-up eGFR, age, weight, ART regimen, and duration on ART. The outcome variable was clinical decline in eGFR, which was based on the calculation of the change in eGFR. A drop in eGFR ≥25% was determined to be clinical as long as the last eGFR was not in stage I of renal function.

Results: A total of 862 patients were included in the study. The majority were female: 69.0% (n=595). The females' mean age was lower (37 vs. 40, p<.001); but their weight was not significantly different (66.4 vs. 66.1, p=.805). Most importantly their mean baseline eGFR was significantly lower than that of the males (86.4 vs. 108.1, p<.001). Their haemoglobin concentration was lower (12.7 vs. 13.7, p<.001). A total of 36.4% (=314) experienced the clinical decline in eGFR. The proportion of females who experienced the clinical decline in eGFR was significantly greater than the proportion in the males (40.7% vs. 27.0%, p<.001) and the incidence rate of the clinical decline in eGFR per 100 patients years was significantly greater in the females than males: 30.9 (95%CI: 27.2 – 35.1) and 22.4 (95%CI: 17.5 – 28.2), p=.013. The factors that were associated with the clinical decline in eGFR were: female sex: OR=4.733 (95%CI: 3.137 – 7.140, p<.001); high baseline eGFR: OR = 1.038 (95%CI: 1.029 – 1.047, p<.001); increasing weight: OR = 1.067 (95%CI: 1.051 – 1.083, p<.001); and haemoglobin concentration OR=1.134 (95%CI: 1.050 – 1.225, p=.001). Increasing age appeared to be protective: OR=.974 (95%CI: .958 -.990, p=.006).

Conclusion: The incidence rate of TDF-associated nephrotoxicity is high in Namibia. Female sex is the risk factor with the greatest effect size, and so significantly more events of clinical decline in eGFR occurred the females. A high baseline eGFR was a risk factor for the clinical decline in eGFR, even though the effect size was. Duration on ART was not identified as a risk factor because of the occurrence of the majority of events soon after ART initiation. Secondly, the patients had various lengths of exposure to TDF. Lastly, about the duration of exposure to TDF, the measurements of eGFR were not done at regular times. Haemoglobin concentration was a covariate, most likely a result of the drop in eGFR rather than a cause

Anti-vaccination conversations on online news forums, twitter, and other microblogs in South Africa

M Matsangaise[1], JC Meyer[1,2], RJ Burnett[2,3]

[1]Department of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa; [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 South African Vaccination and Immunisation Centre (SAVIC) began a social media tracking project in June 2016, to analyse sentiment on vaccination-related posts. Baseline results of the first 6 months of tracking found that 18% of posts were anti-vaccination. This study reports on the second 6 months of the project.

Objective: To classify anti-vaccination themes expressed on South African publically available social-media platforms, including online news forums, Twitter and other microblogs.

Methods: A descriptive qualitative study using content analysis of vaccination-related social medial posts identified by Pulsar® software for the period December 2016 to May 2017 was conducted. Data were coded into positive, neutral or negative sentiments and quantified by the same software. Conversations were then imported into NVivo™12 software and open-coding was used to develop a framework of categories and themes, followed by matrix coding to identify relationships between categories.

Results: A total of 16 411 conversations were identified, of which 23% were anti-vaccination. Common anti-vaccination themes included the following: conspiracy theories surrounding Big Pharma where it was perceived that vaccines were developed for financial gain; the autism theory where vaccines were linked to autism in children; issues surrounding safety of vaccines and vaccine ingredients; and concerns about the effectiveness of vaccines.

Conclusions: This study found an increase in anti-vaccination sentiment expressed on South African social media platforms, when compared to the previous 6 months. Themes identified provide further valuable information that can be used by the National Department of Health to develop targeted messages about vaccine safety.

Perceptions and beliefs of parents from a rural district in KwaZulu-Natal, South Africa regarding pneumococcal disease vaccination - a qualitative study

PX Ndlovu[1], JC Meyer[1,2] and N Schellack[1]

[1]School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa; [2]South African Vaccination and Immunisation Centre, Sefako Makgatho Health Sciences University, Pretoria, South Africa.

Background: The incidence of pneumonia during the first year of life is high and contributes significantly to childhood mortality and morbidity. Evidence has shown the effectiveness of pneumococcal conjugate vaccine since its introduction into South Africa's Expanded Programme on Immunisation (EPI-SA). Studies exploring perceptions of parents towards following the EPI schedule are limited.

Objective: To explore perceptions and beliefs of parents towards pneumococcal disease and their decision to uptake childhood pneumococcal immunisation in a rural district of KwaZulu-Natal.

Methods: A qualitative, descriptive study was conducted at 12 primary health care facilities, providing immunisation services, in the Nqutu sub-district. Face-to-face, audio-recorded interviews were conducted with parents of children, between the ages of 6 weeks and 12 months. The Health Belief Model (HBM) served as a theoretical framework for the interview guide. Data were transcribed, imported into NVivo10® and analysed using a thematic deductive approach. Ethical clearance for the study was obtained and participants provided written informed consent.

Results: Overall, 42 mothers were interviewed. Immunisation records indicated high vaccine coverage (97.6%). Eight themes emerged from the data. Parents considered pneumonia as a major threat to their children's health. Knowledge about pneumococcal disease and vaccines itself was limited. They believed in health care providers as a reliable source of vaccination information and followed their recommendations. The majority believed that benefits of vaccination outweighed barriers like pain, and were committed to vaccination uptake.

Conclusions: Perceptions and beliefs regarding the benefits of immunisation, and information provided by health care professionals, were the main determinants of commitment towards pneumococcal vaccination. Suitable education programmes should address gaps in knowledge among parents and health care professionals in rural areas, to ensure that perceptions are based on accurate information, for better decision making by parents and optimal vaccination uptake.

Vaccination sentiment on publicly available South African social media platforms

RJ Burnett[1,2], JC Meyer[1,3], MM Matsangaise[3]

[1]South African Vaccination and Immunisation Centre, Sefako Makgatho Health Sciences University, Pretoria, South Africa

[2]Department of Virology, Sefako Makgatho Health Sciences University, Pretoria, South Africa

[3]Department of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, Pretoria, South Africa

Background: The South African National Department of Health provides free universal infant vaccination against 10 diseases, and free vaccination against cervical cancer to public sector school girls. Reports of low vaccination coverage and recent measles and diphtheria outbreaks, provide evidence that vaccines are not reaching all South Africans who require protection against vaccine-preventable diseases. The South African Vaccination and Immunisation Centre (SAVIC) at the Sefako Makgatho Health Sciences University, has in recent years received many requests from academics, lay magazines, newspapers, private and public clinics, to explain the validity of claims put to them by parents who are concerned about the risks of vaccination. All of the anti-vaccination claims originate from the Internet, with concerned parents providing lists of websites that provide "evidence" of the "harms" caused by vaccination. The increasing presence of Internet-based anti-vaccination lobbying on South African webpages, prompted SAVIC to start a social media tracking project in 2016.

Objectives: To identify, classify and quantify vaccination sentiments expressed on South African publically available social-media platforms including online news forums, Twitter and other microblogs.

Methods: An online Boolean search on vaccine-related terms was created using Pulsar® software. This software analyses and quantifies sentiment (positive, negative and neutral) for market and scientific research. For this project, all conversations were also analysed by two researchers. If both disagreed with the software-assigned sentiment, it was changed. When there was disagreement between the two researchers, the Principal Investigator made the final decision. In this way, both the researchers and the software were trained. In this baseline report, all vaccination-related conversations were tracked and analysed from 1 June to 29 November 2016.

Results: Of the 11 320 vaccination-related conversations, 9 019 (79.7%) were on Twitter; 2 092 (18.5%) were on online news platforms, 189 (1.7%) were on forums, and 20 (0.2) were on blogs. Of the conversations regarding vaccination of children, 79% were positive, 15% negative, and 6% neutral. The development of new vaccines generated more positive sentiment at 89%, with 6% being negative and 5% being neutral. Overall, 69% of the conversations were positive, 18% were negative and 13% were neutral.

Conclusions: This first report of vaccination sentiment expressed on South African social media platforms, provides a baseline from which trends can be tracked. This project is ongoing, providing valuable information that can be used by the National Department of Health to institute timely interventions when a rise in negative vaccination sentiment is detected.

Therapeutic interchange policies used in managing antimicrobial shortages in South African public sector hospitals

AK Chigome[1], M Matlala[1], JC Meyer[1]

[1]Department of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, South Africa.

Background: Antimicrobial shortages are regarded as a public health crisis due to the necessity to expedite treatment of infection and because antimicrobial resistance limits therapeutic choices. Therapeutic interchange policies have been documented elsewhere as useful in dealing with antimicrobial shortages. The extent of antimicrobial shortages and availability of documented therapeutic interchange policies is largely unknown in South Africa.

Objectives: To describe the pharmacist's practice and role in the therapeutic interchange process when there are antimicrobial shortages at public sector hospitals in South Africa.

Methods: A quantitative and descriptive study was conducted with data collected using an electronic questionnaire, administered via SurveyMonkey™. The target population included 405 public sector hospitals across South Africa. Information on antimicrobial shortages, availability of documented therapeutic interchange policies and the role of the pharmacist in the management of antimicrobial shortages, was collected from pharmacists working at public sector

hospitals across South Africa. Data were exported to MS Excel™ and analysed using SPSS™ v25. Descriptive statistics were used to summarise categorical variables as frequencies and percentages. Data collection is currently still in progress.

Results: Results will include percentages of facilities that experienced shortages over a specified period, hospitals with active PTCs and those with documented therapeutic interchange policies. The most common out of stock antimicrobials will be reported. Reasons for shortages and the role of the pharmacist in the interchange process will be described.

Conclusions: Findings from this study can assist the Department of Health in the development of comprehensive strategies to alleviate the implications of antimicrobial shortages on clinical practice and patient outcomes.

Improving the Utilization and Quality of Antibiotics in Tanzania

K Hamasaki[1], M Jande[2], S Mshana[2], A Massale[3], B Godman[4,5]

[1]School of Pharmacy, Catholic University of Health and Allied Sciences, Mwanza, Tanzania; [2]Weill Bugando School of Medicine, Catholic University of Health and Allied Sciences, Mwanza, Tanzania; [3]School of Medicine, University of Botswana, Gaborone, Botswana

[4]Division of Clinical Pharmacology, KI, Stockholm, Sweden; [5]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK

Background: Antimicrobial resistance leads to serious morbidity, mortality and costly treatment. The inappropriate use of antibiotics including inappropriate self-medication as well as the availability of substandard and falsified medications are contributing factors to increasing antimicrobial resistance (AMR). However, to date there have been on limited publications regarding the utilisation and consumption of antibiotics in Tanzania, and to date the data on quality of antibiotics in Tanzania is limited.

Objectives: This study aims to describe antibiotic utilisation practices among both out-patients and in-patients in Mwanza region and to evaluate the quality of selected essential antibiotics available in Mwanza region. The management of upper respiratory tract infections will be a particular focus as this is a prevalent indication for antibiotic use in ambulatory care despite the vast majority of infections being viral in origin.

Methods: For evaluating the use of antibiotics, the study will use two designs: (1) retrospective cross-sectional study of antibiotic use among ambulatory care clinics for the management of upper respiratory tract infections by using selected indicators from the International Network for Rational Use of Drugs, Defined Daily Doses as well as recognized quality indicators and (2) non-experimental, prospective single day point prevalence study among hospital wards. For determining the quality of antibiotics, the study will first conduct a content and dissolution analysis of amoxicillin, cefalexin, cefixime, doxycycline, azithromycin, co-trimoxazole available at community pharmacies in Mwanza region. Subsequently, a susceptibility analysis of ampicillin, amoxicillin-clavulanate, co-trimoxazole, gentamicin, tetracycline, ciprofloxacin, and ceftriaxone that are available in Mwanza region against Escherichia coli.

Results/ Next steps: The findings will be used to help guide future policies in the Region and nationally to improve future antibiotic utilization in Tanzania to ultimately reduce growing AMR rates

Indicators of registration of essential anti-microbials in Namibia: Findings and implications

Ashipala V[1], Kalemeera F[1], Gaeseb J[2], Shifotoka KS[2], Kibuule D[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek

[2]Namibia Medicine Regulatory Council, Ministry of Health and Social services, Windhoek

Background: Robust registration systems enhance access to quality essential medicines. There is limited data on indicators of registration of essential antimicrobials in most lower and middle-income countries such as Namibia, where the burden of infectious disease is highest.

Objectives: Trends and indicators of registration of essential antimicrobial medicines in Namibia were determined.

Methods: A descriptive analysis of indicators of registration of essential antimicrobials was conducted. Secondary data were abstracted from the Pharmadex® registration database and/or medicine dossiers submitted to the Namibia Medicine Regulatory Council over a 10-year period, 2005-2016. Quantitative and time-series analysis was done using SPSS version 2.3 software.

Results: Of the 291 dossiers reviewed, 97% were for generic products, tablet (51.5%) versus or parenteral (26.5%) formulations. About half (54%) of the antimicrobials are included in the Namibia essential medicine list and 41% were fast track versus convectional registration (59%). The average time to start a dossier review process was 14months, and

the review period lasted 18±6 months. The main factors driving medicine registration were limited human resources and capacity at the NMRC.

Conclusion: The timely registration of essential antimicrobials is Namibia is sub-optimal and may negatively impact access to medicines and health outcomes. Strengthen capacity and the systems for registration of essential antimicrobials in the wake of rising antimicrobial resistance is needed.

An investigation of antibiotic prescribing in patients with upper respiratory tract infections (URTISs) at Katutura Health Centre, Windhoek, Namibia

Mwape Kunda[1], Lischen Haoses-Gorases[2], Marcus Goraseb[3]

[1]Ministry of Health and Social Services, Namibia; [2]Faculty of Health Sciences, University of Namibia, Namibia; [3]School of Medicine, University of Namibia, Namibia

Background: Upper respiratory tract infections (URTIs) are of viral cause in 80% of cases and they constitute a major part of the primary health care practitioners' workload with antibiotics commonly prescribed for these illnesses.

Objectives: The aim of this study was to explore antibiotic prescribing in patients with URTIs at Katutura Health Centre, Namibia.

Methods: A descriptive, cross sectional, quantitative design based on patients' prescriptions was used. Data were analyzed using Epi info statistical package version 7.1.1.14.

Results: The rate of antibiotic prescribing for patients with URTIs at Katutura Health Centre (KHC) was 78% (95% CI, 74%-82%). Further bivariate analyses of antibiotic prescribing (Response variable) and illness, age, gender and profession (exposure variables) showed that age and illness were significantly associated with antibiotic prescribing ($p<0.05$) while gender and profession rank were not.

Conclusion: In conclusion, the Ministry of Health and Social Services need to develop or adopt international strategies with proven interventions in reducing antibiotic prescription in Upper Respiratory Tract Infections.

A review of rise of modern pharmaceutical biotechnology in antibiotic drug discovery and development from natural sources and future implications

Daniel Mavu[1], Seth !Nowaseb[1], Vetjera Haakuria[1], Dan Kibuule[2]

[1]School of Pharmacy University of Namibia, Dept. Pharmaceutics; [2]School of Pharmacy University of Namibia, Dept. Pharmacy Practice and Policy

Background: In the context of antibiotic research and development (R&D), Biotechnology is the exploitation of biological processes for industrial production. Early antibiotic biotechnology relied on empirical research whereas modern biotechnology is regarded as having started in 1973 with the discovery of recombinant DNA technology. Currently, two thirds of antibiotics in clinical use globally are of natural microbial origin, and were developed through these same empirically derived techniques. Empirical antibiotic R&D from natural sources (NS) was, however, not sustainable. No new classes of antibiotics were discovered until after 2000 when there was renewed interest in antibiotic R&D from NS, this time powered by advances in biotechnology. Unfortunately, there are currently no comprehensive systematic reviews of the technologies, focus areas of antibiotic R&D and outcomes thereof over the years. This review aims to highlight the most important developments, and contributions in antibiotic discovery and development from natural sources (NS).

Methods: A systematic literature review design was adopted for the review. Publications on R&D on antibiotics and biotechnology were retrieved from research databases including science direct, PubMed, Medline and open source databases like google scholar. The search terms included *"antibiotics and biotechnology, research and development, methods and production."* The main outcome variables were trends, advances and contributions of biotechnology used for R&D of novel antibiotic classes/types. The study included publications that are peer reviewed and that give antibiotic outcomes with market authorization. Data was analyzed thematically and results are descriptively reported. Antibiotic innovations were ranked using a criteria assessing the significance of contribution to clinical practice and future applicability to R&D of novel antibiotics from NS as well as applicability to other biomedical sciences.

Results: Out of the 126 articles retrieved from the literature (1928 – 2017), 47 studies met the inclusion criteria. Fifteen (15) articles were excluded due overlap of information. Out of the 32 articles reviewed, 25 innovations in biotechnology had impact on R&D of novel antibiotics in clinical use. The main trends in antibiotic R & D were in four eras: 1928-mid 1940s – the primordial era, an initial phase when the first antibiotics were discovered without clinical use and no mass

production; 1944 - 1962 is era when most antibiotics currently in clinical use were discovered and when mass production started. Twenty (20) new classes of antibiotics were discovered and are still used in clinical practice; 1962 – 2000 there were no innovations in new classes of antibiotics but rather synthetic modifications of existing compounds. The era of high discoveries of antibiotics was referred to as the golden era 1944-1970; the rise in antimicrobial resistance due to over use of antibiotics led to combinatorial techniques for novel synthetic antibiotics in the 1980s with no new classes; in 1990's genomic era – the biotechnological advances in genome sequencing led to innovations of antibiotics discovery based on high throughput screens of existing compound libraries to identify targets as well as the genes encoding. Unfortunately the yield for antibiotics based on genomic sequencing remained poor and because of these disappointments, interest in antibiotics from NS was revitalized in the 2000's renascence era, using advanced biotechnology. This led to two new classes of novel antibiotics being marketed by 2010 and two more were still in phase I of the pipeline. A small number were in the preclinical phases.

Conclusion: A combination of advanced biotechnology applied on NS alongside synthetic modifications has the highest potential for R&D of novel antibiotics. The future focus areas for antibiotic R&D from NS will focus on the 99% non-culturable microorganism that have not been exploited, on R&D all microbes with silent genes with potential, R&D on microbes from unexplored environments and R&D on non-multiplying microorganisms.

NON-COMMUNICABLE DISEASES[BG2]

Adjustments of medication dosages in patients with renal impairment admitted in the adult medical wards at Princess Marina Hospital

A M Sheikh[1, 2], G Rwegerera[1], D Habte[3,] B Godman[4]

[1]Department of Internal Medicine, University of Botswana and Princess Marina Hospital, Gaborone, Botswana; [2]Department of Medicine, Princess Marina Hospital, Ministry of Health, Gaborone, Botswana; [3]Consultant, Public Health Specialist, Addis Ababa, Ethiopia; [4]Strathclyde Institute of Pharmacy and Biomedical Sciences, Strathclyde University, Glasgow, United Kingdom AND Division of Clinical Pharmacology, Karolinska Institutet, Stockholm, Sweden.

Background: The prevalence of renal impairment is rising globally. Many drugs are metabolized and eliminated by the kidney, and dosage adjustment is therefore required for these drugs. Dosages should be adjusted according to estimated Glomerular filtration rate (eGFR.) Despite the fact that many resources guiding dosing adjustment are available, medication dosing errors are common in patients with renal impairment, and can cause toxicity and adverse events. Predictors of medication dosing errors in previous studies include severe-to-end stages of chronic kidney disease, presence of co-morbidities and a higher number of prescribed medicines.

Objectives: To determine the prevalence of renal impairment and drug prescription practices among patients with renal impairment in medical wards of Princess Marina Hospital.

Methods: A retrospective cross sectional study was carried out in the male and female medical wards at Princess Marina Hospital, Gaborone, Botswana. It included all patients admitted between August and October 2016 who had renal impairment with an eGFR ≤60mL/min/1.73m2 and were hospitalized for ≥24 hours. Patient demographic and clinical data included; age, gender, serum creatinine level, HIV status and prescribed drugs and their dosages was collected from the patients' medical records. Patient outcome and length of stay were also captured. Estimated Glomerular filtration rate (eGFR) was calculated using Modified Diet in Renal Disease (MDRD). Tools used to categorize appropriateness of dosage adjustment included a book "Drug prescribing in renal failure: dosing guidelines for adults and children." Data was analyzed using SPSS version 24. A logistic regression model was used to assess which patient factors were associated with inappropriate dosage adjustment

Results: Twenty nine percent, 29% (233/804) of patients admitted between August and October 2016 had renal impairment. Of these, 184 patients with renal impairment were included in the final analysis. There were 1143 prescription entries, of which 20.5% (234/1143) required dosage adjustment for renal function but only 45.7% (107/234) were adjusted correctly, while 54.3% (127/234) were not appropriately adjusted. Of note, 112 patients were prescribed at least one drug that required dosage adjustment and 41.1% (46/112) of patients had no medications adjusted, whereas only 30.4% (34/112) had all their medications appropriately adjusted. About 28.6% (32/112) patients had some of the medications appropriately adjusted. Patient factors associated with inappropriate dosage adjustment included a higher number of medication prescribed, specifically ≥3 (Adjusted OR 21.96, p-value 0.000), lower eGFR, i.e stage 4 or 5 CKD (stage 4: adjusted OR 3.87, p-value 0.039, stage 5: adjusted OR 4.42, p-value 0.014), and a positive HIV status (p-value 0.024).

Conclusions: This study confirmed that renal function status was not sufficiently taken into account when prescribing drugs. Similar to previous international studies; patient predictors for dosing errors in this study were higher number of prescribed drugs and more severe renal impairment. HIV positive status was also found to be a predictor for medication prescription error. Continuous medical education needs to be encouraged to prevent dosing errors in patients with renal impairment.

Patient empowerment with hypertension knowledge to improve management of hypertension in patients on chronic medicines at primary health care facilities in the Vhembe District of Limpopo Province, South Africa: Findings and implications

EM Rampamba[1,2], JC Meyer[1], EA Helberg[1] and B Godman[3,4]

[1]Department of Public Health Pharmacy and Management, Sefako Makgatho Health Sciences University, South Africa

[2]Tshilidzini Hospital Pharmacy, Limpopo Department of health, Limpopo Province, South Africa

[3]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, United Kingdom

[4]Division of Clinical Pharmacology, Karolinska Institute, Stockholm, Sweden

Background: The burden of uncontrolled hypertension negatively impacts on mortality and morbidity, and consequently on the economic status of a country. This is important in Africa given a high and growing prevalence of hypertension. High rates of hypertension, overweight and obesity are seen in South Africa, increasing the morbidity and mortality due to non-communicable diseases in recent years.

Objective: To evaluate the impact of a pharmacist-driven patient counselling and education model on the management of hypertension, amongst patients receiving their medication from primary health care facilities (PHC) in the Vhembe District of the Limpopo Province.

Methods: A prospective operational study was conducted amongst chronic hypertensive patients, with 55 and 31 patients respectively in an intervention and a control group. Pharmacist interventions for the experimental group included an educational diary on hypertension management and patient counselling. A structured questionnaire was administered during a face-to-face interview, by nine data collectors who were all pharmacists. Data were collected over a period of six months, with a 4-month interval for each patient between the baseline visit and the post-intervention visit. Data were captured on Microsoft Excel™ spread sheets, checked and cleaned for data analysis using SAS®, Release 9.4. Descriptive statistics was used to summarise responses by frequency counts and percentages and inferential statistics was used to determine if there was any statistical significant difference in patients' knowledge, lifestyle, and blood pressure control between the intervention and control group after pharmacist interventions. All participants provided written informed consent.

Results: Females predominated, and that there were no statistically significant differences in the baseline characteristics between the intervention and the control groups. There was a 34.7% improvement in patients' understanding of what normal blood pressure (BP) is in the intervention group compared to the control group ($p<0.001$). A 9.1% improvement was observed in the intervention group in knowledge about the fact that systolic and diastolic BP are both important in controlling hypertension, while no change was observed in the control group. After the pharmacists' intervention, 40% of the intervention group and 17.9% of control group patients had adequate knowledge (≥75% correct answers) about hypertension management ($p=0.075$). Pharmacists' interventions were well received by the majority of patients (>90%).

Conclusion: A pharmacist-driven patient counselling and education model can be of great assistance to improve patients' hypertension knowledge, and consequently improve their BP control. The implementation of these model should become a routine to improve chronic disease management in this District and throughout South Africa as part of ongoing reforms to improve the care of patients with chronic diseases.

Indicators of registration of antihypertensive medicines in Namibia: Findings and implications

Iita Laimi, Mubita M[1], Gaeseb J[2], Shifotoka KS[2], Kibuule D[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek

[2]Namibia Medicine Regulatory Council, Ministry of Health and Social services, Windhoek

Background: Namibia has the highest burden of cardiovascular disease in sub-Saharan Africa. Universal access to essential antihypertensive medicines is a critical strategy of the Namibia's medicine policy to reduce morbidity associated with poor blood pressure control. However, little is known of indicators for registration of essential antihypertensive medicines in Namibia.

Aims: Indicators and factors associated with registration of antihypertensive medicines in Namibia were determined.

Methods: A quantitative cross-sectional analysis dossiers of antihypertensive medicines registered by the Namibia Medicines Regulatory Council, over a 10-year period, 2006-2015. Data on indicators, trends and factors were abstracted from the Pharmadex® registration database and/or dossiers. Data were entered in SPSS v23 for descriptive analysis for indicators and associated factors and time series analysis for trends in medicines registration.

Results: Out 120 dossiers reviewed, 98.3% were for generic products, 90.8% from international applicants, and 66.7% for fast track review. The mean time to first review of a dossier of antihypertensive medicine was 6±12 and the review period lasted an additional 12±5 months. Time series indicated a non-significant declining annual trend in registration of antihypertensive medicine registered after introduction of the Pharmadex® in 2011 (OR= -0.96, p=0.680). The main challenges were limited lack of systems and human resources for medicine registration. Compliance to the new common technical document format for registration of medicines by applicants was also a barrier to medicine registration.

Conclusion: Indicators for registration of antihypertensive registration in Namibia are sub-optimal. There is need for an efficient system to track registration of medicines to enhance timely registration and access to essential antihypertensive medicines.

Medication reconciliation practices in hypertensive care at Katutura State Hospital, Namibia

Nilenge P[1], Mubita M[1], Kibuule D[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek

Background: Poor medication adherence is common among hypertensive patients in Namibia. Reconciliation of patient's medication can minimize medication errors of duplication, omission, commission and transcribing, and improve blood pressure control. There is limited data on the practice of medication reconciliation in hypertensive care in Namibia.

Aim: The practice of medication reconciliation in hypertensive care in a referral public health facility in Namibia was assessed

Methods: A cross-sectional analysis of current and prescribed medication was conducted on among patients receiving hypertensive care at Katutura state hospital. Heath care workers were interviewed on the practice of medicine reconciliation. The extent of medication reconciliation was determined using 5-point check list and the level of adherence to antihypertensive medication assessed using the Morisky scale. Data on patient and health worker characteristics and medication discrepancies were entered in SPSS v23 for quantitative analysis using descriptive statistics and associations using Chi-square test.

Results: Of the 150-patients, 62.3% were female, 60% had perfect adherence to antihypertensive medication and 98% of prescribed medicines were never reconciled with current medication by a health worker. None of the patient's current medication reconciled perfectly (i.e. 5/5 items reconciled) with the prescribed medications. Majority of the patients 133(88%) had an acceptable level of reconciliation of their medication (>80%, 4/5 items reconciled). The level of reconciliation between prescribed and current medication was significantly associated with; having another chronic comorbidity in addition to hypertension (p=0.005), residence of respondent (p<0.001), treatment with Beta-blocking agents (p<0.001) or diuretic (p=0.005). Adherence to antihypertensive medication was an independent predictor for diastolic (OR=12.2, 95%CI: 1.1, 1.3, =0.039) and systolic (OR= 6.6, 95%CI: 1.4, 2.3, p=0.003) blood pressures.

Conclusions: The practice of reconciliation of medication in antihypertensive care at Katutura state hospital is limited. The integration of medication at points of care should be integrated in routine care of hypertensive patients to improve blood pressure control.

Medication adherence among hypertensive patients receiving care at clinics in Central Windhoek, Namibia

Ottilie Iyambo[1], Godman B[2,3], Kibuule D[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Namibia; [3]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, United Kingdom; [4]Division of Clinical Pharmacology, KI, Stockholm, Sweden

Background: Adherence to antihypertensive medication leads to favourable outcomes of optimal blood pressure levels and a reduced risk of developing complications. In Namibia despite a high incidence of 35744 new cases per year of hypertension, limited studies have evaluated adherence to antihypertensive medication in this population.

Objectives: The level of adherence and the factors that affect adherence to antihypertensive medicines among patients receiving care at primary health care were determined.

Method: A health facility-based cross-sectional evaluation of medication adherence was conducted among hypertensive patients at four primary health facilities in Windhoek central including Katutura health center, Khomasdal, Robert Mugabe and Wanaheda clinics. The main outcome measure was the level of adherence to antihypertensive medication by a self-report method using the Hill bone Compliance to Hypertension Therapy Scale with the threshold for adherence set at 80%. Quantitative data was entered SPSS v22 for statistical analysis.

Results: Of the 120 study participants, 77.5% (n=93) had acceptable level of adherence (≥ 80%) to anti-hypertensive medication. The main factors that were significantly associated will adherence levels of less than 80% were attendance to follow-ups (p=0.041) and the primary health care facility (p= 0.021)

Conclusion: There is an acceptable level of adherence to anti-hypertensive medication among patients receiving care in clinics in central Windhoek but is variable among clinics. Three is need for a standardized programme across clinics to foster optimal adherence to medication and improve outcomes.

Prevalence and determinants of blood glucose control among patients with type 2 diabetes mellitus at Katutura State Hospital

Johana Iyambo *, Mubita M[2], Kibuule D[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Windhoek, Namibia

Background: Diabetes mellitus is a major public health problem in Namibia. The prevalence of diabetes in Namibia is 34% and is associate with a mortality rate of 4%. There is limited evidence on the level of glycemic control in public health care.

Objectives: The prevalence and factors associated with blood glucose control among patients with type 2 diabetes mellitus were determined.

Methods: A quantitative cross-sectional survey was conducted among patients receiving care for type 2 diabetes mellitus at a regional referral hospital. Data on random blood glucose, as well as patient and clinical covariates were abstracted retrospectively from treatment records over a four months period, may-august, 2017. The acceptable level for glycemic control was set at a score of 4/4 (100%) for each patient, that is patients who had RBG in normal range (<11.1mmol/L) on all the past four visits. Data were entered into SPSSv23 for quantitative analysis using descriptive statistics and chi-square test for associations.

Results: Of the 105 patients; 63.8% were female, % were overweight (BMI >25kg/m^2 and 54.3% were prescribed at least two oral hypoglycemic medications. In the four months follow-up period, none of the patients had an HbA1C determined and 2.7±2 out of possible 4 measurements of random blood glucose were completed per patient. The prevalence of sub-optimal random blood glucose was 63.8%. The glycaemic control was significantly associated with drug regimen (p=0.008). The occurrence of microvascular complications was significantly associated with the patient's age (p=0.026), duration of diabetes (p=0.048) and drug regimen prescribed (p=0.011).

Conclusion: Glycaemic control among patients with T2DM at public health facilities is sub-optimal. There is need for systems to incorporate pharmaceutical care to monitor glycemic control in these populations in order to improve outcomes.

Drug utilisation review of tramadol hydrochloride at a regional hospital in Pietermaritzburg, KwaZulu-Natal, South Africa

A Fynn[1], E Helberg[1], JC Meyer[1] AND B Godman[2,3]

[1]Department of Public Health Pharmacy and Management, School of Pharmacy, Sefako Makgatho Health Sciences University, SA; [2]Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK; [3]Division of Clinical Pharmacology, KI, Stockholm, Sweden

Background: Drug utilisation reviews (DURs) can be used to promote rational prescribing and enhance compliance with Standard Treatment Guidelines and Essential Medicines Lists (STGs/EMLs). In recent years, the use of tramadol hydrochloride (HCl), a centrally-acting synthetic analgesic compound, has increased significantly. In response to this increase, the World Health Organization's Expert Committee on Drug Dependence has supported a move to critically review the status quo of tramadol HCl. The need for a DUR of tramadol HCL was identified at a regional hospital in KwaZulu-Natal (KZN), South Africa, following an observed increase in usage and hospital expenditure of tramadol HCL.

Objectives: To determine the prescribing patterns, the use of- and expenditure on tramadol HCl at a regional hospital in KZN, SA, by conducting a DUR.

Methods: A prospective, quantitative and descriptive study was conducted in a 900-bed regional referral hospital in KZN, catering mainly for the surrounding rural community. A sample of 415 tramadol HCl prescriptions were collected over a two-month period, from the outpatient pharmacy and the antiretroviral (ARV) pharmacy. Data were collected by the pharmacy staff, who received training prior to the data collection, using paper-based data collection sheets as well as a scanner for prescriptions. Records of tramadol HCL supplies to the wards were printed from the Cost Man® Electronic Stock Control system and verified against the ward Schedule 5 requisition to determine usage and expenditure. Quantities and costs of tramadol HCl supplied from the Provincial Pharmaceutical Supply Depot were obtained from the electronic system, Plankmed®, used in the pharmacy storeroom. Data were analysed descriptively using SAS Release 9.4.

Results: A total sample of 415 prescriptions for tramadol HCl were reviewed, comprising 259 females (62.4%) and 156 males (37.6%), within an age range of 18 to 81 years. A total number of 1 501 medicines were prescribed on the 415 prescriptions, i.e. an average of 3.6 medicines prescribed per prescription. Of the 1 501 items, 415 (27.6%) were for tramadol HCl, 517 (34.4%) were adjuvant analgesics and 569 (37.9%) were other medicines. Overall compliance to the STGs/EMLs in terms of diagnosis was 70.1%, with the outpatient pharmacy being the highest (76.4%), and the ARV pharmacy the lowest (29.1%). Of the 415 prescriptions evaluated, half of the conditions were categorised as chronic non-cancer pain (131; 31.6%), followed by acute non-surgical pain (80; 19.3%). Nearly a third (124; 29.9%) of the conditions treated could not be classified under any of the pain categories. Dosage compliance was 99.8%. Compliance with the duration of therapy was not evaluated as it is not specified in the STGs/EMLs. Most prescriptions dispensed at the outpatient pharmacy were from the surgical outpatient department (OPD) (140; 33.7%) and the orthopedic OPD (108; 26.0%). The outpatient pharmacy had the highest tramadol HCl expenditure at R72 054.28 (34%), the inpatient pharmacy's expenditure was R37 351.20 (24%) and the ARV pharmacy R8 722.75 (5%). The hospital's tramadol HCl expenditure for the 2016-2017 financial year (R585 088.80) increased with 274% (3.4 fold) when compared to the 2014-2015 financial year (R156 326.00).

Conclusions: This study highlights the need for the development and implementation of monitoring and evaluation tools to enhance rational prescribing and use of tramadol HCl, especially considering the increase in tramadol HCL utilisation. The results of this study can serve as a baseline against which the impact of future interventions can be measured.

Assessing the direct medical cost of treating patients with cancer in Kenya: A Pilot study-findings and implications for the future

Omonodi M[1], Opanga S[1], Kurdi A[2,3], Martin AP[4], Godman B[2,4,5]

[1]Department of Pharmaceutics and Pharmacy practice, School of Pharmacy, University of Nairobi, Kenya; [2]Strathclyde Institute of Pharmacy and Biomedical Sciences, Strathclyde University, Glasgow UK. [3]College of Pharmacy, Hawler Medical University, Erbil, Iraq; [4]University of Liverpool Management School, Liverpool, UK; [5]Division of Clinical Pharmacology, KI, Stockholm, Sweden

Background: The economic burden of cancer is a major issue across countries with the majority of cancer deaths in middle-income and low-income countries where there are appreciable concerns with funding of care. In Kenya, most patients pay out of pocket, and even those who are insured are not properly covered to cover the full costs of cacer treatment, placing a considerable burden on the family if members develop cancer. However, the actual cost of cancer treatment in Kenya has not been enumerated before. This is essential to inform future government as the health system evolves in Kenya.

Objectives: To evaluate the economic burden of the treatment of cancer patients in a leading hospital in Kenya.

Methods: Descriptive cross-sectional cost of illness study over a one year period (2016) in the leading teaching and referral hospital in Kenya, with data collected from hospital files of randomly sampled adult patients between January and March 2017. Outcomes included direct medical costs for managing cancer (chemotherapy, surgery, radiotherapy).

Results: The cost of cancer therapy is highly dependent on the cancer modality. Of the 412 patients included, most cancer patients had surgery (25.4%), followed by chemotherapy (4.6%) and palliative care (21.7%). The most prevalent male cancer were prostate cancer (9.7%, n=40) and colon cancer (2.9%, n=12); while female cancers were mostly cervical cancer (23.78%, n=98) and breast cancer (7.28%, n=30). The cost of cancer therapy varied with the type of cancer and its stage. Patients on chemotherapy alone cost an average of KES 138,206 (1US$ = KES 100) for the year; while those treated with surgery only cost an average of KES 128,207, and those on radiotherapy alone used KES 119,035. Some patients had a combination of all three costing on average KES 333,462 per patient.

Conclusions: The cost of cancer treatment in Kenya depends on the type of cancer, the modality, cost of medicines and the type of inpatient admission. The greatest contributors to the cost of cancer care are the cost of medicines and inpatient admissions. Pressure needs to be applied to the Government and insurance companies to ease out-of-pocket payments especially for medicines.

Adverse effects of chemotherapy and their management in paediatric patients with non-Hodgkin's lymphoma at Kenyatta National Hospital

Opanga L[1], Mulaku M[1], Opanga S[2], Godman B[3,4]

[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]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK; [4]Division of Clinical Pharmacology, KI, Stockholm, Sweden

Background: Non–Hodgkin's lymphomas represent a heterogeneous group of cancers arising from the lymphoid system. They include Burkitts and Non-Burkitts lymphoma. Most of these lymphomas are managed using cytotoxics and these drugs have various adverse effects. The most common acute effects are pancytopenia, nausea and vomiting, loss of appetite and weight while the chronic effects are sterility, development of new cancers and organ damage. They reduce the quality of life of these patients.

Objectives: The study aimed at determining the most common adverse effects of chemotherapy for non-Hodgkin's lymphoma and their management in pediatric patients admitted at Kenyatta National Hospital.

Methods: Data from files of patients 14 years and below, admitted at the hospital with a diagnosis of Non-Hodgkin's lymphoma between January 2014 and May 2017 was abstracted, over a period of four months. The data included patient demographics, diagnosis, chemotherapy used, adverse effects and their management. Descriptive analysis was done using Microsoft Excel and SPSS programs. Ethical approval was sought from the KNH-UON Ethics and Research Committee and thereafter, permission to collect data was granted.

Results: Data was collected from 85 patient files. The majority of patients were male (79%, n=67) while 21% were female (n=18). Nearly half of all patients (52%, n=44) had Non-Burkitt's lymphoma while 46% (n=39) had Burkitts lymphoma. At the time of the study, 39% were on the induction phase while 4% and 57% were on the consolidation and maintenance phases of chemotherapy respectively. For the induction phase, a combination of cyclophosphamide, vincristine, doxorubicin, prednisolone and procarbazine was given in 6 cycles. A combination of cyclophosphamide, cytarabine and doxorubicin was given for the induction phase, with cyclophosphamide, doxorubicin, vincristine, methotrexate and intrathecal mercaptopurine being used for the maintenance phase. Common adverse effects were: vomiting (93%), anaemia (88%), loss of appetite and weight (88%), pain (84%) and leucopenia (72%). Pharmacologic management of adverse effects was done using ondansetron, granisetron, metoclopromide for nausea and vomiting, folic acid and ferrous sulphate syrup and blood transfusion for anaemia and multivitamin syrup, and supplements for loss of appetite and weight. The management of a considerable number of patients who suffered from anemia (23%) and acidity (24%) was not recorded.

Conclusions: Non-Hodgkin's disease was the second most common type of cancer among pediatrics admitted in Kenyatta National Hospital. Up to 93% of the patients with Non-Hodgkin's lymphoma (n=85), suffered from the side effects of chemotherapy. The management of anaemia and allergic reactions should be emphasized for patients on chemotherapy to improve their outcomes. Documentation should be encouraged for every intervention made.

Physicians knowledge of cost of commonly prescribed medications: Findings from a Nigerian survey

Fadare JO[1], Enwere OO[2], Adeoti AO[3], Desalu OO[4]

[1]Department of Pharmacology and Therapeutics, Ekiti State University, Ado-Ekiti, Nigeria; [2]Department of Medicine, Imo State University, Orlu, Imo State, Nigeria; [3]Department of Medicine, Ekiti State University, Ado-Ekiti, Nigeria; [4]Department of Medicine, University of Ilorin, Ilorin, Nigeria

Background: Healthcare costs are escalating worldwide with medications being responsible for a large proportion of this increase. Because of this fact, there is a continuous struggle to contain healthcare costs in many countries. Rational prescribing entails consideration of the costs of medications; choice of the least costly medications without compromising safety and effectiveness. While a lot of emphasis is put on knowledge about safety and efficacy of medicines during undergraduate and postgraduate medical training, little attention is paid to issues relating to costs of medications. The World Health Organization guideline on rational prescribing has cost consideration as one of the steps to be considered. While many drug utilization studies conducted in Nigeria also focused on medication costs, not much has been done in assessing physicians' knowledge and attitude towards the costs of commonly prescribed medications.

Objectives: The main objective of the study was to assess physicians' knowledge of costs of commonly prescribed medications and to identify factors influencing their decision.

Methods: The study was a descriptive cross-sectional survey conducted among medical doctors in three tertiary institutions in Nigeria using a semi-structured questionnaire. Apart from socio-demographic information, questions on the source of drug information, importance of cost consideration in drug prescription, physicians' preference for branded or generic medication and average estimated cost of a branded and generic version of 10 commonly prescribed medications were also included in the questionnaire.

Results: A total of 187 questionnaires were returned giving a response rate of 86.6% response rate. Majority (154; 82.4%) of the respondents were males while registrars (114; 61%) formed the bulk according to professional status. One hundred and seventy-nine (179; 95.7%) respondents agreed that cost consideration was important when writing prescriptions. Majority (172; 92%) would consider the socio-economic status of the patient before prescribing while 161(86.1%) would change their choice of drugs based on the socio-economic status of patients. When asked about exposure to any formal training in health economics at either undergraduate or postgraduate level, only 7(3.7%) respondents answered in the affirmative. However, a large majority (153; 81.8%) among respondents were of the opinion that health economics should be made part of the undergraduate and postgraduate medical education. Hypertension (143; 76.3%), Malaria (136; 72.7%) and Diabetes Mellitus (112; 59.9%) were the most common medication conditions. The correctly estimated cost of medicines by physicians ranged from 0 – 49.2% for branded medicines and 0 -17.1% for generic ones. Respondents were more knowledgeable about the cost of medicines used for the treatment of infectious diseases (malaria, bacterial infections) than non-communicable diseases (diabetes mellitus, hypertension and dyslipidaemia).

Conclusions: The knowledge of Nigerian physicians about cost of commonly prescribed medicines was poor in this study. This is despite the awareness of respondents about importance of cost consciousness especially in a setting where majority of patients pay "out of pocket". There is an urgent need to incorporate "cost consciousness" into the undergraduate and postgraduate medical training curricula in Nigeria.

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

Sunungurai Shiriyedeve[1], Thembelihle Dlungwane[2]

[1]Nyangabgwe Hospital, Francistown, Botswana; 2School of Nursing and Public Health, University of KwaZulu-Natal, Durban, South Africa

Background: The global burden of diabetes is attributed to increase in aging population, urbanization, genetic factors, and overweight coupled with lack of physical activity. While physical activity slows down the initiation and progression of Type-2 Diabetes (DM2) these patients are generally inactive. Several factors were reported to have an effect on physical activity levels (PAL) but most known factors are from developed countries.

Objective: To assess the PAL and the factors associated with them in type 2 diabetic patients.

Methods: An observational cross-sectional study was conducted using an interviewer-administered structured questionnaire to investigate PAL and the factors related to physical activity in DM2 patients at a public diabetic centre in Gaborone. The study setting consults and follows up approximately 100 patients a day. Using systematic random sampling method a sample of 170 patients were interviewed. PAL is defined as any body movement produced by the contraction of skeletal muscle that require energy expenditure in excess of resting energy expenditure and measured in Metabolic Equivalent (MET) units. Collected data was captured on MS-Excel 2013 and exported to SPSS Version 24 for analysis. Chi-square test was performed to find relationship between PAL and factors. ANOVA was used to determine the difference in PAL between groups. The study received ethical approval and written consent received from participants.
Results: The majority of the study participants had low PAL (54.7%) with insignificant difference between sex and marital status. Over 60% of the above 56 years; 62.5% of divorced; 51.6% of obese and 60.5% of overweight participants had low levels of physical activity. 70% of married patients had moderate to high PAL. The PAL was significantly higher in patients that are employed. Among the patients with high PAL, the desire to be healthy (92.9%) interest to exercise (78.6%) and following professional advice to exercise (78.6%) were the highest motivating factors. Having no place for exercise (34%) and having other health problems (31%) were the barriers expressed by the participants with low PAL. Social and recall bias are potential limitations of this study and limits generalization of the findings.
Conclusion: Low PAL is common in DM2 patients. A more elaborate study is necessary to determine the factors associated with low PAL mong DM2 patients to reduce physical inactivity associated morbidity and mortality.

Assessment of the influence of patient knowledge on adherence to insulin therapy in diabetic patients at Katutura State Hospital

Isak S[1], Kibuule D[1], Mubita M[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia

Background: Diabetes is a major global public health problem with the burden estimated at 300 million people by 2025, particularly in in developing countries such as Namibia. Poor glycaemic control has been attributed to non-adherence to medication as well as limited knowledge on care among patients.

Objectives: The association between the patient's knowledge and adherence to insulin therapy among patients at Katutura State Hospital.

Method: A descriptive cross-sectional survey was conducted among patients receiving diabetic care at Katutura State Hospital. Data on clinical, demographic, knowledge on diabetes, and medication adherence was collected using semi-structured questionnaire. Statistical analysis was carried out using descriptive statistics and chi square for associations using SPSS v23 software.

Result: Of the109 patients, 66.1% were females, 69.8% were aged <40 years, 75.2% had T2DM and 58% were using regular insulin. In addition, 57% of the patients had poor level of knowledge on diabetes while 78% had high level of adherence to insulin therapy. Females (38.3%) were more knowledgeable about diabetes than the males (18.3%) as well as more adherent to insulin medication. However, there was no significant association between the knowledge on diabetes and adherence ($p>0.05$).

Conclusion: There is no association between knowledge on diabetes and adherence patients have towards their insulin therapy. There is a strong need for more education of patients towards Diabetes, its risk factors and importance of adherence to treatment.

Appropriateness of prophylactic medication among patients with cardiovascular diseases at Katutura State Hospital

Maparunga PE[1], Kibuule D[1], Mubita M[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Namibia

Background: Prophylactic medication delay cardiovascular events among patients with cardiovascular diseases. The appropriateness of the medication prophylaxis in cardiovascular diseases has not been evaluated in Namibia.

Objectives: This patterns of appropriate use of medications in prophylaxis of cardiovascular diseases was assessed among patients at Katutura hospital

Methods: A descriptive medicine evaluation was conducted among patients in the Internal Medicine wards at Katutura Hospital Windhoek. Data on prescribing patterns of prophylactic medication and covariates such as patient demographics, clinical and treatment characteristics were abstracted from patients' clinical records between May-July 2017. Quantitative statistical analysis was carried out using descriptive statistics and chi square for associations using SPSS v23 software.

Results: Of the 84 subjects, 51.2% were male, 78.8% aged above 40 years and were on Aspirin (53.5%) and or Warfarin (52.3%) prophylaxis. The prevalence of inappropriate use was highest with LMWH (27.3%) and, lowest with Aspirin 11.11% and or warfarin 12.5%. The appropriateness of medication prophylaxis was significantly associated with the use of aspirin ($p<0.001$).

Conclusion: There is need for a system to review prophylactic medication for patients with cardiovascular illnesses to optimize treatment outcomes and patient safety.

Medication prescribing errors in paediatric care at Katutura Intermediate Hospital, Namibia

Uutoni Lea NN[1], Mubita Mwangana[1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Namibia

Background: Paediatric patients are a high risk population for prescribing errors. Nonetheless, systems to screen for errors in paediatric care in most lower and middle income countries such as Namibia are limited.

Objectives: The prevalence of and factors associated with prescribing errors in paediatric care at Katutura intermediate hospital were determined.

Methods: A cross sectional review of clinical records of pediatric patients admitted at Katutura Intermediate hospital was conducted admitted between 1 June- 31July 2017. Data on patient demographic and clinical and medication covariates were abstracted from the records and entered in SPSS v23 for analysis. Quantitative analysis was performed using descriptive statistics and associations made using Chi-square test.

Results: Of the100 clinical records reviewed, 53% were male and 75% were under-five years. The prevalence of prescribing errors was 47% (n=253), with 37.2% dose related errors and 28.1% due to incomplete prescriptions. Errors were common among prescriptions with antibiotics (68.3%). There was no significant association between occurrence of errors and the patients clinical, demographic and treatment covariates.

Conclusion: There is a high prevalence of prescribing errors in pediatric care at the Katutura intermediate hospital. There is need for a system to screen, review and prevent prescriptions in pediatric care to promote safe medication

A comparison of kidney function estimation equations in underweight, normal weight, overweight and obese hospitalized female patients at Katutura Intermediate and Windhoek Central Hospitals, Namibia.

M.M Thikukutu[1], B.S Singu[1], R.K Verbeeck [1]

[1]School of Pharmacy, Faculty of Health Sciences, University of Namibia, Namibia

Introduction: There is limited published data on the population-based incidence and prevalence of chronic kidney disease (CKD) in Namibia. In addition, the performance of kidney function estimation equations in these clinical settings has not been reported.

Objectives: To investigate the performance of creatinine-based kidney function estimation equations in different weight groups.

Method: Study subjects were women of 18 years and above admitted in Obstetrics and Gynaecology wards of Windhoek Central Hospital and Katutura Intermediate Hospital. Body mass index calculations enabled classification of patients into different weight groups. Estimation of glomerular filtration rate was based on modification of diet in renal disease (MDRD) and Chronic Kidney Disease- epidemiology equation. Creatinine clearance was assessed using the Cockcroft-Gault (C-G) formula. Other equations such as the Haycock formula was used to adjust the MDRD and CKD-EPI formulas to individual Body Surface Area (BSA). The C-G formula was adjusted to Ideal Body Weight (IBW) in the obese. Kidney function staging

used the Kidney Disease Outcome Quality Initiative (KDOQI) classification. Descriptive statistics, correlation and regression analysis, and inferential statistics were done.

Results: 77% of the subjects were classified as normal weight. The correlation and regression analysis done on the normalized CKD and C-G showed the least level of agreement (highest point series scattering) with an R^2 of 0.31 and Pearson R of 0.56. The individualized MDRD and C-G gave the highest correlation (Pearson r= 0.93, R^2=0.87). The MDRD also had the highest range (165 ml/min/calculated BSA) of the three individualized equations. Individualization of MDRD and CKD-EPI did not improve the correlation between the two, instead it decreased From a Pearson r of 0.87 to 0.80. Most of the patients (72%) had an estimated GFR of more than 130 ml/min/1.73 m^2 as per the CKD-EPI equation. Inferential analysis show that the null hypothesis could not be rejected in all individualized equations.

Conclusion: This study shows these creatinine based equations perform differently from one population to another. The study provides evidence for a high correlation between the individualized MDRD and C-G formulas.

Recent initiatives in scotland to improve the quality and efficiency of prescribing; findings and implications

Godman B[1,2], Kurdi A[1], MacBride-Stewart S[3], Hurding S[4], McCabe H[5], Morton A[5]

[1]Strathclyde Institute of Pharmacy and Biomedicial Sciences, University of Strathclyde, Glasgow, UK; [2]Division of Clinical Pharmacology, KI, Stockholm, Sweden; [3]NHS GGC, Glasgow, UK; [4]NHS Scotland, Edinburgh, UK; [5]Management Sciences, University of Strathclyde, Glasgow, United Kingdom

Background*:* Changing demographics with an increase in chronic disease prevalence coupled with more aggressive management targets, and the continued launch of new premium priced products, has put considerable strain on healthcare systems worldwide to continue providing universal, high quality healthcare. High appropriate use of generics in a class where care is not compromised by prescribing generics versus patented products, combined with quality measures, can help with providing quality healthcare within finite resources.

Objectives*:* Assess the utilisation and costs of lipid lowering therapies (C10), Proton-Pump Inhibitors (PPIs) (A02BC), and Selective Serotonin Reuptake Inhibitors (SSRIs) (N06AB) in ambulatory care in Scotland between 2001 and 2015 alongside reforms to provide future guidance to Scotland and globally.

Methods*:* Utilisation measured in the number of items dispensed to assess prescriptions and reimbursed expenditure captured in GB pounds from NHS Scotland national database. National and regional initiatives to improve the quality and efficiency of prescribing were captured using standard methodologies (4Es - education, engineering, economics and enforcement). No time series analyses analysis was conducted as multiple interventions over time

Results*:* Lipid lowering therapies (statins predominantly): multiple initiatives including identifying patients with CHD, encouraging preferential prescribing of generics, reducing ezetimibe prescribing as little evidence of benefit, and encouraging the prescribing of higher dose statins in line with recommendations, resulted in statin expenditure falling by 56% in 2015 vs. 2001 despite a 4.03 fold increase in utilisation. High dose statins now account for 71.3% of total prescriptions, up from 17.3% in 2001. PPIs: similar multiple initiatives resulted in a 68% reduction in expenditure despite a 2.91 fold increase in utilisation. High dose prescribing reduced to 20.3% of all PPIs in 2015, down from 25.8% in 2009, following concerns. SSRIs: similar initiatives and encouraging citalopram vs. escitalopram resulted in expenditure falling by 60.1% in 2015 vs. 2001 despite a 2.12 fold increase in utilisation. Concerns with citalopram in 2012 saw its prescribing fall in recent years whilst the prescribing of sertraline has grown. The prescribing of paroxetine continually fell from 2002 onwards as a result of concerns.

***Conclusions**:* Multiple strategies have been successful with improving the quality and efficiency of prescribing in Scotland. These will continue providing guidance to others.