



**College of Pharmacy**

**Clinical Pharmacy Department**

**May 21, 2015**

**King Saud University  
1<sup>st</sup>**

**PharmD Internship Research Day**

**Research Abstracts  
2015-1436**



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**Clinical Pharmacy Department**

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**PharmD Internship Research**

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## **What is the PharmD Internship Research Day?**

PharmD Internship Research Day is an annual forum to highlight research projects of final-year undergraduate PharmD students.

The primary goals of Research Day are to showcase the various types of research in Clinical Pharmacy department, share our mutual interests, and develop intra- and interdepartmental collaborations.

The ideation to organise this Research Day created in year 2014 and it aims to prepare PharmD students for presenting their studies in scientific conferences. Afterwards, this effort has been continued in year 2015, in which all the final-year PharmD students in College of Pharmacy were compulsory to participate in this Research Day to present their studies.

Research Day provides a great opportunity to learn about the clinical research conducted within the School of Pharmacy.

## Message from the Dean

Every year at this time we celebrate the research of our undergraduate students during the Research Day. Engaging undergraduate students in scientific research will have a big impact on their understanding of research methodology and stimulate their interests to continue graduate studies.

Undergraduate students at College of pharmacy at King Saud University are required to conduct a research project and present it at the end of their last year before graduation. This requirement is happening for more than four years.

I congratulate all our students who are presenting their research this year during the Research Day. They worked hard and were committed to complete the assigned tasks on time. Also, I thank all faculty members who supervised the students and those participated in organizing the Research Day at College of Pharmacy.

Best Regards,

Hisham Aljadhey, PharmD, PhD.

Dean, College of Pharmacy



### Organizing Committee

**Maha Mishal Alrasheed, PhD**  
Assistant Professor of Pharmacogenetics  
Clinical Pharmacy Department  
PharmD Internship Research Day Committee Chairperson  
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Assistant Professor of  
Pharmacogenetics  
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Clinical Pharmacy  
Assistant professor  
EJSP Academic coordinator

**Event website:**

<http://pharmacy.ksu.edu.sa/cpird/en/>

# 1<sup>st</sup> PharmD Internship Research Day Program

May 21, 2015

Time		
8-9 am	Registration	
Time	Topic	Speaker
9:00-9:20	<i>Research from an idea to dissemination: overcoming the obstacles</i>	<b>Sinaa Al-Aqeel MSc, PhD</b> KSU Mentoring Program Supervisor-Female Section Associate Professor Clinical Pharmacy Department College of Pharmacy King Saud University
9:20	Welcome Address	<b>Maha M. Alrasheed, PhD</b> Committee Chairperson (1 <sup>st</sup> PharmD Internship Research Day )
9:25	Opening Remarks	<b>Einas S. Al-Eisa, PhD</b> Vice Rector for Female Student Affairs
<b>Session I, Chair</b>		
	<b>Norah Abanmy, PhD</b> Clinical Pharmacy Department	<b>Areej Altaweel, PhD</b> Pharmacognosy Departement
9:30-9:40	Genetic Analysis of Barter's and Gitelman's Syndromes in Saudi Patients	Alanoud A Aleid, Mashael A Alrubaishi
9:40-9:50	Use of Electronic Medical Records (EMR) in Riyadh Hospitals	Maha S Assadoon
9:50-10:00	Potentially Inappropriate Prescribing Among Elderly Patients Admitted to Saudi Hospital	Abeer O. Al-Harbi
10:00-10:10	Differential Effect of Intravenous Bolus Furosemide and Continuous Furosemide Infusion on In-Hospital Management and Short-Term and Long-Term Mortality Among Patients Admitted With Acute Decompensated Heart Failure	Nada Alsuhebany, Rafeef Aqel
10:10-10:25	<b>Coffee Break</b>	

<b>Session II, Chair</b>		
	<b>Fulwah Alqahtani , PhD</b> Pharmaceutics Department	<b>Ghada Bawazeer, MSc,PharmD</b> Clinical Pharmacy Department
<b>10:25-10:35</b>	Interventions for Improving Pharmacist-led Patient Counseling: A Systematic Review	Albatoul M. Almeshari, Hibah A. Alshaya
<b>10:35-10:45</b>	Measuring the Effect of Oral Anticoagulants on the Patients' Quality of Life in King Khaled University Hospital, Riyadh, Observational Study	Laila H Alaman
<b>10:45-10:55</b>	Off-Label Medication Prescribing Pattern in Pediatric Critical Care Unit: A Tertiary Care Hospital Experience	Asma A Alzahrani
<b>10:55-11:05</b>	Assessment of Adherence to Venous Thromboembolism Prophylaxis Guidelines: A Cross-Sectional Study of Medical Inpatients at Prince Sultan Military Medical City, Riyadh-Saudi Arabia	Hanaa Omar, Israa Hussein
<b>11:05-11:15</b>	Detect and Classify the ADEs Of Chemotherapy Experienced by Cancer Patients During Six Months at the Oncology Department in King Khalid University Hospital Using the Global Trigger Tool	Haya Almeshari, Sarah Alsahli
<b>11:15-11:25</b>	Assessment of Vincristine Safe Preparation and Administration at Riyadh Hospitals	Mariyam Alfagih , Razan Alghunaim
<b>11:25-11:35</b>	Assessment of ATG Administration Safety without Skin Testing in Pediatrics Post Bone Marrow Transplant	Roqaiah Al-Otaibi
<b>11:35-11:45</b>	Viewpoints of Saudi Pharmacists toward Barriers to Effective Medication Reconciliation in Riyadh, Saudi Arabia	Waad Alghamdi, Hana Al-alshaykh
<b>11:45-11:55</b>	Health Literacy in Saudi Arabia- Validation of an Arabic Health Literacy Test Based on S-TOFHLA Instrument	Nada M Alharbi, Rawan A Al-Shehri
<b>12:00-1:00</b>	<b>Prayer and Lunch Break</b>	

Session III, Chair			
	<b>Nouf Aloudah, MSc</b> Clinical Pharmacy Department	<b>Lobna Aljaffali, MSc</b> Clinical Pharmacy Department	
<b>1:00-1:10</b>	Population Pharmacokinetics of Aminoglycosides in Saudi Children in King Saud University Medical City	Yasmin A. Elsharawy, Reem A. Osman	
<b>1:10-1:20</b>	Hospitals Compliance with Compounding Sterile Preparations Standards in Riyadh, Saudi Arabia	Latifah Aldulaymi, Bashayr Alsuwayn	
<b>1:20-1:30</b>	Based on Pharmacokinetic, Towards Evidence – Predictable Neonatal Dosing Regimens Of Amikacin at KSUMC	Maram Alotaibi	
<b>1:30-1:50</b>	<b><i>Research Ethics</i></b>	<b>Dr. Dana M. Bakheet, PhD</b> Scientist and Chairman of Training and Education at Research Center of KFSH&&RC Vice Dean and Associate Professor at College Of Medicine at Alfaisal University	
<b>1:50-2:10</b>	<b>Awards and Closing Remarks</b>	<b>Einas S. Al-Eisa, PhD</b> Vice Rector for Female Student Affairs	<b>Maha M. Alrasheed, PhD</b> Committee Chairperson (1 <sup>st</sup> PharmD Internship Research Day )





# **1<sup>st</sup> PharmD Internship Research Day**

Research Abstracts, Girls

May21, 2015

## Measuring the Effect of Oral Anticoagulants on Patients' Quality of Life on King Khaled University Hospital, Riyadh, an Observational study

**Student Name:** Laila Alaman

**Supervisor(s) Name:** Jawza Alsabhan, MSc, Pharmacy College  
Ahmed Mayet. Pharm.D BCPS, BCNSP

### ABSTRACT:

**Background:** Warfarin is a commonly prescribed oral anticoagulant all over the world, yet impact of warfarin on patients' quality of life has not been well research here in Saudi Arabia. Warfarin is a high effective thromboembolic agent, but it requires frequent laboratory monitoring (international normalized ratio), change in dietary habit, and limit on performance physical activity that can compromise patient's quality of life. We aim to evaluate the quality of life of patients who are receiving warfarin for various thromboembolic conditions.

**Method:** We conducted a cross-sectional prospective study to measure the quality of life on patients who were attending an outpatient anticoagulant clinic using Arabic-translated Modified Depression Anxiety Stress Scales (DASS) questionnaire.

**Result:** A total of 70 patients were agreed to participate in survey. Among the respondents, 39(55%) were female; 41 (58.5%) were unemployed; and 41(58.5%) had below high school education. Forty (57%) of the participants said that the warfarin used never or rarely limit their physical activity; 45 (64%) said it does not limit their travelling; 37 (53%) said it does not affect their seeking medical care; 33(47%) said it does not limit their job performance; and only 26 (37%) said that they rarely or never worried about bleeding or bruising while they were on warfarin.

**Conclusion:** We concluded that the almost half of the participants who were taking warfarin had limitation on their quality of life. Two third of the patients were sometime or often worried about bleeding while they were on warfarin.

## Hospitals Compliance with Compounding Sterile Preparations Standards in Riyadh, Saudi Arabia

**Student(s) Name:** Latifah Aldulaymi  
Bashayr Alsuwayni

**Supervisor(s) Name:** Nora Kalagi, M.Sc, Pharmacy College  
Salma Alkhani, B.Sc, MHHA, CPHQ

### ABSTRACT:

**Background:** Sterile preparation compounding is an integral part of pharmacy practice. Good practice and compliance with national and international standards for preparing compounded sterile preparations are important to promote patient and medication safety.

**Objective:** The study intended to evaluate the adherence of the selected hospitals to the Institute for safe medication practices (ISMP) and other organizations' standards for safe preparation of sterile compounded preparation, among the hospitals of five different health sectors in the city of Riyadh, Saudi Arabia.

**Methods:** A descriptive cross-sectional analysis was conducted among 10 hospitals. A combination of selected items from the ISMP guidelines and other standards related to the preparation of sterile products were used as a standard tool for the assessment. A total of 12 IV rooms in 10 hospitals were observed. The data were analyzed with SPSS version 20.

**Results:** The study showed a substantial rate of adherence to the compounding sterile preparations (CSPs) standards. 75% of the hospitals have well-defined policies and procedures for CSPs. For the compliance of proper aseptic techniques used in CSPs, 66.7% of the hospitals fulfill the standards. A total of four hospitals (41.7%) developed and implement a strategic plan for sterile products automation service. In terms of applying annual competency evaluation for pharmacy staff involved in preparing CSPs 41.7% of the hospitals fully met the criteria.

**Conclusion:** In Riyadh hospitals, Compounding Sterile Preparations Standards are well accepted and partially practiced. However, a nationwide study is recommended to evaluate if the standards are followed throughout Saudi Arabia.

## Assessment of Adherence to Venous Thromboembolism Prophylaxis Guidelines: A Cross-Sectional Study of Medical Inpatients at Prince Sultan Military Medical City, Riyadh-Saudi Arabia.

**Student(s) Name:** Hanaa Omar  
Israa Hussein.

**Supervisor(s) Name:** Basma Kentab, MSc, Pharmacy College  
Eman Alobary, MSc., PSMMC

### ABSTRACT:

**Background:** Venous thromboembolism (VTE) is a potentially fatal disorder that is often asymptomatic, undiagnosed and associated with a major risk of morbidity and mortality. Hospitalized patients are at particularly high risk. Despite all evidence supporting the importance of VTE prophylaxis, reports from around the world show that guideline recommendations are not always translated into practice, leading to low rate of appropriate prophylaxis.

**Objectives:** To assess DVT risk in hospitalized medical patient and evaluate the level of adherence to the 9th ACCP Guideline.

**Methods:**

Hospitalized patients were recruited from four medical wards. Data were gathered from patients' medical records. The Padua Prediction Score was used to classify patients' risk for the development of VTE. Then, appropriateness of thromboprophylaxis received was judged as sufficient, insufficient or excessive.

**Results:** A total of 119 patients were included, 76 (64%) of them were under general internal medicine and 43 (36%) were under nephrology. The risk of VTE was considered high in 63 (52.9%) patients. Overall, VTE prophylaxis was deemed sufficient in 72 (60.5%), insufficient in 11 (9.24%) and excessive in 36 (30.25%) patients. Application of the guideline was significantly higher in patients admitted under general internal medicine (40, 55.5%) compared to those under nephrology (32, 44.4%) (p-value. 0.00).

**Conclusion:** The study results reflected suboptimal practices in prescribing VTE prophylaxis to hospitalized patients. Interventions to enhance adherence to the guidelines are needed.

## Population Pharmacokinetics of Aminoglycosides in Saudi Children.

**Student(s) Name:** Yasmine ElSharawy  
Reem Osman

**Supervisor(s) Name:** Manal Abou Elkheir, PharmD, BCPS, KCUH  
Weal Hamdy Mansym, MD, Pharmacy College

### ABSTRACT:

**Background:** Aminoglycosides is a commonly used antibiotics to treat resistant gram-negative infections in pediatrics. Dosing recommendations of aminoglycosides for pediatrics have relied solely on literature data from Caucasian populations. However, In Saudi pediatrics, these dosing recommendations usually fail to achieve target therapeutic concentrations, and require further multiple dosage adjustments.

**Objective:** to determine population pharmacokinetic parameters of amikacin and gentamicin in Saudi pediatric patients population, that would future help in developing a revised optimum & population specific dosing regimens.

**Method:** A retrospective chart review was performed at KSUMC including pediatric patients (age 1–12 years), who were admitted to the general wards or ICU from (Jun 2009 – Mar 2015); and received aminoglycoside for suspected or proven gram-negative infection. Population pharmacokinetics parameters were calculated using SPSS.

**Result:** A total of 184 aminoglycoside levels from 117 patients were included in the analysis with mean ( $\pm$ SD) age of  $5.40 \pm 3.56$  years and weight  $17.52 \pm 9.18$  Kg. 32 patients received amikacin total daily dose (TDD) of  $20.99 \pm 6.06$  mg/kg/day, resulted in peak  $20.25 \pm 6.06$  mcg/mL and trough  $1.82 \pm 0.72$  mcg/mL, while 85 patients received gentamicin TDD  $7.36 \pm 1.2$  mg/kg/day, with peak  $6.48 \pm 2.9$  mcg/mL and trough  $0.47 \pm 0.31$  mcg/mL. Amikacin PK parameters were:  $V_d$   $0.51 \pm 0.15$  L/kg,  $kel$   $0.27 \pm 0.08$  h<sup>-1</sup>, and  $t_{1/2}$   $2.87 \pm 1.09$  h; while for gentamicin, the PK were:  $V_d$   $0.53 \pm 0.15$  L/kg,  $kel$   $0.33 \pm 0.1$  h<sup>-1</sup>, and  $t_{1/2}$   $2.36 \pm 0.86$  h.

**Conclusions:** Our results showed that our pediatric patient population having markedly higher  $V_d$  and shorter  $t_{1/2}$  for aminoglycosides compared to what have been published for Caucasian pediatric population, thus they may require higher doses.

## Differential Effect of Intravenous Bolus Furosemide and Continuous Furosemide Infusion on In-Hospital Management and Short-Term and Long-Term Mortality Among Patients Admitted With Acute Decompensated Heart Failure

**Student(s) Name:** Nada Alsuhebany, Rafeef Aqel ,Hissah Alballa

**Supervisor(s) Name:** Prof. Tarek Kashour, MBChB, FRCPC, FACC  
Ghada Bawazeer, MSc., Pharm.D., BCPS.  
Fakhr Al-Ayoubi, MSc,  
Anhar Ullah, MSc.

### ABSTRACT:

**Background:** Furosemide is a main therapy in Acute Decompensated Heart Failure (ADHF). We set to examine the difference in hospital management and outcomes of patients received either furosemide bolus or infusion therapy.

**Methods:** This is a retrospective cross-sectional study of 207 patients admitted to King Khalid University Hospital (KKUH) with ADHF. Clinical data, labs, in-hospital outcomes and long-term mortality data were collected through review of medical records and HEARTS registry database. We stratified our cohort into two groups; furosemide infusion and bolus groups.

**Results:** The Mean age was  $61.5 \pm 13.87$  years, and 66.2% were males. Use of intravenous infusions furosemide and boluses during admission was 42.86% and 57.14%, respectively. Compared to patient received bolus therapy, patients on infusion therapy had more renal impairment at presentation (26.4% vs. 12.5%,  $p=0.033$ ), anemia (18.1% vs. 4.25,  $P=0.006$ ), less diabetes (30.6% vs. 38.5%,  $p=0.006$ ) and prior MI (18.1% vs. 32.3%,  $p=0.006$ ). Infusion group received higher total daily diuretic dose ( $p<0.001$ ), more metolazone (19.4% vs. 3.1%,  $p=0.002$ ) and mechanical ventilation (11.1% vs. 3.1,  $p=0.038$ ). There was no difference in total urine output and renal outcomes between the two groups. In-hospital stay for the infusion group was longer ( $15.40 \pm 12.14$  vs.  $10.26 \pm 6.74$  days,  $p<0.001$ ). The long-term mortality up to 3 years was significantly higher among patient who received infusion therapy (27.78% vs. 9.38%,  $p=0.002$ ).

**Conclusions:** ADHF patients who received furosemide infusion needed higher diuretic dose, had more chance of receiving mechanical ventilation and had significantly longer hospital stay and higher long-term mortality.

## Health Literacy in Saudi Arabia- Validation of an Arabic Health Literacy Test Based on S-TOFHLA Instrument.

**Student(s) Name:** Nada Alharbi , Rawan Al-Shehri

**Supervisor(s) Name:** Jamilah Alsaidan, MSc, Pharmacy College  
Najwa Al-Ghamdi, Pharm.D, MHA, BCNSP, BCPS, FCCP  
Ameera Aldarwish, BS, SSC-PHP

### ABSTRACT:

**Background:** Health literacy entails a person's knowledge and competency to access, understand, appraise as well as apply health information in order to make judgments and take decisions in everyday life. To our knowledge there are no previous published studies that have been carried out to study the level of health literacy in Saudi Arabia. In addition, there is no validated tool in Arabic language for health literacy assessment. The purpose of this study was to translate and validate an Arabic version of the Short Test of Functional Health Literacy in Adults (S-TOFHLA).

**Methods:** The Arabic health literacy test was partly translated from the S-TOFHLA and partly rewritten in Arabic to adapt for the Saudi health system. Interviews using the test were conducted with Arabic speaking patients who had follow up appointments in several outpatient clinics at King Fahad Medical City.

**Results:** A total of 100 interviews were completed. Internal consistency (Cronbach's alpha) of the 34 items representing the health literacy scale was 0.974. Mean score of the health literacy scale was  $23.3 \pm 11.2$  (range 0–34). Nineteen respondents had inadequate health literacy, 6 respondents had marginal health literacy, while 75 had adequate health literacy. Furthermore, participants with a higher level of education had a significantly higher level of health literacy ( $p < 0.001$ ).

**Conclusions:** The Arabic version of the S-TOFHLA appears to be a valid measure of health literacy and can be used for assessment of health literacy.



## Detect and Classify the ADEs of Chemotherapy experienced by cancer patients at the Oncology Department in King Saud University Medical City using the Global Trigger Tool.

**Student(s) Name:** Haya Almeshari, Sarah Alsahli

**Supervisor(s) Name:** Jawza Alsabhan, MSc, Pharmacy College  
Haya Alsaloom, Msc., KKHU

### ABSTRACT:

**Background:** Chemotherapy as it kills cancer cells it also invades normal cells which lead to a wide range of side effects. These side effects should be reported in order to measure their severity and make an appropriate intervention. There is insufficient data regarding measuring chemotherapy adverse events in Saudi Arabia so we want to identify and classify the chemotherapy induced adverse events in King Saud University Medical City using Global trigger tool.

**Method:** Retrospective review of randomly selected 20 patient's records per month using the GTT with the oncology module checklist to search for triggers, once a trigger identified search deeply to detect the occurrence of ADEs and classify it if happened.

**Results:** trigger occurrences (n=74) detected in 94 patient's admissions from 49 triggers. Transfusion was on the top of the triggers detected ( $P = 0.611$ ). In addition to complication of procedure or treatment, abrupt medication stop, aspiration and urinary tract infection with P value of 0.024, 0.012, 0.006 and 0.021 respectively. 18.1% (n=17) of these triggers were associated with harm to the patient and 61.1% of them were temporary harm with category E according to the National Coordinating Council for Medication Error Reporting and Prevention index. Two events were category F which resulted in temporary harm that required initial or prolonged hospitalization.

**Conclusion:** More extended periods can clearly reflect the institutional progression regarding the occurrence of ADEs.



## Assessment of ATG Administration Safety without Skin Testing in Pediatrics post Bone Marrow Transplant.

**Student(s) Name:** Rqaiyah Al-Otaibi.

**Supervisor(s) Name:** Roa'a Al-Gain, PharmD  
Hanadi Muawad, BSc, RP

### ABSTRACT:

**Background:** Anti-thymocyte immunoglobulin (ATG) Fresenius® is a polyclonal antibody immunosuppressive agent derived from rabbit source. ATG administration is commonly associated with immunological reactions. Due to its nature, test dose prior to administration had been used to assess hypersensitivity status. This practice is controversial and supported by limited evidence. Moreover, there is lack of consensus about test dose route, result interpretation, and appropriate action toward positive test results. At KFSHRC, the practice of performing skin test prior to ATG administration was changed and pediatric bone marrow transplant (BMT) protocol was revised. Based on the new protocol, ATG infusion will be commenced at slower rate with close monitoring for adverse reactions. The purpose of this study is to assess the safety of ATG Fresenius® administration without performing skin test dose in pediatric patients post BMT.

**Methods:** This is a retrospective cross-sectional study. Data was collected for all pediatric patients ( $\leq 14$  years) who underwent BMT at KFSHRC and received ATG Fresenius® “new protocol”, May 2013-April 2014. Subjects were compared to historical control group in which skin test was administered as per the “old protocol”. The primary endpoint is composite infusion outcomes before and after implementation of the new protocol. The outcomes assessment include: positive skin test result, infusion reactions with ATG therapy before and after protocol revision, allergy medication administration, infusion interruptions, total infusion time, and failure to complete therapy. Statistical analyses will involve descriptive and nonparametric statistics.

**Results:** Data collected for 68 patients. Analysis is ongoing.

**Conclusions:** To be reported

## Potentially Inappropriate Prescribing among Elderly Patients Admitted to a Saudi Hospital.

**Student(s) Name:** Abeer Al-Harbi.

**Supervisor(s) Name:** Najwa Al-Ghamdi, Pharm.D, BCNSP, BCPS, FCCP  
Salha Jokhab, MSc, Pharmacy College  
Nada A. Al-Agil, R.Ph., SSC-Php  
Mohammed Alsheef, MD, SSC-IM, CABM, FACP

### ABSTRACT:

**Background:** Potentially inappropriate prescriptions (PIPs) are a major health problem in elderly. A number of criteria and screening tools have been developed to assist detection of PIPs in elderly such as the Screening Tool of Older Persons' potentially inappropriate Prescriptions (STOPP). Studies using STOPP criteria indicate high PIPs prevalence rates. However, no studies have been conducted in elderly patients in Saudi Arabia.

**Objectives:** The objectives of this study are (1) to explore the prevalence of pre-admission potentially inappropriate prescribing in elderly admitted to internal medicine service using STOPP criteria; (2) to evaluate to what extent these potentially inappropriate prescribing events, contributed to hospital admissions.

**Method:** This is a retrospective, cross-sectional study conducted at King Fahad Medical City. Patients 65 years or older admitted to the internal medicine service between December 1, 2013 to June 10, 2014 were included. PIPs were determined by applying the STOPP criteria. In addition, the inappropriate prescribing events were assessed if they were the main reason or contributed to admission.

**Results:** Medication lists for 121 (median age 74) patients were assessed. The median number of admission medicines was 6. Overall, STOPP criteria identified total of 167 pre-admission PIPs in 71.9% (87) of patients. Univariate analysis showed a non-significant association between PIPs and gender, age and number of medications prescribed. PIPs contributed to hospital admissions in 3 of the 87 patients (3.45%).

**Conclusions:** Pre-admission PIPs are highly prevalent among the studied population. The study is underpowered to detect if there is a correlation between PIPs and hospital admissions.

## Assessment of Vincristine Safe Preparation and Administration in Riyadh Hospitals.

**Student(s) Name:** Mariyam Alfagih, Razan AlGhunaim

**Supervisor(s) Name:** Nagwa Ibrahim, PharmD, KFMC  
Nahla Alageel, MSc, Pharmacy College

### ABSTRACT:

**Background:** Vincristine is an antineoplastic agent that should be given by IV route only. Unintentional IT administration of vincristine may lead to death. The risk of this medication error is recurrent and well documented. The purpose of this study was to assess the awareness of healthcare practitioners of the safe handling of vincristine and to verify the approaches followed in Riyadh hospitals to prevent this fatal error.

**Methods:** A descriptive survey consisting of 41 questions was designed based on recommendations from WHO, JCI and the Institute for Safe Medication Practices. It was distributed to nurses, pharmacy technicians and pharmacists in 6 main governmental hospitals in Riyadh city.

**Results:** Surveys were completed by 266 participants. 63.9% practitioners in all hospitals stated that vincristine was prepared in a minibag while only 16.9% respondents said that the syringe was employed in preparation of vincristine, the main reasons for that were shorter administration time and lower risk of extravasation. 65% of the participants confirmed that vincristine label includes a clear warning that reads "FOR IV ONLY. FATAL if given intrathecally". Surprisingly, when practitioners were asked about the consequence of giving vincristine intrathecally, only 65% in all hospitals answered that it will lead to death.

**Conclusions:** The participants' answers indicate that there is a policy in the hospitals but in general there are deficiencies in implementing important safety practices as recommended by international bodies. Further regulations and education are needed to improve awareness and eradicate the possibility of this fatal medication error.

## Genetic Analysis of Bartter's and Gitelman's Syndromes in Saudi Patients.

**Student(s) Name:** Alanoud Aleid, Masha'el Alrubaishi

**Supervisor(s) Name:** Ali S. Alzahrani, MD, KFSH & RC  
Maha M. Alrasheed, PhD, Pharmacy College

### ABSTRACT:

**Background:** Bartter and Gitelman syndromes are rare autosomal recessive disorders characterized by hypokalemia, metabolic alkalosis, and normal to low blood pressure.

It can be clinically divided into antenatal and classical Bartter's syndrome and Gitelman's syndrome. On the other hand, they can be classified into five subtypes (I to V) based on the underlying mutant genes. Also, Saudi population is a unique population and the role of gene mutation in Bartter's and Gitelman's syndrome in this population has not been studied.

**Methods:** Four unrelated Saudi patients were screened for genetic mutations. DNA was extracted from whole blood using the Gentra Puregene DNA purification blood Core kit C. Primers were designed to include exon and intron boundaries for the following genes: SLC12A1, KCNJ1, CLCNKB, BSND and SLC12A3. Polymerase chain reaction performed through PTC200 Thermal Cycler and checked on 2% agarose gel. MegaBACE DNA analysis system was used to screen for mutations, and data were analyzed by Lasergene Software. Biochemical data were extracted from patients' files.

**Results:** Among the three studied genes, 3 novel mutations and a reported one were discovered. Two mutations were identified in NKCC2 gene in 2 patients, the novel c.1216 G>C (p.406 Asp>His) and the reported c.1942G>A (p.648Asp>Asn). Besides, the other 2 novel mutations c.1325A>C (p.442Asn>Thr) and c.1685T>C (p.562Asn>Thr) in SLC12A3 and CLCNKB respectively, discovered in the other 2 patients.

**Conclusions:** In this study, three nonsynonymous novel mutations, in addition to a known one were identified in the studied genes in 4 unrelated Bartter and Gitelman syndromes patients.

## Interventions for improving pharmacist-led patient counseling: a systematic review.

**Student(s) Name:** Hibah A. Alshaya, Albatoul M. Almeshari.

**Supervisor(s) Name:** Norah O. Abanmy, PhD, Pharmacy College  
Sinaa Al-Aqeel, PhD, Pharmacy College

### ABSTRACT:

**Background:** Patient counseling is an important service provided by community or hospital pharmacies. However, pharmacist may have some barriers during implementing this service. Interventions to improve it need to be highlighted.

**Objective:** To identify and assess the current interventions employed to improve pharmacists' counseling technique.

**Search methods:** The search was conducted between (September 2014 to April 2015). The following databases were searched: EPOC Group Specialized Register, CENTRAL (The Cochrane Library), MEDLINE (PubMed) and the reference lists of relevant articles.

**Selection criteria:** Quasiexperimental and RCTs that compare either intervention of any type intended to improve pharmacist-led patient counseling to no intervention or multiple interventions. The target populations consist of pharmacists of any age and of either gender, who provide counseling in hospital or community pharmacy setting.

**Data collection and analysis:** Titles and abstracts were screened for eligibility. Two review authors independently extracted data and assessed risk of bias of included studies according to the Cochrane criteria.

**Main results:** Three trials met the inclusion criteria. The interventions were targeted pharmacists with combined number (n= 119), pharmacist assistants (n=54). Follow up was ranged from 2 weeks to 1 year. One trial was quasiexperimental while two trials were RCTs that compared intervention to no intervention. Four main types of interventions were examined: Educational workshops, theory applications, training through role-playing with patient scenarios and tools (brochures, motivating poster and mugs). All interventions have showed mixed success in improving pharmacist led patient counseling.

**Authors' Conclusion:** Across the body of evidence all interventions appear promising in improving pharmacist led patient counseling. However, we need more reliable evidence on their efficacy from carefully designed RCTs before a firm conclusion can be reached.

## Viewpoints of Saudi Pharmacists toward Barriers to Effective Medication Reconciliation in Riyadh, Saudi Arabia.

**Student(s) Name:** Hana Al Alshaykh - Waad Alghamdi

**Supervisor(s) Name:** Weaam AlJassim, RPh, MSc.HI  
Ghada Bawazeer, MSc., Pharm.D., BCPS.

### ABSTRACT:

**Background:** Medication Reconciliation (MR) is an important process to reduce medication errors and achieve optimum patient care. Multiple barriers exist that hinder effective implementation of MR. We sought in this research to explore the viewpoints and mindset of Saudi pharmacists towards these .barriers

**Methods:** Using Q-methodology, 25 pharmacists were asked to rank 30 statements of barriers to effective MR according to their point of view using a sorting grid. The Q-sorts were then analyzed using Q-method series of statistical analyses to identify Saudi pharmacists' viewpoints regarding .barriers hindering effective implementation of MR

**Results:** Four perceived opinions (factors) reflecting participants' viewpoints were identified; "The Operational Management Supporters": Pharmacists in this group suggest that a robust operation supported with policies and procedures will be the best modality to effective MR, "The Doubtful" is a group of pharmacists who are unconvinced in MR, questioning its accuracy and perceiving it as an inconvenient service, "The Nationalists": support the implementation of unified national practice of MR, that includes good communication and collaboration between different healthcare settings by following organized schemed procedure, and "The Opponents" who are pharmacists attributing barriers to physicians, patients and health workers, .creating a blame environment

**Conclusion:** Saudi pharmacists have different viewpoints towards medication reconciliation barriers. Understanding these viewpoints may help in developing effective solutions for the barriers and give an opportunity for further research and improvement



## Off-Label Medication Prescribing Pattern in Pediatric Critical Care Unit; a Tertiary Care Hospital Experience.

Student(s) Name: Asma Ali Alzahrani

Supervisor(s) Name: Alanoud Almuhareb, Pharm.D,BCPS,BCNSP

### ABSTRACT:

**Background:** Off-label drug use (OLDU) is the use of a registered drug for an indication, dose, frequency, route of administration or for a population that is not listed in the package insert. OLDU is a common practice in pediatric setting. The percentage of OLDU worldwide is quite high especially in the younger population, it has been reported in the literature around 40% to 90% of hospitalized pediatric patients receive at least one or more of off-label drugs. This practice is more frequent in critically ill pediatric patients, due to the huge gap of clinical data regarding safety and efficacy. Clinical trials are designed to overcome this lack of knowledge; however, it is challenging to enroll children in clinical trials secondary to social and ethical issues.

There is no study conducted in Saudi Arabia to signify or identify the OLDU in critical care pediatric patients. This study aims to determine the rate of OLDU and identify the most frequent off-label drugs that have been prescribed in King Faisal Specialist Hospital and Research Centre (KFSH&RC) pediatric intensive care unit (PICU) in order to highlight the current practice and increase the healthcare providers' awareness.

**Methods:** Observational, retrospective study includes all patients who admitted to PICU at KFSH&RC during one month period. Patients' demographics, clinical data and all prescribed drug through the designated study period were collected from patient's medical records and integrated clinical information system (ICIS). This Study approved by the Research Ethics Committee at KFSH&RC.

**Results:** On going.

**Conclusions:** On going.

## BASED ON PHARMACOKINETIC, TOWARDS EVIDENCE - PREDICTABLE NEONATAL DOSING REGIMENS OF AMIKACIN AT KCUH.

**Student(s) Name:** Maram Alotaibi

**Supervisor(s) Name:** Hussah Alhussein, MSc. KCUH  
Norah O. Abanmy, PhD, Pharmacy College

### ABSTRACT:

**Background:** Bacterial sepsis is one of the commonest reasons for admission to neonatal units and neonatal mortality in newborns. A combination of aminoglycoside and beta-lactam are widely used as initial treatment for neonatal sepsis. Amikacin is a semi-synthetic aminoglycoside antibiotic that has the widest antimicrobial spectrum. Doses for neonatal often derived from adult doses after adjusting for body weight. However, because pharmacokinetic responses to a drug are different in infants, they need doses that are even lower than the calculated doses, as dose eliminated through immature kidneys. Amikacin has a narrow therapeutic index, health care providers must maintain serum concentration within the therapeutic range to minimize nephrotoxicity and ototoxicity adverse effects of the drug.

**Purpose:** To examine the efficacy and safety of current Amikacin dose (15-20 mg/kg, as single dose) in Pre and Full-term neonates at King Khalid University Hospital (KCUH) by obtaining a pharmacokinetics relationship, aiming to establish an evidence-based dosing regimen and reduce variability in pharmacokinetic responses.

**Methods:** Prospective and retrospective medical file review were performed for all neonates with suspected or proven sepsis who treated with amikacin in NICU at KCUH from 2 September 2009 to 15 October 2014 with gestational ages from 22-41 weeks. Data were collected from 147 neonates had at least one serum drug concentration record. Nephrotoxicity was assessed by comparing creatinine clearance at birth date and at end of treatment. Clinical efficacy of doses was compared using normalization of laboratory tests.

**Results:** On prognosis

**Conclusions:** On prognosis



## Use of Electronic Medical Record (EMR) in Riyadh Hospitals: Pilot Study

**Student(s) Name:** Maha Assadoon

**Supervisor(s) Name:** Norah O. Abanmy, PhD, Pharmacy College  
Fatimah Ali Al-Rowibah, MSc

### ABSTRACT:

#### Introduction

Evidences suggest that electronic medical records EMR has the potential to increase the safety, efficacy and efficiency of health care practice. Functions such as computerized physician order entry (CPOE), clinical decision supports (CDS) and bar-coding have been reported to reduce medication errors. In Saudi Arabia, the Ministry of Health (MOH) has invested toward improving the electronic health around the kingdom. However, the functionalities of EMR adopted in Riyadh hospitals are poorly addressed.

#### Methodology

The total number of hospitals in Riyadh city is 41 and 33 of them have been contacted by phone or actual visit. A previously published survey by Jha AK *et al* was used in this study and the contacted hospitals have been asked to answer it. The survey has been modified to serve the purpose of this study. Results have been analyzed using Microsoft Excel and the response rate was set to 10% for a pilot study.

#### Results

Only 10 (24%) of the contacted hospitals answered the survey. Results showed that none of the hospitals had comprehensive electronic medical records. Functions with high implementation rate include patient demographics, medication list, laboratory/ radiology reports, CPOE for laboratory/ medications orders and bar-coding for patient ID. On the other hand, clinical decision support functionalities had low adoption rate.

#### Conclusion

The finding of this study was based on the presence of EMR functionalities. However it does not address the actual use of these functions by end users. Future studies with larger sample size are needed to study the adoption of EMR in Riyadh hospitals.

