THE ANNUAL MEETING OF SPS

SIPHA 2019

23 – 24 JANUARY, 2019
JEDDAH, SAUDI ARABIA
THE RITZ-CARLTON

Saudi Pharmaceutical Society
الجمعية الصيدلية السعودية

SIPHA
Saudi International Pharmaceutical Science
Meeting & Workshops

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Saudi Pharmaceutical Society
الجمعية الصيدلية السعودية

VISION

Leadership in the development of pharmaceutical care, scientific research, and medical education in the field of pharmacy in the Kingdom of Saudi Arabia.

MISSION

The development, the increased awareness, and the education of medical practitioners of pharmacy and health professions and the wider community.

VISION

To be the pioneer in the field of continuous pharmacy education and pharmacists' professional development.

SIPHA
Saudi International Pharmaceutical Science Meeting & Workshops

MISSION

Advance the different pharmaceutical sectors, by discussing and evaluating our current practices, and developing new recommendations.

WELCOME MESSAGE FORM THE PRESIDENT OF SAUDI PHARMACEUTICAL SOCIETY

It is both privilege and a great honor to welcome you to the Saudi Pharmaceutical Society Annual Meeting (SIPHA 19). Last year meeting was a record break In the number of delegates, educational activities, and innovative sessions. We're very proud and thankful to our members and guests who have participated with us and urged us to make SIPHA an annual meeting for all pharmacists in the region.
It is exciting to be back, however, in Jeddah this time to bring our annual meeting closer to everybody In the Kingdom. This year we are back with numerous innovative activities, excellent educational sessions, and a bigger residency showcase. Also, I encourage you to make a meaningful connection during the mini networking sessions we are hosting this year. And to explore a state of art science and research presented in the poster session area. Please don't forget to support your college's at the Student's Clinical Skills Competition- the final round this year will be live on the main auditorium.
Moreover, we are very proud to host the Saudi Commission for Health Specialists Pharmacy residency research day at SIPHA 19. This year we also very happy To introduce our interactive platform session. The session will host students residents and pharmacists to present and share their innovative ideas and research to everyone.
We are striving to exceed your expectations. Please let us know how we are doing I invite you to share your thoughts with us at our booth or send me an email at SPS@KSU.EDU.Sa

Sincerely,

Dr.Khalid A. Alburikan,
BS.Pharm, PharmD, BCPS.

WELCOME MESSAGE FROM THE ORGANIZING COMMITTEE CHAIRMAN

Dear Colleagues,

It is my privilege and pleasure on behalf of the organizing committee to welcome you to Jeddah, Saudi Arabia, from the 23rd to 24th of January 2019, to participate in The Annual Meeting of SPS I SIPHA 2019. The number of pharmacists has increased significantly over the last few years. Healthcare is changing in Saudi Arabia, and with this change, and in accordance with the 2030 vision, our role in this country is more important than ever. Our goal in SIPHA is to bring experts and those interested in the field of pharmacy together to share pharmaceutical and healthcare-related fields and work toward improving practices. That goal is as pertinent today as it was then. Our team consists of academicians, practicing pharmacists and even students. It's a goal I know we all share - the advancement of our profession to improve patient care. With a record number of participants expected this year, I am delighted to see that these annual meetings are becoming larger and more substantial every year. I am equally excited about the diverse and large number of sessions, and the wide variety of ideas that scholars and practitioners will bring into our fold.

One of the highlights of the meeting is to review the latest evidence and updates through lectures, workshops and networking sessions to further share our knowledge and expertise. As scientific research serves a great importance to advancing our field, not only will there be a poster presentation session, we will also be hosting The 5th Annual Residents Research Day. Also, we will have the highly anticipated Student's Clinical Skills Competition which I'm sure many students are excited about.

Finally, I would like to thank you, the participants, for enriching this annual meeting by your presence. A special thanks goes to the organizing committee members who have worked hard to present you with a unique program. I hope you will enjoy the content, renew old friendships, make new friends, create new ideas, and above all, have a good time.

Sincerely,

Mohammad S. Alawagi,
BSc. Pharm, MSc

WELCOME MESSAGE FORM THE CHAIRMAN OF SCIENTIFIC COMMITTEE

Dear participants

On behalf of the Scientific Committee, I have the pleasure to welcome you in. The Annual Meeting of SPS/SIPHA 2019 that held on 23rd -24th January 2019 in Ritz Carlton, Jeddah. KSA, we celebrate the continuous success since we have had the last Annual Meeting SIPHA in 2018. The Annual Meeting of SPS/SIPHA is an event in which the expertise of pharmacy professions can share their knowledge and experiences with other pharmacists and pharmacy technicians.

SIPHA 2019 scientific program comprises of Pharmacy practice, and workshops Education, professional faculty and student poster session, student poster competition and student short oral presentation competitions. The latest technical information from the pharmacy clinical practices will be highlighted in this annual meeting.

Speakers from KSA, shall present their latest perspectives on pharmaceutical science in the intensive 2–days program with a wide variety of topics encompassing pharmacy practice, pharmaceutical science, quality and safety of medicines, medication management, education and training, digital pharmacy and transformation, and professional development and best practices

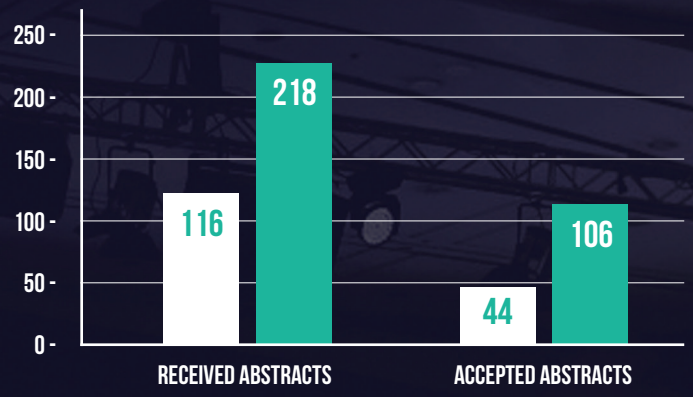
Moreover, it is essential to recognize the pharmacists as a professional health practitioner, equipped with the knowledge and skills, to play a critical and vital role in drug therapy together with the health care team for better patient care.

Finally, I would like to extend my sincere thanks and humble appreciation to the president of Saudi Pharmaceutical Society, all my colleagues in the scientific and organizing committees, the sponsoring drug companies, as well as to all those who have participated in this meeting with a great hope that this event will meet your expectations.

Sincerely yours,

Dr. Abdullah M. Al-Zahrani,
Chairman of Scientific Committee

SIPHA 2019 STATISTICS



PERCENT INCREASE IN RECEIVED POSTERS = 87.9%

PERCENT INCREASE IN ACCEPTED POSTERS = 140.9%

ATTENDEES 1600

30 LECTURES & WORKSHOPS

49 SPEAKERS & MODERATORS

138 POSTERS

22 UNIVERSITIES

16 HOSPITALS

19 INTERACTIVE PLATFORM SPEAKERS

33 SPONSORS & EXHIBITORS

8 NETWORKING SESSIONS

175 VOLUNTEERS

> A THRIVING ECONOMY... A VIBRANT SOCIETY... AN AMBITIOUS NATION

A THRIVING ECONOMY..

With the annual meetings that we conduct and workshops that we organize, SIPHA contributes in fulfilling a thriving economy by showcasing national pharmaceutical companies and their economical role in pushing for the highest quality local production similar to global products but with lesser costs and is more of a local investment. Furthermore, the annual meeting of SPS introduces new concerns regarding economics while highlighting issues and presenting possible solutions. Also, SIPHA encourages the importance of scientific research in the manufacturing of pharmaceuticals and all other pharmaceutical industries.

A VIBRANT SOCIETY

The most important work of the Saudi Pharmaceutical Society that is represented in SIPHA project, is to create a vibrant, proactive and ambitious society that contributes to the realization of the vision of the association and SIPHA project, and the national vision in particular, where SIPHA project has become the main umbrella that brings together all parties in the healthcare and pharmaceutical sectors. This is the case with pharmacy students, pharmacy colleges and specialized pharmacists through the introduction of topics concerned with the development of pharmaceutical education in the Kingdom and the acquisition of educational expertise locally and from outside the Kingdom, contributing to the formation of an environment that supports the desired outputs. In addition, SIPHA contributed to the development of the research sector through the implementation of a poster presentations competition and showcasing important research projects that may contribute very positively in highlighting the importance of scientific research in the formation of a pharmaceutical society that is capable and scientifically effective and sound in its medical practices. Where in the last installment of the SIPHA annual meeting, 38 posters out of 150 applications were showcased. Also, with the annual meetings and workshops that SIPHA conducts, it has contributed in emphasizing the importance of volunteer work to young adults who are enrolled as pharmacy students, aiding in raising their level of professionalism and expanding their expertise in the field. SIPHA 2018 has had 200 volunteers from many colleges of pharmacy and other health professions colleges, volunteers with various talents and skills that combine creativity and professionalism. SIPHA has also formed a link between hospitals with its ongoing residency programs and between pharmacists. This led to 12 residency programs in different specialties from several hospitals showcasing their programs. The symposium was attended by more than 60 speakers from within and outside the Kingdom and attended by over 1500 attendees.

By establishing its foundations and exhibiting its spirit, SIPHA is becoming an example of a vibrant community. The exchange of experiences has contributed in establishing a clear basis for what the profession will be in 2030. As a part of this society, our role in organizing such scientific meetings and events comes into play, to advance healthcare and the career of pharmacy.

AN AMBITIOUS NATION

The goals of the 2030 vision and the aspiration of this great nation are consistent with and complement the objectives of SIPHA project, its goal and mission representing as our inspiration in which we desire to achieve. To achieve a vision that enables us to play our leading role in improving our profession and the healthcare field.

As effectiveness and responsibility are fundamental concepts once they are met in our younger generation, they are urged to work hard and take initiative in facing challenges and seize opportunities with their knowledge and national identity. SIPHA encourages the efficiency of our young men and women and empower their energies. Also, invest time and effort towards what advances our profession and this country. SIPHA is proud of our younger generation who form the vast majority of this great nation. Believing in their skills and capabilities, they are fulfilling their professional roles as students in advancing the pharmaceutical industry and pushing our nation forward.

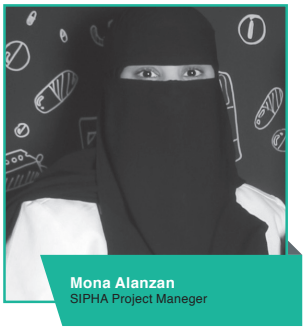
The goals of the 2030 vision and the aspiration of this great nation are consistent with and complement the objectives of SIPHA project

رؤيـــة VISION
2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

The sustainability of our success can be achieved only through the sustainability of these enormous human resources and our values. SIPHA's vision is what we hope to achieve, which stems from our strengths and leads in the end to investing in the right manner that is in the interest of the profession and the nation. As SIPHA is the home of ingenuity and inspiration, we work towards and aspire to increase the awareness and advance the pharmaceutical industry by raising the level of medical education, health professions and improve the health of our society. To move towards a unified pharmaceutical care and advancing scientific research, hoping that Allah will make us the platform that elevates the pharmaceutical industry, and makes the pharmaceutical industry proud.

ORGANIZING COMMITTEE

Momammed Alawagi
Chairman, Organizing committee



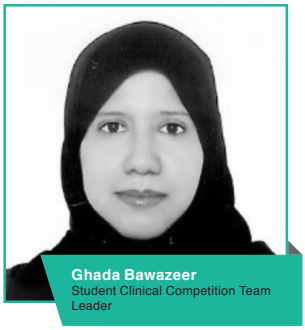
Mona Alanzan
SIPHA Project Maneger

Hazza AlGhamdi
Co-Chairman, Organizing Committee

Hosam Alem
General Coordinator

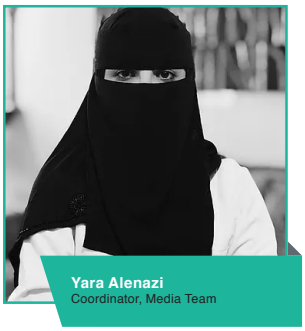
Mustafa AlJasser
SIPHA Project Adviser

Hassan Linjawi
General Coordinator, Jeddah



Ghada Bawazeer
Student Clinical Competition Team Leader

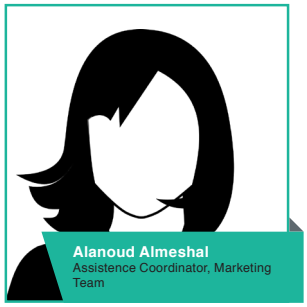
Rawan Abu Zaid
Coordinator, Marketing Team



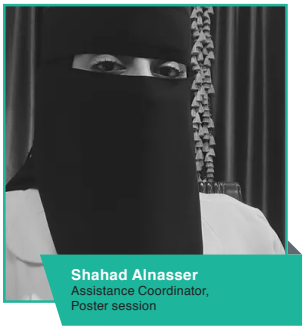
Yara Alenazi
Coordinator, Media Team

Afnan Alsunaidi
Coordinator,
Registration Team

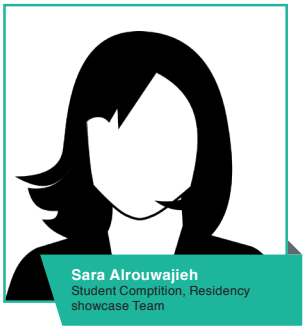
Faisal Bin Gonayah
Coordinator,
Event Manegement



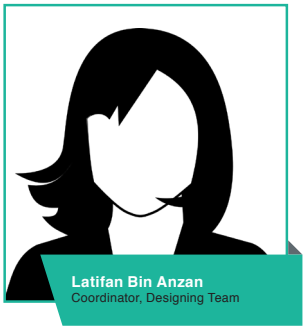
Alanoud Almeshal
Assistence Coordinator, Marketing Team



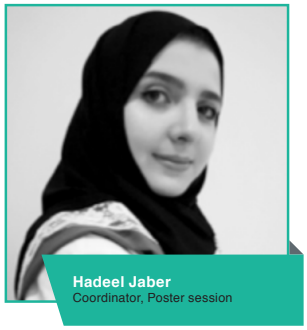
Shahad Alnasser
Assistance Coordinator,
Poster session



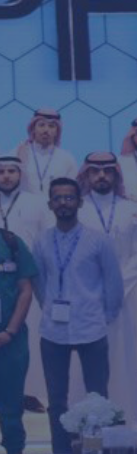
Sara Alrouwajieh
Student Comptition, Residency showcase Team

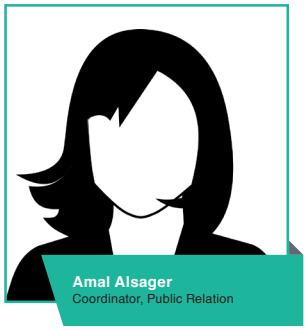


Latifan Bin Anzan
Coordinator, Designing Team

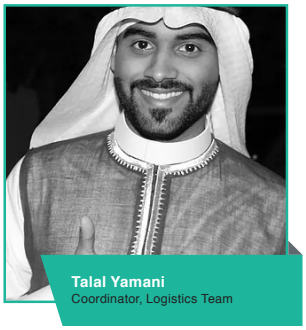


Hadeel Jaber
Coordinator, Poster session





Amal Alsager
Coordinator, Public Relation



Talal Yamani
Coordinator, Logistics Team

Ahmed Alshamrani
Coordinator, Exhibition Team

Aziza Ajlab
Coordinator, Public Relation

Tariq Al-Zahrani
Coordinator, Interactive Platform

SCIENTIFIC COMMITTEE

Abdullah Alzahrani
Chairman,
Scientific Committee

Abdulgadeer Almoeen
Member, Scientific Committee

Hani Alhamdan
Member, Scientific Committee

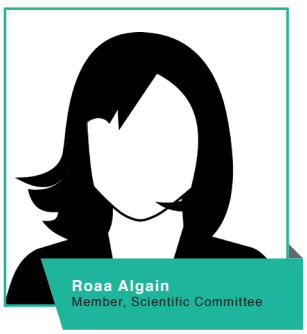
Yousef Alqeel
Member, Scientific Committee

Hussain Bakhash
Member, Scientific Committee

Manal H.Bashihab
Member, Scientific Committee

Moureq Alotaibi
Member, Scientific Committee

Thammer Alshammari
Member, Scientific Committee



Roaa Algain
Member, Scientific Committee

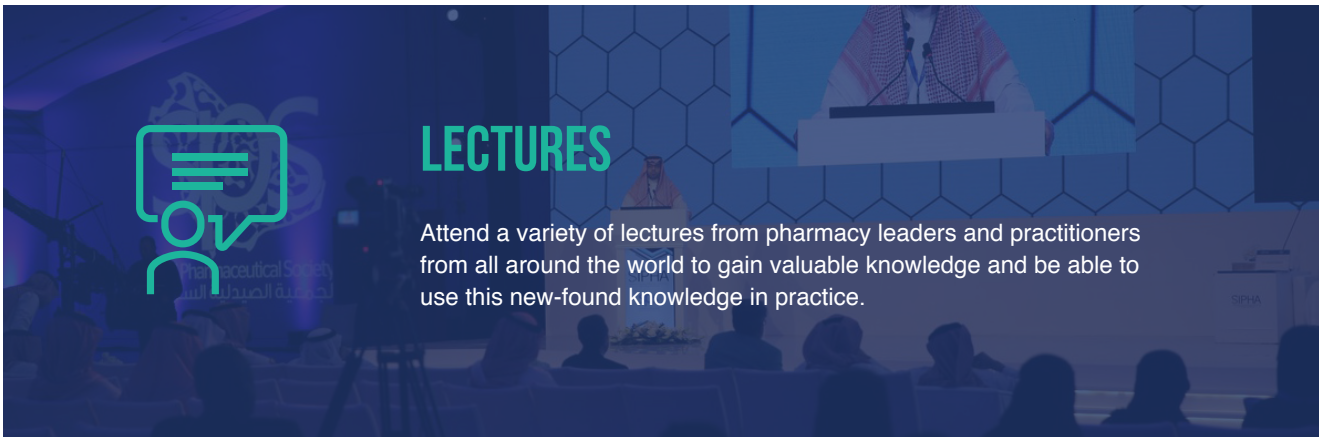
Ahmed S. M. Bahatheq
Member, Scientific Committee

Maha Al Enazi
Member, Scientific Committee

SIPHA 2019 ACTIVITIES


SIPHA
Saudi International Pharmaceutical Science
Meeting & Workshops

SIPHA ACTIVITIES



LECTURES

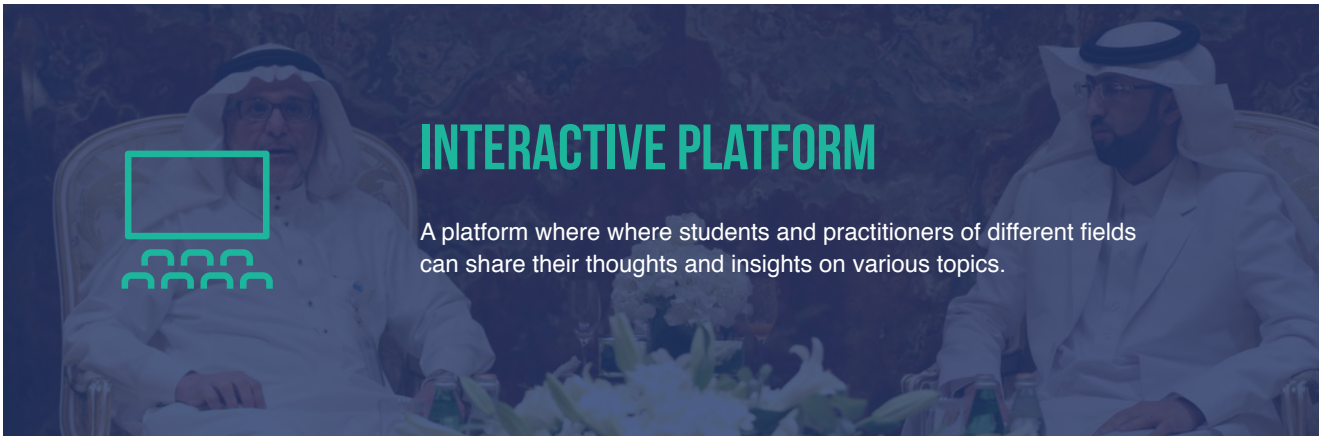
Attend a variety of lectures from pharmacy leaders and practitioners from all around the world to gain valuable knowledge and be able to use this new-found knowledge in practice.

WORKSHOPS

Specialized workshops will be offered to help pharmacists with their continuous learning and growth in their desired field.

NETWORKING SESSIONS

Networking is an important professional tool. It is a focused way of developing and building a group of professional contacts who can serve as friends and resources during a career. Networking sessions is a great opportunity to network with your peers on a variety of topics.



INTERACTIVE PLATFORM

A platform where where students and practitioners of different fields can share their thoughts and insights on various topics.

RESIDENCY SHOWCASE

The Residency Showcase provides potential residency applicants the convenience of one location in which to meet with representatives from a number of postgraduate year 1 (PGY1) and postgraduate year 2 (PGY2) pharmacy residency programs from across Saudi Arabia.

POSTER/ORAL PRESENTATIONS

Oral and Poster Presentations Competition is organized at SIPHA 2019, to encourage pharmacy students and pharmacists to present their original research. All accepted abstracts will be presented at the poster sessions and oral presentations sessions during the conference.

CLINICAL SKILLS COMPETITION

In a competitive atmosphere, the pharmacy clinical skills competition will assess the problem-solving skills of pharmacy students and their ability to apply learned knowledge of therapeutics in solving patient cases. The aim of this activity is to support and advocate clinical critical thinking and team-based collaboration in providing patient care.

SCIENTIFIC PROGRAM

THE ANNUAL MEETING OF SPS | SIPHA 2019

DAY 1

WEDNESDAY, 23 JANUARY 2019

	07:00 – 09:00	**Registration and Reception**	
	09:00 – 10:00	**Keynote speaker & Opening Ceremony**	**HE. Prof. Hisham Aljadhy,** President, SFDA
Session I	**Education of Pharmacy & Training** **Hani Asfour,** Ph.D.		Ballroom 1
	10:00 – 10:20	**Is it The Time to Unify the Pharmacy Academic Program Learning Outcomes?** This lecture will give an overview of the current curricula of pharmacy colleges in KSA. The speaker will also discuss the need to a unified curriculum and standard program learning outcomes amongst colleges of pharmacy after imposing the Saudi Pharmacy License examination.	**Abdulkareem M. Albekairy,** M.Sc., Pharm.D.
	10:20 – 10:40	**Role of Academia in Driving Pharmacy Innovation: Future Perspective** This presentation will give an overview of the role of academia in driving pharmacy innovation and future prospective.	**Aws Alshamsan,** Ph.D.
	10:40 – 11:00	**Saudi Pharmacy Licensing Exam, an Overview and What Needed to Know?** Background, structure and requirements of the recently imposed Saudi Pharmacy License Examination (SPLE) will be addressed in this presentation. Information and recommendations regarding the pharmacy college's responsibility in preparing their graduates to the exam will also be discussed	**Alaa A. Bagalagel,** Pharm.D.
	11:00 - 11:10	**Panel Discussion**	

Session II — The Pharmacy Practice in The Private Sectors

Mustafa Al-Jawadi, BSc. Pharm, Pharm.D.

Ballroom 1

11:10 – 11:30	**The Future of Saudi Pharmacists in Pharma Companies & Manufacture** This Presentation will focus on future of Saudi pharmacist on local companies & Manufacture and the opportunities match with Saudi Arabia vision. Skills and behaviors need to fit with these opportunities.	**Khalid Suliman AlShammari,** BSc.,MBA.
11:30 – 11:50	**The Journey of Community Pharmacy in Saudi Arabia** There has been an intense debate among practitioners over the pharmacy practice in community setting. In this presentation, the speaker will address the status of the current community pharmacy services and how the new MOH and SFDA regulations will shape the future of this practice	**Abdullah Almesend,** BSc. Pharm
11:50 – 12:05	**Panel Discussion**	
12:05 – 13:15	**Lunch and Prayer Break**	

Session III — Clinical Pharmacy Practice Future in Saudi Arabia

Yousif Alakeel, Pharm.D., MPH, BCPS

Ballroom 1

13:15 – 13:45	**The Saudi Society of Clinical Pharmacy: The Founder Vision** After the establishment and its first general meeting, the newly SCFHS-approved clinical pharmacy society will be advertised in this speech. the speaker will address the society mission, goals and target members in addition to the future and activities.	**Abdulrazaq S. Al-Jazairi,** Pharm.D., MBA, FCCP, BCPS
13:45 – 14:15	**Clinical pharmacy practice: National Standardization Across Hospitals** Diversity of and discrepancy in delivering the clinical pharmacy services are always areas of debate. In this speech, the speaker will discuss the possibility, values and drawbacks, and obstacles of standardizing of clinical pharmacy practice across hospitals in Saudi Arabia.	**Ahmed Al-jedai,** Pharm.D., M.B.A., BCPS, FCCP,

	14:15 – 14:45	**Clinical Pharmacist Utilization of Simulation: A Novel Approach** Using of simulation is widely adopted in some healthcare areas, However, its utilization in pharmacy is very limited. This lecture will discuss how simulation can be applied to clinical pharmacy services to support the development of the clinical skills and competencies required of clinical pharmacists with consideration of the challenges to its implementation.	**Reem Diri,** Pharm.D.
	14:45 – 15:00	**Panel Discussion**	
	15:00 – 15:30	**Coffee Break**	
Session IV	**The Formulary Management & Medication Evaluation** **Hani S. Alhamdan**, RPh., BSc. Pharm., M.Sc		Ballroom 1
	15:30 – 15:50	**Formulary Management from Institutional Perspective** Formulary management is a challenging task to balance between the evolving demands of patients and the organizational resources. The speaker in this presentation will address the factors influencing the decision-making process of addition new drugs into the formulary or deletion of others.	**Sherine Esmail,** BSc, Pharm.D., BCPS
	15:50 – 16:10	**Bridging the Gap Between Payers & Providers for Better Medication's Management** Giving the fact that increasing number of new medications that represent a big part of healthcare expenditures put a big financial burden on health insurance services, the speaker of this presentation will discuss functions of the drug management services as a guide to provide proper medications-related decisions, and manage medications' cost at health insurance level.	**Fadia almahdi,** Msc., BCPS
	16:10 – 16:30	**Pharmacists Burnout Syndrome, Insights & Prevention** Burnout is a consequence of stress which has a big impact on pharmacists. It affects healthcare systems and patients care, leading to increased medication errors, poor clinical decision making, worse patient safety outcomes, and reduced quality of health care services. This presentation will address factors causing this syndrome and methods of preventions.	**Sara Khansa,** Pharm.D., BCPS
	16:45 – 17:05	**New Horizons in Migraine Management**	**Dr. Hussain Algahtani**
	16:30 – 16:45	**Panel Discussion**	
	21:00 – 22:00	**Gala Dinner (by Invitation)**	

DAY 2

THURSDAY, 24 JANUARY 2019

	07:00 – 08:00	**Registration and Reception**	
Session V		**Digital Pharmacy Transformation** **Sahar Alsharif**, Pharm.D., MHI., MBA.	Ballroom 1
	08:00 – 08:20	**What, Why and How: Business Digital Transformation** Overview, values and implementation of the business digital transformation are subject of the domains of this presentation. application and integration of digital transformation into all aspects of healthcare will also be discussed.	**Abdulgader Almoeen,** RPh, MHI, CPHIMS, CHCIO
	08:20 – 08:40	**Role of pharmacists in digital transformation** Pharmacists represent a significant underutilized resource in healthcare provision and in today value based care model; pharmacists will play a major role in Saudi health digital transformation plan.	**Amar Hijazi,** R.Ph, MHI
	08:40 – 09:00	**The future of pharmacy: Pharmacy innovation in digital health world** The Pharmacy of the future will be shaped by the transformation of healthcare; New digital information technologies will have a major impact on how do we deliver care. Innovation is the new game.	**Hayat Arafah,** R.Ph, MSc (MHI)
	09:00 – 09:20	**Make Your Pharmacy Ready for the digital 2020 National Transformation Program** How to prepare your pharmacy to be ready for the new health delivery model in Saudi Arabia? and how to move from digitization to digitalization for a better 2020 NTP goals? Are questions will be answered by the speaker of this presentation.	**Amani Moharram,** R.Ph, ITIL
	09:20 – 09:30	**Panel Discussion**	
	09:30 – 09:45	**Coffee Break**	

Session VI

Medication Safety & Pharmacy Quality

Abdullatif S. Alokif, BSc. Pharm, MHHA

Ballroom 1

09:45– 10:05	**ISMP's Targeted Best Practices for Hospital** The speaker will familiarize the audience with the five important medication safety issues reported to ISMP in 2018. He also will discuss how drug shortages contribute to medication errors and effective strategies to mitigate harm. Resources available to practitioners in the ISMP website that promote medication safety will also be discussed.	**Mohammed Aseeri,** Pharm.D., BCPS, FISMP
10:05– 10:25	**Update in WHO Medication Safety Challenge** This presentation will take you globally and discuss the initiative of World Health Organization (WHO) in promoting medication safety. In addition, the speaker will discuss the short, medium, and long-term interventions at country level and the impacts of this interventions on medication safety.	**Thamir M. Alshammari,** M.Sc., PhD
10:25 – 10:45	**Medication Safety Officers in Saudi Arabia, are They Effective?** Job description and attributes of effective medication safety officer (MSO) will be areas of discussion in this presentation, in addition to their responsibilities and how they Align their activities with the organizational strategic plan	**Abdulrahamn Alswaedi,** BSc. Pharm
10:45- 11:05	**ADRs reporting in community pharmacies: SFDA and private collaboration success story** Pharmacovigilance and adverse drug reporting system has been already established in institutional settings, however, it is considered new in the setting of community pharmacy. This presentation will address and appreciate of a trial program of ADR reporting in Saudi community pharmacies.	**Mubarak Alshahrani,** MSc.
11:05 -11:10	**Panel Discussion**	

Session VII

Pharmaceutical Research from Theory to Reality

Nabil Alhakamy, Ph.D.

Ballroom 1

11:10 – 11:30	**Establishing an Institutional Basic Sciences Research units: institutional experience** This presentation will focus on the challenges and obstacles facing scientists in Saudi Arabia. Also, this speech will emphasize on bioethics, biosafety, and the necessity of improving our basic and preclinical research facilities	**Mussad Alshammari,** Ph.D.
11:30 – 11:50	**Future of Vaccines and Biologics Research in Saudi Arabia** This presentation will discuss the status of research activities related to biologics and vaccines development in both academia and industry in Saudi Arabia. The country's plan to establish new biopharmaceutical research centers and manufacturing facilities will also be highlighted.	**Meshal Almutairi,** Ph.D.
11:50 – 12:00	**Panel Discussion**	
12:00 – 13:00	**Lunch and Prayer Break**	

Session VIII

Pharmacotherapy Update

Majda Alattas, Pharm.D., BCPS

Ballroom 1

13:00 – 13:20	**Update in Management of Pulmonary Hypertension** Significant developments have occurred in the field of pulmonary hypertension (PH) in the past 2 years. This lecture will update the audience regarding the new pharmacotherapy targeting the three abnormal pathways of PH. Advantages and disadvantages of early combination versus sequential drug therapy will also be addressed in the update.	**Zaid D. Alanazi,** BSc., SSC.PhP., SSC.Cardio
13:20 – 13:40	**Novel Treatment of Pediatric Diseases** Several novel drugs and biologics have been approved in the last 2 years which may have role pediatric pharmacotherapy. This lecture will review these new options that may have indications in the pharmacotherapy of some pediatric diseases.	**Mohammed Alharbi,** Pharm.D., BCPS., BCPPS
13:40 - 14:00	**Novel Approach to Immunomodulation After Transplantation** This lecture will review the new immunomodulatory approaches after organ transplantation, discuss their role and potential outcomes and the recommended monitoring and follow up.	**Razan Alsheikh,** Pharm.D., BCPS
14:00 – 14:20	**Panel Discussion**	
14:30 – 14:45	**Coffee Break**	
14:45 – 15:30	**Final Round:** SIPHA Clinical Competition Skills for Pharmacy Students	
15:30 – 16:30	**Closing Ceremony**	

DAY 1 | WORKSHOPS

WEDNESDAY, 23 JANUARY 2019

Workshop I

Residency Program

Mohammed Aseeri, Pharm.D., BCPS, FISMP

Al Karam 1

14:00 – 16:00

Preceptor and Mentoring Development

This interactive workshop will address skills needed by practicing pharmacists to be effective preceptor and/or mentor. In addition, methods of developing a mentorship program in the institution will be discussed.

Delal Alkortas,
Pharm.D., BCPS., BCACP

Majda Alattas,
Pharm.D., BCPS

Workshop II

Digital Pharmacy Transformation

Amar Hijazi, R.Ph, MHI

Al Karam 2

14:00 – 16:00

Building a Practical Pharmacy Digitalization Roadmap for the Saudi 2030 Vision

A comprehensive workshop about developing a business digital transformation roadmap to achieve NTP 2020 and Saudi Vision 2030 including recommended practical frameworks and guidelines.

Abdulgader Almoeen,
RPh, MHI, CPHIMS, CHCIO

Manal Nemari,
RPh, LSSBB, CAP

DAY 2 | WORKSHOPS

THURSDAY, 24 JANUARY 2019

Workshop III

Total Parenteral Nutrition

Al Karam 1

09:00 – 11:00

Parenteral Nutrition from Ordering to Administration

This workshop will include aspects of ordering, calculation, preparation, handling and administration of parenteral nutrition (PN). In an interactive method, the following topics will also be discussed: initial patient assessment, efficacy and safety monitoring, complications, dealing with abnormal laboratory values, refeeding syndrome, overfeeding, and writing PN for special populations

Hamdy M. Amin,
Pharm.D., MBA., BCNSP.

Mohammad Alsharhan,
PharmD, BCNSP, CNSC

Workshop IV

Pharmaceutical Research

Hashem Obaid Alsaab, Pharm.D., MSc., Ph.D.

Al Karam 2

09:00 – 11:00

The Art of Conduction a Translational Research: The Nitty – Gritty Details

This comprehensive workshop is designed for interested people in pharmacogenomics and pharmacogenetics. The topics discussed in this workshop are: steps in conducting a prospective transitional Pharmacogenetics clinical study, technologies used in the field, materials needed, participants involvement and management, preparing research areas and samples handling and data management DNA structure, genes, mutations, and genetic variability (single nucleotide polymorphism).

Azher Arafah, Pharm.D., Ph.D.

Homood Al Subaie, Ph.D.

Workshop V

Formulary Management

Roa'a Al-Gain, Pharm.D., BCPS., BCACP

Al Karam 1

13:00 – 15:00

Formulary Drug Evaluation: an EBM Tool to Guide Clinical Decisions

This workshop aims to provide a practice-based session for formulary drug evaluation. It presents a stepwise approach on the process of the evaluation and the important factors to consider during the decision-making process.
-Budgeting a research study

Sherine Esmail, BSc, Pharm.D., BCPS

Workshop VI

Clinical Research

Hind Almodaimegh, Pharm.D., BCPS-AQ., FISMP

Al Karam 2

13:00 – 15:00

Advanced Clinical Research

This workshop is designed for people who already have basic research knowledge. This interactive session will discuss the following areas of clinical research: planning to do research, effective literature review, data and references management, ethical considerations, budgeting a research study

Majed Ibrahim Al Jeraisy, MSc., Pharm.D.

NETWORKING SESSIONS

23 – 24 JANUARY, 2019

Day 1 - Wednesday, 23 January 2019

23 January 2019 | 14:00 – 15:00 | Al Asala 1

PHARMACY INFORMATICS AND AUTOMATION

Abdulmosin Marghalani, BSc. Pharm
Hazzaa Alghamdi, BSc. Pharm, MHA

23 January 2019 | 14:00 – 15:00 | Al Joud 1

PHARMACY RESIDENTS

Tariq Alzahrani, BSc. Pharm R2
Khalid Alharbi, Pharm.D.

23 January 2019 | 14:00 – 15:00 | Al Asala 2

AAPS SAUDI DISCUSSION GROUP

Abdullah Alsultan, Pharm.D., Ph.D.

23 January 2019 | 14:00 – 15:00 | Al Bader

SAUDI SOCIETY OF CLINICAL PHARMACY

Ahmed Aljedai, Pharm.D., M.B.A., BCPS, FCCP

Day 2 - Thursday, 24 January 2019

24 January 2019 | 14:00 – 15:00 | Al Asala 1

PHARMACY DIRECTORS

Ali Al-Blowi, MSc., Ph.D.

24 January 2019 | 14:00 – 15:00 | Al Joud 1

RESIDENCY PROGRAM DIRECTORS

Sakra Balhareth, Pharm.D., BCPS, BCACP

24 January 2019 | 14:00 – 15:00 | Al Asala 2

MEDICATION SAFETY & QUALITY PHARMACY

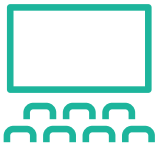
Murooj Shukry, Pharm.D., CAPPS

24 January 2019 | 14:00 – 15:00 | Al Bader

SPS STUDENT CHAPTER

Mohammad Alawagi, BSc. Pharm, MSc
Rawan Abuzaid, Pharm.D.

INTERACTIVE PLATFORM PROGRAM



DAY 1

WEDNESDAY, 23 JANUARY 2019

10:00	How to Write a C.V	Dr. Majed Al Jeraisy
10:20	How to Pass the TOEFL Exam	Dr. Khaznah Al Kaseb
10:40	A Key Skills for a Competent New Clinical Pharmacy Practitioners	Dr. Majed Alshamrani
11:00	Essential Tools for Residency	Dr. Asma Alshahrani
11:20	Challenges During Internship and Suggested Solutions	Muath Alsaloom
11:40	Starting Career as a Pharmaceutical Scientist in Cancer Research	Dr. Hashem Al-Saab
13:00	Effective Patient Counselling	Dr. Yahya Kadumi
13:20	The Match: Getting into a Residency Program	Dr. Khaled Al- Harbi
13:40	The Mastery of Self	Bader Awlaqi

DAY 2

THURSDAY, 24 JANUARY 2019

9:00	The Benefit from Attending Scientific Conferences and Volunteering	Abdulaziz Al Saleh
9:20	Tips for Pharmacy Students to Prepare for a Residency Program	Dr. Reem AlMahasnah
9:40	Dose of Research	Dr. Nedaa Karami
10:00	How to Pass a Job Interview Successfully	Dr. Tariq Alzahrani
10:20	Using Saudi Digital Library Like a Pro	Dr. Manar Lashkar
10:40	How to Enrich Pharmacy by Talents & Hobbies	Dr. Suha Alhebshi
11:00	Obstacles; Our New Opportunities	Dr. Eman Shorog
11:20	The Role of Skills in Deciding a Journey of Your Career	Dr. Sari Hindi
11:40	What We Don't Know About Medical Representative	Dr. Ameerah Al-Ghamdi
13:00	What is Next	Dr. Aisha Al-Harbi

RESIDENCY SHOWCASE

1- KING SAUD UNIVERSITY MEDICAL CITY, RIYADH
2- KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE, RIYADH
3- KING ABDULAZIZ MEDICAL CITY - NATIONAL GUARD HEALTH AFFAIRS, RIYADH
4- KING ABDULAZIZ MEDICAL CITY - NATIONAL GUARD HEALTH AFFAIRS, JEDDAH
5- PRINCE SULTAN MILITARY MEDICAL CITY
6- KING KHALED EYE SPECIALIZED HOSPITAL
7- KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE, JEDDAH
8- KING FAHAD SPECIALIST HOSPITAL DAMMAM
9- KING ABDULLAH MEDICAL CITY, MAKKAH
10- JOHNS HOPKINS ARAMCO HEALTHCARE
11- KING ABDULAZIZ UNIVERSITY HOSPITAL
12- KING FAHAD MEDICAL CITY
13- KING SAUD MEDICAL CITY
14- PRINCE MOHAMED BIN ABDULAZIZ HOSPITAL
15- KING FAHAD UNIVERSITY HOSPITAL

1- KING SAUD UNIVERSITY MEDICAL CITY, RIYADH

RESIDENCY PROGRAMS DIRECTOR:

Dr. Abdullah Alhammad, BSc, PharmD, BCPS
aalhammad@ksu.edu.sa

DIRECTOR OF PHARMACY:

Dr. Khalid Al Burikan, BSc, PharmD, BCPS
kalburikan@ksu.edu.sa

Brief Description of the Residency Program:

King Saud University Medical City (KSUMC) is a tertiary care, academic medical center with proven years of experience in hospital operation and administration. KSUMC pharmacy department is one of the leading departments comprises several pharmacies distributed over the medical city that serves a huge number of patients. Pharmacy Residency Program KSUMC provides an educational environment designed to advance the practice of post-graduate pharmacists. The resident will develop knowledge and skills in direct patient care with experiences in both acute and ambulatory care settings, teaching and research. The resident at KSUMC has multiple opportunities to nourish the innovation and creativity through participation in several activities and projects. Additionally, the resident will be mentored in the development of pharmacy leadership skills that will serve the graduate well in a variety of integrated health care systems. KSUMC provides access to central library and college of medicine simulation labs and workshops. Our residents participate in specialized clinics (e.g. anticoagulant clinic, psychiatry, chronic diseases, diabetes), on-call services, staffing in the inpatient/clinical service, pharmacy and therapeutic subcommittees. KSUMC offers participation in teaching in collaboration with KSU college of pharmacy. Along with that, weekly residents' activities run by residents including topics review, journal clubs, and case presentations. Residents at KSUMC can benefit from the support from the Investigation and Research units. KSUMC has a total of 5 seats for PGY2 specialties including ambulatory care, cardiology, hematology and oncology, critical care and internal medicine. KSUMC Residency program is a candidate for ASHP accreditation by 2019.

KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE, RIYADH

RESIDENCY PROGRAMS DIRECTOR:

Sakra S. Balhareth, Pharm.D., BCPS, BCACP
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DIRECTOR OF PHARMACY:

Abdulrazaq S Al-Jazairi, Pharm.D., MBA, FCCP, BCPS (AQ-Cardiology)
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Brief Description of the Residency Program:

PGY-1 residency program is composed of 2 years of which the first year covers staffing in different areas of pharmacy. This will allow the resident to develop skills, competencies and expertise in all aspects of pharmacy practice including drug information and medication-use policies. The second year is designed for the resident to develop experience in acute care and ambulatory practice environment. Core rotations include cardiology, critical care, infectious diseases, and internal medicine. A broad range of elective rotations are available including parenteral nutrition, pediatrics, transplant services, hematology/oncology and nephrology. The specific program for each resident varies based upon the resident's interests and previous experience. The program provides attendance of the ASHP Midyear Clinical Meeting and other National Meetings in Saudi Arabia. There are several specialty areas for PGY-2 residency program training in KFSH&RC including cardiology, solid organ transplant, oncology, critical care and drug information. KFSH& RC maintains a goal to be a leader and a practice model environment with a mission for teaching, research, and patient care in the entire region of the Middle East.

KING ABDULAZIZ MEDICAL CITY - NATIONAL GUARD HEALTH AFFAIRS, RIYADH

RESIDENCY PROGRAMS DIRECTOR:

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DIRECTOR OF PHARMACY:

Lt. Col. Khalil Al Majed
majidk@ngha.med.sa

Brief Description of the Residency Program:

Residency program at KAMC-Riyadh is composed of 2 years of which the first year covers different pharmacy areas such as ambulatory care, inpatient, intravenous admixture, drug information, administration, and introductory clinical rotations. The second year is a clinically focused program with many opportunities for rotations in cardiology, oncology, infectious diseases, pediatrics, critical care, nephrology, transplant services, and internal medicine. Participation in research, manuscript preparation, and teaching are required. KAMC is a 1200 bed teaching tertiary center that provides a variety of care. The facility includes Cardiac and Liver Transplant Center, Adult ICU, Trauma Center, Pediatric and Neonatal ICUs, and Ambulatory Care. By combining state-of-the-art research, education and exceptional patient care, we offer the best to our residents. The Medical Center is affiliated with King Saud bin Abdulaziz University for Health Sciences, College of Pharmacy.

KING ABDULAZIZ MEDICAL CITY - NATIONAL GUARD HEALTH AFFAIRS, JEDDAH

RESIDENCY PROGRAMS DIRECTOR:

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DIRECTOR OF PHARMACY:

Hani S. Alhamdan, RPh., BSc. Pharm., M.Sc.
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Brief Description of the Residency Program:

Pharmacy residency program at KAMC-J is composed of two years. The first year will focus on operational pharmacy practice that will provide the resident with the opportunities to develop skills, competencies, and professional expertise. It contains the following rotations: Ambulatory care, Inpatient care, IV admixture, Administration, Medication Safety, Drug information, Introduction to clinical practice, and one clinical rotation. The second year is conducted in such a manner that will provide the resident with the opportunity to develop clinical knowledge and professional skills in clinical pharmacy practice. Pharmacy residency program at KAMC-J is PGY-1 ASHP accredited program, it is including PGY-2 oncology program, and it is focused on improving clinical skills. Our team is dedicated to provide a variety of high-quality learning experiences. Our hospital is 800 beds tertiary care facility. It provides state of the art practice of medical care services. Moreover, KAMC is affiliated with King Saud bin Abdulaziz University for Health Sciences and is accredited by JCI.

PRINCE SULTAN MILITARY MEDICAL CITY, RIYADH

RESIDENCY PROGRAMS DIRECTOR:

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walfahad@PSMMC.MED.SA

DIRECTOR OF PHARMACY:

Dr Mohammed Almezini
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Brief Description of the Residency Program:

Prince Sultan Military Medical City (PSMMC) Is a tertiary care medical center, established at 1979. It has had a leading record in many medical achievements (1st renal transplantation Center, Bone- marrow transplant since 1989 & 1st liver transplant in Arab region) and it is one of the most advanced centers in the middle east. PSMMC Pharmacy Residency Program started in 2002, one of the first hospitals established program in our region. Thirty-six clinical pharmacists were graduated from the residency program in different specialty. Currently, twenty-two clinical pharmacists covering different specialty in the hospital. All PGY1 core rotations offered by our hospital and most of the elective rotations as well. Sub-specialty seats for Internal medicine, Infectious diseases and Nephrology. The program is willing to Accept residents from outside PSMMC for PGY1 and PGY2.

KING KHALED EYE SPECIALIST HOSPITAL, RIYADH

RESIDENCY PROGRAMS DIRECTOR:

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DIRECTOR OF PHARMACY:

Dr. Abdullah AlHumaidan, Pharm.D., FCCN, MPH
ahumaidan@kkesh.med.sa

Brief Description of the Residency Program:

Clinical Pharmacy Practice Residency Program is composed of two years training. The first year covers pharmacy operation practice (Inpatient, Outpatient, and Intravenous Admixture Pharmacies in addition to Drug Information and Administration rotation). This will allow the residents to develop skills, competencies and expertise in all aspects of pharmacy practice. The second year is composed of clinical rotations that are designed to develop clinical experience and skills in different areas of pharmacotherapy. A broad range of clinical rotations that are divided into six core rotations including cardiology, infectious disease, internal medicine and intensive care unit, and three elective rotations. The program for each resident varies based on the resident's interest and previous experience. It is also requiring formal case presentations, in-services, journal clubs, and research project. King Khaled Eye Specialist Hospital is the only tertiary ophthalmic hospital in the region of Saudi Arabia. It is a Ministry of Health facility that operates 250 beds. It has been recognized for excellence in its delivery of ophthalmic patient care for its educational programs and highly successful research projects. In 2016, it was accredited by the Saudi Commission for Health Specialties for the Clinical Pharmacy Practice Residency Program, a hospital-based clinical experience on pharmaceutical care.

KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE, JEDDAH

RESIDENCY PROGRAMS DIRECTOR:

Majda Salem Al-Attas
m.alattas@kfshrc.edu.sa

DIRECTOR OF PHARMACY:

Mohammad Hussein El-Faour
malfour@kfshrc.edu.sa

Brief Description of the Residency Program:

King Faisal Specialist Hospital & Research Center, Jeddah residency program is Post Graduate Year One (PGY-1) candidate for ASHP accreditation in 2019 with established specialized PGY-2 in infectious diseases as well as additional new PGY-2 specialty in cardiology and hematology/oncology starting in 2019. most our residency positions are sponsored. KFSH&RC has a research center which provides a perfect opportunity for residents to collaborate with health care providers to identify research priorities and courses/workshops to improve their research skills. The program provides free attendance to CME accredited pharmacy educational lectures, accredited fundamental research lecture series and free courses to improve skills, such as professional communication skills, computer related skills and leadership skills courses with free access to the most important electronic resources (Lexicomp, Micromedex and UpToDate websites and mobile applications). Access to the most journals through medical library of the hospital.

KING FAHAD SPECIALIST HOSPITAL, DAMMAM

RESIDENCY PROGRAMS DIRECTOR:

Dr. Hamdi ElSoudi, MSc Clinical Pharm, BCOP
Hamdi.Soudi@kfsh.med.sa

DIRECTOR OF PHARMACY:

Dr. Nabil Kammas, Pharm.D, BCPS
Nabil.kamas@kfsh.med.sa

Brief Description of the Residency Program:

King Fahad Specialist Hospital (KFSH) is tertiary health care center that provides specialized medical services serving 15.1% of the kingdom population in oncology Center since 2006, established cancer registry since 2010 and the neuroscience and Transplant Center since 2008. KFSH has distinguished Health Research Committee since 2009. Academic Affair Administration that has several education programs for trainee, volunteers, residents and fellows. Leader of the First Health Cluster in Eastern Province by 2018. King Fahad Specialist Hospital (KFSH) residency program first launched by October 2015. The Current capacity of two residents/ year. Three graduates successfully completed the program and growing program with Saudi Commission for Health Specialties (SCFHS) approved clinical rotations and others in process for approval.

KING ABDULLAH MEDICAL CITY, MAKKAH

RESIDENCY PROGRAMS DIRECTOR:

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DIRECTOR OF PHARMACY:

Dr. Mohammed Al-Ghanmi
alganmim@kamc.med.sa

Brief Description of the Residency Program:

Our residency program is committed to provide education and training opportunities emphasizing on research, evidence-based knowledge and practical skills development in an innovative work environment to provide comprehensive direct patient care utilizing informatics and automated solutions under the guidance of highly skilled preceptors enabling residents to excel as clinicians, educators and leaders in a variety of career paths. The program Started in 2016. Current capacity is two seats for R1, two seats for R2 with Sponsorship as per institution condition The Mentorship program one of the programs provided in King Abdullah Medical City, also research methodology course with open access to e-learning resources/ institutional subscriptions. The program has specialties in adult oncology/hematology, cardiac and neurology center and Renal transplant center. It provides exposure to Hajj and Umrah population and participation in Hajj Caravan.

JOHNS HOPKINS ARAMCO HEALTHCARE, DHAHRAN

RESIDENCY PROGRAMS DIRECTOR:

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DIRECTOR OF PHARMACY:

Fuad Alghamdi
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Brief Description of the Residency Program:

Residency program at Johns Hopkins Aramco Healthcare is the only site in Kingdom got approval for psychiatry rotation. The program provides exams at the end of each rotation that will help the residents to get well prepared in final and promotional exams. Providing pharmacotherapy lecture for all eastern province to include preceptors, residents, and interns, and presence of advanced longitudinal tasks e.g. present at drug and therapeutic committee, attend management meetings and cover as staff. Residents participate in advanced teaching.
Johns Hopkins Aramco Healthcare has fully automated ambulatory pharmacy department with robotic barcoding dispensing system with implantation of State of art electronic health care system (Epic). Our site provides patient centered design and practice with in an environment of learning and carrier development.

KING ABDULAZIZ UNIVERSITY HOSPITAL, JEDDAH

RESIDENCY PROGRAMS DIRECTOR:

Hussain Bakhsh
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DIRECTOR OF PHARMACY:

Bayan Darwesh
bdarwesh@kau.edu.sa

Brief Description of the Residency Program:

Residency program at King Abdulaziz University Hospital affiliated to King Abdulaziz University-Faculty of Pharmacy, prepares selected, highly-motivated and highly- qualified pharmacists to compile, synthesize and analyze information and to communicate with healthcare professionals and patients in order to optimize drug therapy outcomes in hospitalized patients. Residents will receive teaching training, demonstrate professional leadership and develop life-long learning skills that will lead to career satisfaction. The residency program adheres to the standards described in the Saudi Commission for Health Specialties General Clinical Pharmacy Diploma Program.
King Abdulaziz University Hospital is a 1002 beds with Diamond Canadian Accreditation affiliated to King Abdulaziz University that is ranked among top QS World University Rankings.
It is located in the middle of the city of Jeddah and are the leaders in providing Intravenous, Chemotherapy and TPN training courses, teaching and precepting skills. Furthermore, it has a computerized provider order entry system and automated dispensing cabinet. The programs also provides an Antimicrobial Stewardship Program, intravenous to Oral Switch Therapy program, Clinical pharmacy services, Material management services and Clinical Pharmacists providing Clinic Services in ER, ICU and TTO Satellite Rooms.

SIPHA RESEARCH ABSTRACTS


SIPHA

Pharmaceutical Sciences Research

Professionals Abstracts

SA-03819

Comparing Antifungal Prophylaxis Efficacy Between Fluconazole and Amphotericin B Lipid Complex in Adult Acute Lymphocytic Leukemia (ALL) Patients Receiving HyperCVAD Based Chemotherapy

Afnan Almrey, Abdelmajid Alnatsheh, Mohammed Aseeri, Ahmed Absi, Mansoor Khan

Background/Purpose: Fungal infection is common in acute lymphocytic leukemia (ALL). Fluconazol is the standard antifungal prophylaxis in these patient populations. We have been facing problem of drug drug interaction between fluconazol and tyrosine kinase inhibitors (TKI) when treating Philadelphia positive ALL. Hence, our hospital started using Amphotericin B lipid complex (Abelcet) 2.5mg/kg three times per week as alternative to fluconazol 400 mg once daily in adult Philadelphia positive ALL patients during the neutropenic nadir. Our aim was to compare the efficacy of antifungal prophylaxis in adult ALL patients.

Methods: Our retrospective, single center, cohort chart study the data was reviewed between January 1, 2007 until December 31, 2016 at KAMC, Jeddah. We included ALL patients who: completed at least one course of HyperCVAD and received antifungal prophylaxis, age >14 years. Data have been collected using hospital information system. The primary endpoint was the incidence of fungal infection. The secondary endpoints were to assess QTc prolongation and cost impact based on the type of antifungal prophylaxis used.

Results: A total of 105 cycles of HyperCVAD chemotherapy were reviewed among 59 patients. In 70 cycles fluconazole was used as prophylaxis (n= 70) and in 35 cycles Abelcet was used as antifungal prophylaxis (n=35). We found documented fungal infection in 4 out of 70 cycles of HyperCVAD chemotherapy where fluconazole was used; while in Abelcet group we didn't find any documented fungal infection. The incidence of QTc prolongation was higher with fluconazole group than Abelcet group and Fluconazol was significantly more cost effective compared to Abelcet.

Conclusion: Our findings suggest that fluconazole might be comparable to Abelcet with regards to efficacy. Careful monitoring for QTc-prolongation is required in case fluconazole is combined with TKIs. We suggest that fluconazole is a cost-effective regimen for prophylaxis of invasive fungal infection compared to Abelcet.

SA-03919

The Protective Effect of Cardamom Aqueous Extract on Tamoxifen-Induced Acute Pancreatitis in Female Rats.

Afraa Alzoubi, Nour Alanazi, Hala Attia, Naglaa Elorabi

Background/Purpose: Tamoxifen (TAM) is widely used for the treatment of breast cancer. However, TAM results in oxidative stress and hypertriglyceridemia, which is a well-known risk factor for acute pancreatitis (AP). AP is associated with high mortality and delay in response to treatment. Cardamom is a spice possessing antioxidant, anti-inflammatory, anti-hyperglycemic and anti-hyperlipidemic properties. In this study the protective effects of cardamom aqueous extract (CAE) on TAM-induced AP was investigated in female rats.

Methodology: Sixty-four female rats were divided into 8 groups (8 rats each) as follows: normal control, CAE control (10 ml/kg, orally), model group administered 45 mg/kg TAM i.p for 10 days, and CAE +TAM groups treated with 4, 6, 8, 10, 12 ml/kg of CAE orally for 20 consecutive days, starting 10 days before TAM injection. Serum levels of amylase, pancreatic lipase, glucose and triglycerides (TG) were measured. In addition, oxidative stress markers [lipid peroxidation, reduced glutathione (GSH) & nitric oxide (NO)] and inflammatory markers [tumor necrosis factor –α and interleukin-6] were assayed in pancreatic homogenate. Histological examination with H&E was performed. Statistical comparisons were performed using one-way ANOVA.

Results: TAM resulted in significant increase in amylase and lipase ($p < 0.001$) indicating pancreatic damage. Glucose, lipid peroxides, NO, TG and inflammatory markers were markedly elevated ($p < 0.001$) with reduction of GSH ($p < 0.001$). H&E staining showed marked increase in connective tissue septa, inflammatory cells, atrophic acini with epithelial degeneration. Treatment with CAE (8, 10 and 12 ml/kg) ameliorated the biochemical deviations ($p < 0.05$, $p < 0.001$ & $p < 0.01$, respectively). Histological examination revealed normal acini and marked decrease of the inflammatory cells with the optimum effect produced by the dose 10 ml/kg.

Conclusion: Daily administration of CAE could ameliorate TAM-induced AP by alleviating oxidative stress, inflammation and hypertriglyceridemia.

SA-06619

Can Herbal Medicines Improve Asthma Control? A Randomized, Double-Blind, Placebo-Controlled, Exploratory Phase II Trial of Nigella Sativa Oil in Asthma

Abdulrahman Koshak

Background: Poor compliance with asthma medications remains a major problem leading to poor asthma control. Herbal medicines may help to improve asthma control. Traditionally, Nigella sativa (NS), known as black seed, is thought to be effective in asthma.

Objective: To investigate the benefits of NS supplementation on clinical and inflammatory parameters of asthma.

Methods: Ns oil (Marnys®) was used as "add-on" treatment option in a randomized, double-blind, placebo controlled, phase II trial. The primary endpoint was Asthma Control Test

(ACT). The secondary endpoints were predicted FEV1%, blood eosinophils, and total IgE. Independent t and Mann–Whitney U statistical tests were used. The trial was registered with clinicaltrials.gov; NCT02407262.

Results: Eighty patients enrolled between Jun 1 and Dec 30, 2015, with forty patients each randomly assigned to treatment (NS) and placebo groups. At the end of four weeks treatment, ten patients withdrawn from each group. NS showed a statistically significant improvement in ACT and blood eosinophils count. NS showed a trend to improve predicted FEV1%. However, no improvements found on IgE and other inflammatory mediators.

Conclusion: Ns appeared to be improving asthma symptoms, and some asthma-related biomarkers. Future studies should follow patients for a longer period and validate outcomes using different approaches.

SA-07319

Synthesis, Molecular Docking, Anti-inflammatory and Anti-Cancer Evaluation of New N-Substituted Aminophenyl Chalcone Activities

Ali Alqafshat, Rawan Aldaowr, Mohammed Fouad, Radwan El-Haggar

The interesting diverse biological activities of chalcone derivatives have grabbed much attention. In the present study, 24 N-substituted aminophenyl chalcone derivatives were synthesized via reaction of different aminophenyl chalcones with different substituted benzoyl chloride. The anti-inflammatory activity of newly synthesized compounds was investigated using formalin-induced hind paw edema method. Some of the compounds, showed the most potent effect on reduction of rat paw edema volume compared to the reference drug, Celecoxib. In most of the compounds shows significant anti-inflammatory activity. Molecular docking of the synthetic compounds revealed that some of these compounds showed the best binding with COX enzymes. Finally, the most potent derivatives were evaluated for their anti-cancer activity and most of them showed significant activity against three different cancer cell lines.

SA-07519

Novel Histone Deacetylase-2 (HDAC2) Inhibitors: Design, Synthesis and Biological Evaluation

Mohamed Alsanea, Bahaa Youssif, Abdel-Aziz AlSaleh

Histone deacetylase (HDAC) enzymes are promising targets for cancer epigenetic therapy. Herein we describe the design, synthesis, biological evaluation of HDAC1 and HDAC2 inhibitory activities using fluorescent-based methodology. A series of five designed HDAC inhibitors (4a-4e) based on ligustrazine as cap moiety, linked via an aromatic ring to hydroxamic acid or hydrazide, were designed and synthesized. Compound 4a showed potent competitive inhibition of nuclear HDAC2, with an IC50 value of 53.7 nM. Moreover, it showed 2-fold selectivity for HDAC2 (53.7 nM) over HDAC1 (114.3 nM). Two compounds 4b and 4e have emerged from the designed series with 18-fold and 16-fold selectivity for HDAC2 over HDAC1, respectively. These experimental data propose that the obtained structural criteria can be valuable tools for the rational design of new potent and selective HDAC2 inhibitors.

SA-12019

The Use of Piperine in Combination Therapy as Combined Dosage Form to Increase the Efficacy and Oral Bioavailability of Curcumin Using Self-Nanoemulsifying Lipid Based Formulation

Mohsin Kazi, Sofiane Bouchenak, Majed Alwadei

Background: Curcumin (Cur) is a well-known natural polyphenol that exhibits anticancer properties. Piperine (PP), a major component of black pepper is shown to increase the bioavailability of curcumin. The study aims to develop Cur with PP using self-nanoemulsifying drug delivery systems (SNEDDS) and convert liquid SNEDDS into solid SNEDDS as combined dosage form to investigate how the adsorption of drug onto an inorganic high surface area material Aerosil® and Neusilin® affects in vitro dissolution performance.

Methods: Liquid SNEDDS were designed for Cur and PP using black seed/ivy-rue oils with surfactants. Aeropearl® and Neusilin® were used to solidify the liquid SNEDDS. The characterization of the liquid and solid SNEDDS was performed by particle size analysis, scanning electron micrograph, differential scanning calorimetry, Fourier transform infrared spectroscopy and X-ray powder diffraction. The in vitro dissolution studies were conducted to investigate the influence of solidification by adsorption on Cur & PP release.

Results: The liquid SNEDDS containing black seed/ivy-rue oils showed excellent self-emulsification performance with transparent appearance. The results of characterization studies showed that solidification using 50% (w/w) Aeropearl® and Neusilin® in the liquid formulation yield free flowing powder but Aeropearl® produced smooth granules than Neusilin® and kept the drugs stable in amorphous state. In vitro dissolution studies indicated that solid SNEDDS formulations using Aeropearl® provided high dissolution rate (> 85%) and reproducibility for both Cur and PP.

Conclusions: The SNEDDS could be a potential delivery system for Cur & PP as combined dosage form, which can be used against various cancer cells.

SA-12719

Preparation and Characterization of Dapoxetine Transdermal Patches Loaded with an Optimized Drug Nanoparticles Formulation

Asmaa Alay, Bader Aljaeid, Tarek Abdelnapy

Background: Dapoxetine is a selective serotonin reuptake inhibitor (SSRI) used for the treatment of premature ejaculation (PE). Oral dapoxetine has a short half-life of (1.2 h) and poor bioavailability of (42%) due to the extensive first-pass metabolism. Therefore, the aim of this study was to develop an optimized nanoparticle formulation of dapoxetine with subsequent loading into transdermal patches in order to enhance the bioavailability and extend the drug release.

Methods: Nanoparticles entrapping dapoxetine were prepared using chitosan-alginate polymers in different ratios by ionotropic gelation method. The optimization goals for preparation conditions were set to minimize the average particle size and maximize the drug entrapment efficiency utilizing of the Box-Behnken experimental design.

Results: Among the design points, maximum desirability is achieved at run 8. The optimum formulae of dapoxetine nanoparticles showed values for particle size (Y1) and entrapment efficiency (Y2) of 415.943 nm and 37.31%, respectively.

Conclusion: The studied formulation parameters were significantly affecting the Y1 and Y2. The optimized formulation is expected to enhance the drug bioavailability especially after loading into transdermal patches.

SA-12819

Ameliorative Potential of Zinc/Alogliptin Combination on Testicular Toxicity Induced by Doxorubicin

Ahmed Kabel, Ali Alshahrani

Background: Doxorubicin (DOX) is one of the anthracycline antibiotics that are widely used for treatment of various types of malignancies. However, DOX may induce serious testicular toxicity. Its mechanisms may include induction of oxidative stress, increased release of the proinflammatory cytokines and induction of apoptosis in the spermatocytes.

Purpose: Our aim was to assess the effect of alogliptin and/or zinc on DOX-induced testicular toxicity in rats.

Methodology: Sixty male Wistar rats were divided into 6 equal groups: Control; DOX; DOX + Zinc; DOX + Alogliptin; DOX + Carboxymethyl cellulose and DOX+ Zinc + Alogliptin. Testis weight, testicular functions, serum testosterone, luteinizing hormone, follicle stimulating hormone and zinc were measured. Also, testicular tissue zinc, 3 β-hydroxysteroid dehydrogenase, 17 β- hydroxysteroid dehydrogenase, antioxidant enzymes, pro-inflammatory cytokines, transforming growth factor beta 1 (TGF-β1), nuclear factor (erythroid derived 2)-like 2 (Nrf2) and sperm characteristics were assessed. Parts of the testes were subjected to histopathological and immunohistochemical examination.

Results: Zinc/alogliptin combination restored the testicular weight and functions, sperm characteristics, serum and tissue zinc levels, hormonal profile and the antioxidant defenses compared to the use of each of these drugs alone. Also, this combination induced significant amelioration of the inflammatory processes, significant increase in tissue Nrf2 content and significant improvement of the histopathological and immunohistochemical picture compared to the use of each of these drugs alone.

Conclusion: Zinc/alogliptin combination might represent a promising therapeutic modality for amelioration of DOX-induced testicular toxicity.

SA-13019

Estimation of Lithium Clearance from Routine Clinical Data in Saudi Bipolar Patients Using Population Pharmacokinetic Approach

Noha Aljomah, Abdullah Alsultan, Saeed Alqahtani

Background: Lithium has been used in the treatment of acute mania and prophylaxis of bipolar disease. It has a narrow therapeutic window ranges from0.6-1.2mEq/L. The narrow therapeutic range and the large IIV have led to the study of population pharmacokinetics.

Objective: The objective of this study is to develop a model for the estimation of lithium clearance in Saudi patients with BPD to individualize lithium therapy in order to achieve target plasma concentrations.

Methods: A retrospective chart review was performed at KKUH on patients who received oral lithium. The average and SD for age, weight, Scr, total daily dose (TDD), and trough levels were analyzed. The PPK models were developed using Monolix4.4. Five covariates were tested, specifically age, gender, weight, Scr, and CLcr.

Results: The analysis included a total of 170 lithium concentrations from 31(77% female) patients with a mean (±SD) age of 36.3 ± 10.5years and body weight of82.7 ± 14.8kg. They received a TDD of 750 ± 260 mg/day, resulted in trough concentration of 0.73 ± 0.26mmol/L. The mean (Clcr) for the subjects was119.2 ± 32.8ml/min. The data were adequately described by two compartment open model with linear absorption and elimination. Average parameter estimates for lithium CL, volume of the central and peripheral compartment (V1,V2),and inter-compartmental clearance (Q) were 1.15L/h,22.1L(fixed),3.35L fixed),and 0.44L/h (fixed),respectively. The IIV (coefficients of variation) in CL was 42%. The most significant covariate on lithium CL was Clcr.

Conclusion: The PPK model of lithium in Saudi patients was established. Significant covariate on lithium final model was identified; Clcr. This model showed a significant IIV between subjects.

SA-14219

Investigating the Physicochemical and Microbiological Stability of Extemporaneously Compounded Nitrofurantoin Oral Suspension Under High Temperature Climate Conditions in Medina Hospitals, KSA.

Abdulelah Alhusayni, Sameh Ahmed, Abdulmalik Alqurshi, Yaser Alahmadi, Alaa Abdulaal

Background: Temperatures in Saudi Arabia can reach up to 54ºC, exposing medicinal products to conditions outside the ICH recommended parameters for stability testing. Furth more, it is common practice in local hospitals to dispense extemporaneous preparations for discharged patients, thus allowing medicinal products with unknow stability requirements to be used outside the hospital. The aim of this study is to investigate the effect of high temperatures on the physical, chemical and microbiological stability of nitrofurantoin extemporises suspension as a model preparation.

Methodology: Nitrofurantoin suspension (20mg/mL) was prepared from 100mg-Nitrofurantoin tablets, (50% w/v) dextrose solution and water (1:2), filled into dispensing plastic bottles and stored for a period of 32 days at 4, 25, 40 and 54ºC. Samples where tested for changes in pH, color, odour, viscosity and sedimentation volume. Drug content and chemical stability was monitored throughout the study using a validated stability indicating HPLC assay. Microbiological tests were performed according to the US Pharmacopeia monograph for non-sterile products.

Results: Storing the extemporaneous preparations at temperatures above 4ºC have shown to greatly influence color and odour, gradually caramelising dextrose, causing a drop in pH values, from 6.2 ± 0.21 to 3.5 ± 0.01, sedimentation volumes, from 36.8 ± 26.2 to 1.30 ± 0.1, and viscosity, from 19.1 ±6.89 to 10.5± 0.57. Observed changes where more prominent at higher temperatures. Furthermore, drug content was observed to drop below the ± 10% US pharmacopeia accepted limits when storing the preparations at ≥40ºC. Microbiological studies showed storage temperatures not to affect fungal or bacterial contamination.

Conclusion: Extemporaneous preparations must be investigated prior to dispensing to allow for suitable storage instructions. Patients must be instructed to keep nitrofurantoin suspension refrigerated throughout usage period.

SA-14719

Saudi Arabia's Public Awareness on the Pharmacogenetics Tests (Pgx) Required for the Application of Pharmacogenetics.

Afnan Aljuhani, Reem Aljuhani, Abeer Barasain, Ahmad Mufti

Introduction: Pharmacogenetics aims to provide drugs to individuals based on their genetic profile in attempts to reduce the incidence of adverse effects and increase therapy success by matching the right patient to the right drug and dosing regimen. Pharmacogenetics tasting (PGx) is needed prior to choosing the right drug and dose. Thus, the aim of this project is to assess public awareness on PGx, its usefulness and their attitude towards applying it.

Methods: This is a Cross-Sectional study that used a self-administrated online questionnaire distributed among the Saudi Population.

Results: 954 individuals participated in this study. Only 46% of respondents claimed they have heard about PGx, with significantly higher percentage (53.2%) individuals between 18–25 years compared to individuals with older ages ($p<0.01$). In addition, 48% of individuals with bachelor's degree and 50% of postgraduates heard about PGx compared to only 38.5% who are still at school level, while significantly more individuals from the medical field (62.8%) heard about PGx compared to 31.7% of individuals from other fields ($p<0.001$). However, 8.1% of participants believed that PGx is safe to be used, including those in medical field (9.7%) ($p<0.001$). In addition, only small percentage of participants (15.7%) believed that PGx would risk the patient's privacy. Finally, 79.9% of participants were willing to apply PGx assuming it will help in choosing the best medications, with no much differences in response between individuals from different groups.

Conclusion: The current results indicate that there is a lack of adequate knowledge about PGx tests and their benefits and risks, however, participants anticipated that it would become a valuable and effective way of providing better treatment and they were willing to use it.

SA-14919

Overview of Variations in Marketing Approvals for Priority Review Drugs Across United States, Europe, and Canada

Kholoud Ghazawi

Introduction: New drug approvals and reviewing safety and efficacy legislation vary from one drug authority to another across the globe. Efficient regulatory review process, while ensuring drug safety, may enable patients to get access to promising new therapies sooner, especially those with serious or life-threatening conditions who have no other therapy options30. The priority review classification allows regulatory agencies to expedite the review of drugs that are considered to represent significant improvements compared to marketed products or that will be used for diseases where no satisfactory alternative treatment exist.14 The purpose of this study is to provide a historical perspective of priority review drugs approval trends and availability in the United States (US), European Union (EU), and Canada as well as the variation of the regulatory data for these drugs in the three studied countries from 2000-2015.

Methods: The database and official websites of the drug regulatory agencies were used to collect data about priority review drugs approved in the US, EU, and Canada. Information about the drug approval history, generic and brand name, and market status was collected. Also, the approved drug labels were compared to identify differences in approved dosage forms, strengths, route of administration, and pediatric Information.

Results: A total of 134 [26.86% of biologics (BLA), and of 73.13% new molecular entities (NMEs)] were approved by the three regulatory agencies of the US, Europe, and Canada. Of the total drugs approved by three agencies, the Antineoplastic and Immunomodulating Agents class represented the largest percentage of approvals (47.76%), followed by Anti-infective

for Systemic Use therapeutic class (18.66%). Furthermore, differences were found among the studied jurisdictions in terms of the characteristics of approved drugs. The characteristic that showed the greatest difference was drug strength. Out of the total, there were 37 (27.61%) drugs shown to have different strengths approved across the three countries. Twenty-five (18.66%) drugs of the total 134 approved in the three countries, found to have a pediatric use (13.43% NME and 5.22% BLA). Pediatric age groups were varying as one regulatory agency was more restrictive than the other in 18 (13.43%) medicinal agents.

Conclusions: US Food and Drug Administration (FDA), European Medicines Agency (EMA), and Health Canada (HC) approved 134 priority review pharmaceutical medications in the period 2000-2015. Discrepancies in the availability of these drugs approved in EMA and HC were detected in this study compared to the US. Also, trends of approvals were different for priority review drugs approved in the three countries. The FDA had a better availability for these drugs in the US market than the others. However, this raises questions about whether safety is compromised in expediting the approval process by FDA. There were also significant differences in dosage forms, strength, routes of administration as well as pediatric information. The basis, clinical implications, and consequences of these discrepancies warrant further investigation.

SA-15019

Assessment of Drug Lag for Priority Review Drugs Approved in the US, Europe, and Canada

Kholoud Ghazawi

Introduction: Patient's and healthcare provider's timely access to medications represents a major public health concern, especially for new medications that have promising efficacy compared to currently available therapies. Since the practice and regulations relevant to drug approval vary in different countries, the timing of drug approval differs, causing a so-called 'drug lag'. A drug lag is any delay of availability of a drug for the patients in a specific market36. This work aimed to ascertain whether a drug lag still exists for priority review drugs approved by FDA compared to EMA and HC from 2000-2015. Moreover, this study highlights other legislative aspects such as orphan designation and priority status discrepancies in the US, EU, and Canada for the study period.

Methods: Regulatory data, including submission and approval date, orphan designation, priority status, and regulatory review time (estimated as the difference in the number of months between the submission and the approval date as reported by each regulatory agency) were analyzed and extracted from FDA, HC, and EMA websites. Drug lag was calculated as the difference in approval dates of each drug in EMA and HC, respectively from drug's approval date in FDA. Dates of approvals in FDA was used as a reference point. ANOVA-test and descriptive statistics were employed in the analysis.

Results: The drug lag was statistically significant as determined by one-way ANOVA (p-value= 0.0103) among the three countries included in this study. Canada noted to have the highest in delay of introducing a drug into the country compared to the US and Europe in a range of 0.13-154.6 months, and 0-148.63 months, respectively. Out of the 134 priority review drugs active in all three agencies, the FDA approved 116 drugs (86.57%) earlier than EMA in average 9.80 ± 10.03 months (median=7.52 months). Moreover, the FDA approved a total of 127 drugs out of 134 drugs (94.78%) earlier than HC in average 14.59 ± 18.82 months (median=9.03 months). EMA approved 89 products out of 134 (66.41%) earlier than HC an average of 15.05 ± 28.79 months (median=5.2 months). A Tukey post-hoc test revealed that drug lag was statistically significant between FDA vs EMA (p-value= 0.0071). However, there were no statistically significant differences between FDA vs HC or EMA vs HC (p-values>0.05). 26.87% (36) of the 134 drug products had at least one orphan designation at first approval by any of the two regulatory agencies, FDA or EMA. There were 64 (47.76%) medicinal products included in the study that had priority review status in HC. On the contrary, there were 70 (52.24%) drugs which had received a standard review by the HC while they received priority review by FDA.

Conclusions: Differences in approval timing, orphan designation, and priority status were identified, which reflect differences that still exist in drug review and approval procedures besides other regulatory actions among drug regulatory authorities. There is still a large gap in the major pharmaceutical markets, Europe and Canada compared to the US regarding access to new priority review drugs. Future research could identify ways of closing the timeline gap between the US and other countrie's approval. Reducing the time to drug approval and equalizing access to important and new drugs ultimately will improve patient access to new therapies.

SA-15119

Assessment of Discrepancies in Indications Approved by The U.S. Food and Drug Administration, European Medicines Agency, and Health Canada of Priority Review Products for the Period 2000-2015

Kholoud Ghazawi

Introduction: In industrialized countries, a wide array of information that is considered important for public health is being researched through one of the world leading agencies i.e. FDA, EMA, and HC which could consider the reference for other international agencies. However, it is obviously that the decision made by one regulatory agency about the approval indication of the same pharmaceutical product may differ from one country to another which may have a clinical impact on drug access and affect the availability of that drug for both clinicians as well as patients17. The purpose of this study is to examine how the treatment indications approved for priority review drugs differ and are similar in the three agencies that control pharmaceutical products legislation and approval procedures in the US, Europe, and Canada from 2000 through 2015.

Methods: Data about approved indications and their features were extracted from publicly accessible websites of the studied agencies. Descriptive statistics were conducted to describe the similarities and differences in indications features (restriction of use, outcome limitation, limitation of use) for each drug among the three territories.

Results: Thirty-eight priority review drugs (28.36%) noted to have different approved indications from one agency to another. Different indications were found in 33 drugs (24.63%) for EMA vs FDA, and 27 drugs (20.15%) for HC vs FDA or for HC vs

EMA. Approved indications could be more restrictive in one regulatory agency than another. In general, 79 (58.96%) drugs found to be more restrictive in their use in all three jurisdictions. We found that HC was the most restrictive agency in the intended use of a drug for 64 drugs (47.76%) compared to EMA and FDA for 62 drugs (46.27%), and 33 drugs (24.63%) respectively. Regarding the limitation of using a drug, we found 77 (57.46%) drugs have different in limitation of use of an approved drug across the three countries. Again, HC showed to be more limited in using a drug for an approved indication, for 101 (75.37%) drugs contrasted to 61 (45.52%) and 41 (30.60%) in FDA and EMA respectively. Variations in outcome limitation (i.e. limitations in the availability of drug safety and efficacy information for non-approved indications) were recorded for 75 drugs (55.97%) which have a limitation in data for using a drug for non- approved indication. Antineoplastic and Immunomodulating agent therapeutic classes represented to be the highest in terms of restriction of use, limitation of use, and outcome limitation.

Conclusions: Discrepancies in the number of approved indications was identified in one-third of the priority review drugs and biologics approved by the FDA, EMA, and HC. Also, significant differences were found in terms of restriction on a drug use, limitation of use, and outcome limitation across the leading regulatory bodies. These inequalities were influenced by the different behaviors and assessment of each drug authority. Stimulating factors leading to variations in the approval decisions need to be further investigated.

SA-15419

To Evaluate and Compare the Effect of Black Seed (Nigella Sativa) Extract on Memory, Learning, and Attention Deficit Ailments with the Standard Drug Methylphenidate

Reem Almashayekhi, Fatimah Alsofiani, Fayha Alosaimi, Manahil Alharthi, Maria Khan

Background: In the modern world, heavy application of electronic gadgets has made the daily life easier but also pose a detrimental effect on the human brain cells making them vulnerable towards electromagnetic radiations, causing learning and memory anomalies. using natural supplements can reduce the severity of the aforesaid problem. Black seeds are widely used in the Middle East but still lacking scientific evidences to be used in variety of disease.

Methods: The hot extraction method using Soxhlet was adopted for NS extraction. NS extract (500 mg/kg) was used to evaluate ADHD via behavioral models, comparing with Methylphenidate (0.5 mg/kg). Further, their alertness was evaluated using behavioral test namely Force swim test, dark light model, and manual Rota-wheel model. NS extraction was done in ethanol after defatting giving a yield of 4.04%.

Results: NS extract at the dose of 500 mg/kg has shown significantly increased immobility to 57.2 ± 6.4 secs in comparison to control at 33.10±4.3 sec ($p<0.05$) which was significantly near to Methylphenidate (0.5 mg/kg) 42.5±9.5 sec. In light and dark model, number of rearing from dark to light and vice versa were significantly increased in NS (500 mg/kg) to 47 ± 8 and closer to Methylphenidate (0.5 mg/kg) 57 ±5 ($p<0.01$) when compared to control. The enhanced activity was also confirmed in the manual rota-wheel model, where the rotation in NS (500 mg/kg) was found to be 22 ± 7 ($p<0.01$) in comparison to Methylphenidate (0.5 mg/kg) 31 ± 6 ($p<0.01$) and control 18 ± 4.

Conclusion and Recommendations: NS seeds extract proved to have a potent effect on ADHD when given at the dose of 500 mg/kg. Its bioavailability and efficacy can be increased using Novel drug delivery systems, which may impart an enhanced local CNS effect at low doses.

SA-16019

Biological Effects of Docetaxel-Loaded Polymeric Nanoparticles on Human Kidney Cells.

Hessa AlDuhailan, Alanoud Al-Qahtani, Aia Soltan, Raghad Qadadeh, Norah Albekairi.

Background/Purpose: Docetaxel (DTX) is a potent antineoplastic agent and nephrotoxicity secondary to DTX treatment has been recently reported in lung cancer patients, however the underlying mechanism is not known. Nanoformulation-based therapy is a promising approach towards overcoming drug toxicity. This study aims to formulate DTX-poly-lactic-co-glycolic acid (PLGA)-nanoparticles (DTX-NPs) and examine its biological effects on human kidney cells.

Methods: A calibration curve was constructed from 0.5 to 10 mg/mL of DTX using UPLC-UV-MS at 230nm. DTX-NPs were prepared by dissolving DTX and PLGA in acetone using a modified solvent displacement method. DTX-NPs were characterized for particle size, polydispersity index by High Performance Particle Sizer. Zeta potential was determined by Laser Doppler Velocimetry. The xCELLigence real-time cell analysis system was used to optimize cell titration for HEK293 cells, to measure DTX-NPs related toxicity.

Results: DTX validation method showed: linear relationship with R2=0.9989, retention time at 3.2min, LOQ at 0.3ppm, and LOD at 0.1ppm. DTX-NPs with different drug loading (1, 5, 10, and 15%) were characterized for particle size which ranged from (64 to 89nm) and (105 to 142 nm) and have a PDI range from (0.13 to 0.19) and (0.06 to 0.24) using 1mg/mL and 3mg/mL PLGA concentrations, respectively. All the nanoparticles have a zeta potential between (-46.2 and 24.1 mV). HEK293 cells optimal titration of 200,000 cells/mL was determined to measure DXT-NPs effect on proliferation. Human kidney cells (HEK293) showed the highest cell proliferation (~250.000 cell/well) when they were treated with DTX NPs of lowest polymer concentration (1 mg DTX 1% PLGA) with p-value <0.05.

Conclusion: DTX-NPs therapy may provide an alternative to conventional DTX therapy with lower nephrotoxic effects.

SA-16119

Development of Novel Polymeric Micellar DACHPt for Enhanced Platinum Based Chemotherapy in Colorectal Cancer

Abdulsalam Alharbi, Mohammed Vakili, Afsaneh Lavasanifar

Background/Purpose: The parent compound of oxaliplatin, dichloro(1,2-diaminocyclohexane)platinum(II) (DACHPt) is a potent chemotherapeutic agent with wide spectrum of anticancer activity, and no cross-resistance with cisplatin Incorporation of DACHPt in polymeric micelles may lead to changes in physiochemical properties as well as the pharmacokinetics profile of the drug, leading to a reduction in its unfavorable side effects; improved tumor accessibility and in vivo activity.

Method: Poly (ethylene oxide)-b-poly-(α-carboxylate-€-caprolactone) (PEO-b-PCCL) diblock copolymer was synthesized. Then, DACHPt was reacted with the polymer to form polymer-metal complex. The complex was dialyzed in water to prepare DACHPt loaded micelles. The average size of the micelles, complexed levels of DACHPt and platinum in vitro release from micelles was measured. ICP-MS was used to measure encapsulated and released Pt levels. MTTs assay was used to measure the cytotoxicity of DACHpt and DACHpt micelles against human colorectal cancer cell lines, HCT-116, SW-620 and HT29 for 24, 48 and 72 hours. The results were correlated to intracellular Pt levels.

Results: High drug loading was achieved reaching 50 % w/w (n=3) with a mean diameter size of 56 nm for DACHPt complexed micelles. The release profile of DACHPt from its micellar complex was sustained (only 53.6% of DACHPt was released by 120 h) compared to the free drug (96.5 % release at 7.5 h). The IC50s for both DACHPt-micelles and the free DACHPt decreased as the incubation time increased. However, the IC50 ranges were higher in DACHPt-micelles than the free DACHPt in all the three cell lines for all the incubation times. The cytotoxic drug levels were shown to be correlated with intracellular Pt levels.

Conclusion: Prepared micellar formulation of DACHPt has a high potential for targeted Pt delivery.

SA-16919

Enterolactone Modulates Cholesterol Trafficking in HepaRG Cells

Ahlam Hawsawi, Jane Alcorn

Background/Purpose: Cardiovascular disease (CVD) is a cause of significant morbidity and mortality world-wide. High blood cholesterol (HBC) is one of several non-genetic causes of cardiovascular disease (CVD), which doubles the chance of having heart disease. Life style changes and drugs (Statins mainly) are mainly advised by practitioners to manage cholesterol; however, there is an increasing shift towards safer alternatives such as natural products. Flaxseed supplementation may serve as an alternative natural product treatment for mild to moderate hypercholesterolemia or in combination to statins in severe conditions. Studies suggest a putative improvement in cholesterol blood profile following consumption of flaxseed; however, the underlining mechanism by which flaxseed lignan or its active metabolites modulate blood cholesterol level is not yet known. This study examines the possible underlying mechanism by which flaxseed lignans or the active metabolites may influence cholesterol trafficking in liver. In addition, possible concomitant administration of statins and flaxseed lignans raises a possible role of intestinal efflux transporter, multidrug resistance-associated protein 3 (ABCC3 or MRP3), and/or hepatic uptake transporters (OATP1Bs) in a potential important drug-drug interaction which cannot be ignored.

Methods: We studied the possible effect of flax lignan metabolites, Enterolactone (ENL) and Enterolactone glucuronide (ENL-Gluc), on hepatic trafficking of fluorescing cholesterol, using the HepaRG cell line as an in vitro liver model. We also screened for genetic modulation of INSIG-SREBP cholesterol genetic regulation pathway in liver cells after treatment with ENL and ENL-Gluc by screening some transcriptional changes in genes important in cholesterol metabolism and trafficking such as, INSIG-1, SREBP, HMGCoA-R and LDL-R. We used western blot analysis to confirm qPCR results. In addition, since organic anion transporter possess high impact on statin pharmacokinetics, a possible interaction was investigated by studying the inhibitory effect of ENL and ENL-Gluc on the uptake of organic anion transporting polypeptides 1B1 and 1B3 substrate (fluorescein Methotrexate-FMTX) in HEK293 cells overexpressing human OATP1B1 & OATP1B3 transporters.

Results: Both ENL and ENL-Gluc treatment minimized uptake of fluorescent cholesterol into hepatocyte. In comparison to vehicle control treated with 1% DMSO only, treatment with 20 μM ENL and 20 μM and 40 μM ENL-Gluc reduced cholesterol uptake by 1.78, 1.96 and 2.11 fold, respectively. This was confirmed by observing a surge in NBD-cholesterol retention in endoplasmic reticulum (ER) following treatment with different concentrations of ENL and ENL-Gluc. In addition, in a preliminary evaluation a concentration dependent inhibition by ENL-Gluc on OATP1B1 and OATP1B3 transporter mediated liver uptake of FMTX was observed at levels comparable with alternative inhibitors described in the literature.

Conclusion: We reported that flaxseed lignan ENL and its active glucuronidated form are suggested to be responsible for the modulation effect on cholesterol homeostasis and trafficking observed in HepaRG cells. Both ENL and ENL-Gluc showed a reduction in cholesterol uptake and an increase in cholesterol surge into the endoplasmic reticulum which involved downregulation of HMGCoA-R and LDL-R, and upregulation of SREBP-2, proteins of sterol sensing domain (SSD). This effect is apparently mediated via the active glucuronide form of ENL, which showed an inhibitory effect on OATP1B1 and OATP1B3 hepatic uptake-mediated statin transport. Further in vivo investigation is necessary to confirm the altered effect of lignans on cholesterol transport and metabolism as well as the inhibitory effect on OATP hepatic uptake transporters

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SA-17319

Tumor Hypoxia Targeting Nanoparticles for Overcoming Drug Resistance in Renal Cell Carcinoma

Hashem Alsaab, Samaresh Sau, Rami Alzhrani, Arun Iyer

Introduction: Tumor hypoxia, a low oxygen abundance and poorly vascularized condition, contribute towards drug resistance, cancer stemness and metastasis. It has been reported that carbonic anhydrase (CA IX), a clinically validated hypoxia marker is overexpressed in ~95-99% of primary and metastatic renal cell carcinoma (RCC). In the clinics, drug resistant RCC is a challenging phenomenon. To overcome the RCC drug resistance, we used a small molecule apoptosis inducer called CARP-1 functional mimetic (CFM) compound (C-4.16) as a single agent therapy or in combination with a multi-kinase inhibitor, sorafenib. The current study is focused on multimodal approaches, including (a) synthesis and nano-formulation of hypoxia targeting-C-4.16 oligomicelles (OMs) using copper-free 'click' chemistry; (b) assessment of anticancer effect of hypoxia targeting-C-4.16 in resistant RCC cellular and animal model; (c) finding mechanistic pathway to overcome drug resistance and CA IX selective tumor hypoxia imaging.

Methods: We have developed various RCC cell models to demonstrate the resistance of conventional therapy. We performed varying drug combination regimens to target mTOR using everolimus, and VEGFR using sorafenib. Physio-chemical characteristics of the OMs were evaluated by dynamic light scattering (DLS) and TEM. In vitro cell growth inhibition assays were performed using CA IX specific oligomer in drug resistant A498 RCC cells expressing CA IX marker. Tumor spheroid uptake study with hypoxia-targeting oligomer was performed to investigate the tumor core penetration ability of the oligomer. In vivo therapeutic efficacy and biodistribution were examined in mice bearing subcutaneous RCC tumors and immune histology (IHC) study of the isolated tumor was performed to determine the mechanism of anticancer effect.

Results: Tumor spheroid uptake study clearly demonstrated the excellent tumor core penetrating ability of hypoxia-targeting oligomer, which is a critical parameter for tumor stromal disruption. The combination of C-4.16 and sorafenib has shown superior synergistic cell killing in resistant RCC, which is associated with activation of caspase 3/7 protein and complete destruction of pAKT. Hypoxia targeting oligomer allows the selective targeting and antitumor therapy of RCC that significantly support development of personalized cancer nanomedicine.

Conclusion: The significant tumor accumulation of the hypoxia targeted OMs suggests potential applications in the treatment and diagnosis of resistant RCC patients. The engineered OM formulation would have an immediate and direct impact on developing newer therapies for treating RCC in the clinics.

SA-17619

Dual Mechanism of Action Technique in Formulation and Characterization of Simvastain Mucoadhesive Buccal Films

Alaa Bawazir, Tarek Abd Elnapy, Bader Aljeaid

Background: Simvastatin (SIV) is a lipid-lowering agent which is characterized by having low aqueous solubility and low oral bioavailability (5% bioavailability due to the intensive first pass metabolism).

Aim: The aim of the research based two objectives: enhancing the drug's solubility using a dual mechanism of action technique (two drug delivery carriers) and improving the drug's bioavailability by formulating SIV in buccal films to bypass the hepatic action.

Methods:

1. Complexation of SIV with a hydrophilic carrier: Several types of hydrophilic polymers were tested to investigate the most suitable carrier that improves the solubility of SIV effectively. A drug-carrier complex of Hydroxypropyl Beta-cyclodextrin (OH-propyl ß-CD) was prepared in a molar ratio (1:2).

2. Characterization of the prepared complex: Phase solubility study, dissolution study, and cell-line permeation study were conducted to ensure its effectiveness.

3. Mixed Micelle (MM) formation: The drug incorporated into MM in nanoscale carriers composed of phosphatidylcholine and sodium deoxycholate in a ratio of (1:0.8).

4. Loading of the two carriers into mucoadhesive buccal films: The dual mechanism carriers (complex and MM) will be loaded into a mucoadhesive buccal film using HPMC and Carpabol 974 as a film forming polymer and a mucoadhesive polymer respectively applying an Optimization Statistical Analysis.

5. Films Characterization studies have analyzed followed by in-vivo study.

Results:

1. (SIV- OH-propyl ß-CD) complex demonstrated the highest degree of SIV's solubility.

2. The results of complex characterizations achieved a remarkable difference in its adequacy.

3. The results of the drug incorporation into MM in nano-scale carriers revealed significant progress in SIV's solubility.

4. HPMC and Carpabol 974 produced a smooth and transparent film with adhesive proprieties capable to load the two drug-carriers.

Conclusion: Formulating Simvastatin in mucoadhesive buccal films is a promising approach that will amplify the efficacy and bioavailability of the drug significantly.

SA-18219

Preparation and Optimization of Long Acting Rosuvastatin Injection Utilizing Poly(Lactide-Co-Ɛ-Caprolactone)

Mohammed Mussari, Tarek Ahmed

Background/Purpose: The rationale behind this work was development of optimized Injectable in situ gelling Rosuvastatin (RSV) formulation characterized by minimum initial drug burst. Injectable in situ gelling systems show increased initial drug release (initial burst) which may result in toxic levels of the drug.

Methodology: Different formulations were developed using a combination of both surfactant & plasticizer to minimize the accompanied initial drug burst. Different formulation factors were screened during the optimization which were poly(lactide-co-Ɛ-caprolactone) (PLCL) concentration (X1), PLCL type (X2), molecular weight of polyethylene glycol (PEG) (X3), PEG concentration (X4), surfactant concentration (X5) and surfactant Hydrophilic-Lipophilic Balance HLB (X6). The independent variables were the initial burst of ATR after 0.5 (Y1), 2 (Y2) and 24 hours (Y3). 12 formulations were prepared, and dissolution test were conducted for 24 hours.

Results: The in vitro release data particularly those for the release after 0.5, 2 and 24 hours were inputted to the software and analyzed, which showed that the initial burst was affected significantly by PLCL concentration, PLCL type and surfactant HLB value.

Conclusion: PLCL concentration, PLCL type, and surfactant HLB value are the factors to be optimized.

SA-18819

Influence of Pravastatin Chitosan Nanoparticles on Erythrocytes Cholesterol and Redox Homeostasis: An in Vitro Study

Gamaleldin Harisa

Purpose: The objective of this study was to develop and characterize chitosan nanoparticles (CSNPs) to increase efficacy of pravastatin (PR) on erythrocytes redox status.

Methods: CSNPs and PR loaded CSNPs (PRCSNPs) were prepared by ionic gelation method. The particle size, zeta potential, scanning electron microscopy (SEM), differential scanning calorimetry (DSC), Fourier-transform infrared (FTIR) and X-ray diffraction (XRD) were used to investigate physicochemical characters of the prepared nanoparticles.

Results: The present results revealed that CSNPs and PRCSNPs have nanosize about 90 nm with spherical shape, positive zeta potential and prolonged PR release. Moreover, DSC and FTIR indicated no chemical interactions between PR and CS. In vitro studies revealed that, erythrocyte uptake of PR from PRCSNPs was higher than free PR solution. Incubation of erythrocytes in high cholesterol plasma, hypercholesterolemia (HC), increases membrane cholesterol, erythrocyte hemolysis, oxidized glutathione (GSH), protein carbonyl (PCC), and malondialdeyhe (MDA). However, HC significantly decreases PR uptake by erythrocytes, superoxide dismutase (SOD), glutathione peroxidase (GPx) catalase (CAT) activities, reduced GSH and nitrite levels compared to control. By contrast, treatment of HC with PR plus CS as free drug or nanostructure formula keeps the measured parameters at values near that of control. The effect of CSNPs and PRCSNPs on redox status of erythrocytes was more prominent than free drugs.

Conclusion: PRCSNPs are promising drug carrier to deliver PR into erythrocytes, moreover, PRCSNPs possess promising characteristics with high biological safety for treatment of HC induced disruption of redox homeostasis.

SA-19519

Anti-Metastatic and Anti-Proliferative Activity of Eugenol Against Triple Negative and HER2 Positive Breast Cancer Cells

Mashan Aldlamy, Mohamed Hafez, Ali Al-Hoshani, Othman Al-Shabanah

Background: Eugenol is a natural phenolic compound and possesses anticancer and antibacterial activities. Breast cancer is a major global health problem, and most of the chemotherapeutic agents are highly toxic with long-term side effects. Therefore, this study aimed to explore the possibility of using eugenol as an anti-metastatic and anti-proliferative agent against MDA-MB-231 and SK-BR-3 breast cancer cells.

Methods: Breast cancer cell lines MDA-MB-231 and SK-BR-3 were treated with eugenol and cell proliferation was measured using a real-time cell electronic sensing system. Annexin V analysis with flow cytometry was used to detect the effect of eugenol on cell death. In MDA-MB-231 and SK-BR-3 cells, metastatic potential after eugenol treatment was examined using a wound-healing assay. Real-time PCR was used to study the effect of eugenol on the expression of anti-metastatic genes such as MMP2, MMP9, and TIMP-1, and genes involved in apoptosis including Caspase3, Caspase7, and Caspase9.

Results: Treatment with 4 μM and 8 μM eugenol for 48 h significantly inhibited cell proliferation of MDA-MB-231, with an inhibition rate of 76.4%, whereas 5 μM and 10 μM of eugenol for 48 h significantly inhibited the proliferation of SK-BR-3 cells with an inhibition rate of 68.1%. Eugenol-treated cells showed significantly decreased MMP2 and MMP9 expression and an insignificant increase in TIMP1 expression in HER2 positive and triple negative breast cancer cells. Eugenol significantly increased the proportion of MDA-MB-231 and SK-BR-3 cells in late apoptosis and increased the expression of Caspase3, Caspase7, and Caspase9.

Conclusion: To the best of our knowledge, this is the first study to describe the anti-metastatic effect of eugenol against MDA-MB-231 and SK-BR-3 breast cancer cell lines.

SA-20319

Anticonvulsant and Anxiolytic Properties of the Leaves Extracts of Cymbopogon Proximus

Maisa Ibrahim

Objectives: This study was conducted to evaluate the anticonvulsant and the sedative anxiolytic activity of the leave extract of Cymbopogon proximus in rats.

Materials and methods: The ethanolic extract of the root of C. proximus at (200, 400 and 800 mg/kg, i.p was studied for its anticonvulsant effect on four in vivo rat models (Maximal Electroshock Seizure (MES), Pentylenetetrazole (PTZ)-, picrotoxin (PIC)- and Strychnine (STR) - induced seizures). Simple activity meter was used for the evaluation of the anxiolytic properties. Sodium valproate (400 mg kg) was

used as a reference anticonvulsant drug for all models. The protection from tonic convulsions and the number of protected animals from seizures were noted. The numbers of movements between the squares in the activity meter were counted in the consecutive 5 minutes and the motor activity were observed.

Results: The plant showed marked sedative - anxiolytic effect and significant decrease in the motor activity ($p< 0.001$) since the first dose (200 mg/kg) in a dose-dependent manner. The doses 400 and 800 mg/kg of the extract significantly ($p < 0.01 – p < 0.05$) reduced the duration of seizures induced by maximal electroshock (MES), PTZ and picrotoxin (PIC) while only the dose of 800mg/kg of the extract delayed the onset of tonic-clonic seizures produced by strychnine.

Conclusion: Results of the present study concluded that the ethanolic extract of Cymbopogon proximus leaves possesses strong sedative properties with moderate anticonvulsant and anxiolytic activity. So, it is recommended for the treatment of insomnia, anxiety in case of epilepsy.

SA-21619

Development of Buccal Fast Disintegrating Tablets Containing Nanosystem of Limited Permeability Drug

Hadel Abo El Enin

Background: Poorly buccal-permeability and limited water-solubility drugs consider challenges in developing buccal-formulations with adequate bioavailability. This study took advantage of nanoparticles size and permeability enhancing effect to develop novel zolmitriptan (Zl) buccal fast-disintegrating tablets (FDTs).

Method: Different permeability enhancers (PE) were used to study their effect on Zl's in-vitro release and permeability. Zl- nanosuspensions (Zl-NS) prepared using the selected PE, which further converted into dry-nanoparticles (Zl-NP). Zl-NP included in the composition of Zl-fast dissolving tablets (Zl-FDTs) which prepared by direct-compression method. Tablets were evaluated for in-vitro/in-vivo disintegration-time (Dt), dissolution and ex-vivo permeation tests then studying the storage effect.

Results: PE increases the Zl dissolution-rate (T95% after 5min) and enhances its transport through the buccal mucosal-membrane two folds (EF=2.11). Using 1%w/w PE produces the lowest Zl-NS particle-size (≈250nm). Lyophilizations drying method is the suitable drying method to produce NP from NS. Zl-NPs' tablets containing mannitol as diluents, avicel-PH102 as a binder and Ac-Di-Sol as super-disintegrant considered the suggested formula. They have short in-vitro and in-vivo Dt; 36, 44 secs respectively, rapid release rate; >70% within the first 1 min and stability for twelve months at 25°C and 75%RH.

Conclusion: This study illustrated a novel approach to combine nanoparticles-features and permeability enhancing effect in improving buccal-permeability and absorption of poorly-soluble drugs.

SA-24719

Nanoliposomes Loaded with MicroRNA-1296 for Suppression of Triple Negative Breast Cancer

Lamyaa Albakr, Fulwah Alqahtani, Fadilah Aleanizy, Abdullah AlOmrani, Mohamed Badran

Background/Purpose: Triple negative breast cancer (TNBC) is an aggressive subtype of breast tumors due to lack of the important breast cancer therapeutic targets. TNBC patients suffer from poorest prognosis with median overall survival rate of less than two years. There is an urgent need to identify novel therapeutic entities to treat TNBC. Functional studies reported microRNA-1296 (miR-1296) to be down-regulated in different TNBC cell lines and tissues. Restoring miR-1296 in TNBC cells resulted in suppression of tumor growth and induced apoptosis. The present study aims to encapsulate miR-1296 in non-viral nanodelivery system, and evaluate it with regards to cellular uptake, in vitro viability, apoptosis, and potential chemotherapy sensitization.

Methodology: Cationic nanoliposomes loaded with miR-1296 (NL-miR-1296) were prepared using thin film hydration method. Ribogreen Quant-iT kit was used to test the encapsulation efficiency of miR-1296 inside nanoliposomes. For in vitro viability studies, Alamar Blue kit was utilized to assess the effect of NL-miR-1296 on TNBC cell line isolated from metastatic pleural effusion (MDA-MB-231). Chemotherapy sensitization study performed on cisplatin as an established TNBC resistance drug. Protein analysis was done to validate apoptosis and down expression of miR-1296 receptor.

Results: Average particle size of prepared nanoliposomes was 116+/-9 nm, with polydispersity index of 0.231+/-0.013. Highest encapsulation of miR-1296 inside nanoliposomes achieved in nitrogen to phosphate ratio of 3:1 and yielded 94.33%. Cell viability assay reported LD50 of 0.176 uM of NL-miR-1296 compared to 61 uM using commercial transfection agent. A dose of 3X the LD50 (0.5 uM) was found to significantly reduce the viability ($P<0.001$). This was validated by down-expression of CCND1, and PARP1, the miR-1296 receptor and apoptosis marker, respectively. Fluorescently labelled miR-1296-cy3 imaging showed cytoplasmic intracellular localization. It is found that NL-miR1296 sensitize the TNBC cell line to cisplatin ($P<0.001$).

Conclusion: Current study reported NL-miR-1296 as promising novel cancer therapeutic that act on TNBC cell proliferation, apoptosis, and chemotherapy sensitization. Future in vivo research may answer questions concerning safety and stability

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Students Abstracts

SA-01119

Determination of Parabens and Bisphenol A in Personal Care Products Marketed in Saudi Arabia Using Solid Phase Extraction Coupled to High Performance Liquid Chromatography Mass Spectrometry

Wejdan Al-Hajri, Heba Shaaban, Ahmad Mostafa

Background: Personal care products are widely used among males and females of different age groups. These products may contain harmful chemical compounds known as endocrine disruptors e.g. Parabens and bisphenol A. Endocrine disruption occurs as these products can interfere with normal hormonal function. No data is available regarding the concentration of endocrine disruptors (paraben and bisphinol A) in the products marketed in Saudi Arabia. The objective of this study is to provide a baseline database to determine the content of these chemicals in different personal care products, such information is crucial for exposure and risk assessment.

Method: A green fast HPLC-MS method has been developed for the analysis of endocrine disruptors in 40 personal care products marketed in Saudi Arabia. Solid phase extraction was used for sample preparation.

Results: Among all parabens, methylparaben was the most frequently found paraben (75.5% of the samples), Ethylparaben was found in (40% of the samples), probylparaben was found in (22.5% of the samples), benzylparaben was not detected in any of the samples and bisphenol A was the least chemical found in the tested samples.

Conclusion: Among all tested samples the determined chemical concentrations were not exceeding the established but not all producers disclose the ingredients to the consumer.

SA-01319

Thymoquinone and Fluoxetine Alleviate Depression Via Attenuating Oxidative Damage and Inflammatory Markers in Type-2 Diabetic Rats

Ammar Masmali, Mohammed Safhi, Hiatham Qumary, Mhammed Alam, Gyas Khan, Tariq Anwer

The study was designed to find out the effect of thymoquinone (TQ) alone and combination of TQþfluoxetine in depression of type-2 diabetic rats. Glucose level was significantly decreased in TQ alone treated group, whereas no significant change was recorded when TQ was combined with fluoxetine. Administration of TQ alone and combination of TQ and fluoxetine significantly decreased immobility time, increased latency to immobility and increased locomotor activity. Treatment with TQ alone significantly decreased level of TBARS, increased GSH and restored the activities of antioxidant enzymes (GPx, GR & CAT). However, TQ and fluoxetine combination reduced TBARS level, increased GSH content but no change in the antioxidant enzymes activities. Inflammatory markers (IL-1b, IL-6 & TNF-a) levels were significantly reduced after the administration of TQ alone and TQ þ fluoxetine. The study suggests that combination of TQ and fluoxetine can be used to control depression in type-2 diabetes mellitus.

SA-02819

Febuxostat Transdermal Patch Based on Self-Nanoemulsifying Drug Delivery System to Enhance Skin Permeability In-Vitro and Ex-Vivo

Shahad Alotaibi, Bader Aljaeid, Enas Almohammadi, Raghad Aljehany, Osama Fahmy

Introduction: Febuxostat (FBX) was approved to treat hyperuricemia via inhibition of xanthine oxidase enzyme which prevents formation of uric acid. The bioavailability of FBX is (49%) leading to a low solubility and first pass metabolism. The aim study is to improve FBX bioavailability by enhancement its solubility using self- nanoemulsifying drug delivery system (SNEDDS) technique in the form of transdermal film to avoid hepatic metabolism.

Methodology: Solubility study was carried out in different oil, surfactant and co-surfactant to determine the highest FBX solubility using spectrophotometer at 345 nm. Eight SNEDDS formulae of different selected ratios of oil, surfactant and co-surfactant were formulated, globular size was then measured, and ternary phase diagram was constructed to reach the optimum ratio that gives the smallest globular size. After that, the selected formula was poured into 1.5 and 1% hydroxyl propyl methyl cellulose (HPMC)and Hydroxy propyl cellulose (HPC) solutions, respectively, to select the suitable film based on physical appearance. Diffusion study was conducted using Franz cell apparatus. Moreover, FBX-SNEDDS permeation in rat skin was imaged using florescent microscope.

Results: The highest FBX solubility was found in lemon oil (3148.978 mg/ml), Tween 20 (56.06132 mg/ml), and PEG400 (182.8223 mg/ml). SNEDDS droplet size ranges were from 165 to 956 nm, and the selected formula was composed of 30% oil, 20% surfactant and 50% co-surfactant.1.5 % HPMC showed a flexible transdermal patch. Diffusion study over 24 hours showed a great enhancement in release from SNEDDS (90%) compared with raw FBX patch (30%). Finally, the images of microscope confirmed enhancement in release.

Conclusion: Formulation of FBX SNEDDS is a successful way to improve solubility and skin permeability that would reduce adverse effects leading to improve patient's compliance.

SA-04719

Development and Evaluation of Gastro-Retentive Sodium Alginate Floating Gel Beads: In-Vitro Evaluation and Stability Study

Mahmoud Alali, Turki Alazmi, Naif Albalawi, Ameeduzzafar, Abdulaziz Alzarea

Background: Gastro-retentive dosage forms have potential to stay dosage form and release drug in the stomach. There are Many approached to retention of drug in the stomach, in which floating dosage form is one of most appropriate method to achieve prolong gastric retention time provide opportunity for both local and systemic drug action. Multiple unit system avoids to all or nothing gastric emptying nature of single unit system. Paracetamol is anti-inflammatory drug used to treat the fever used as model drug.

Method: Modified emulsion gelation method was employed for preparation of oil-entrapment calcium alginate gel beads. Different concentration of polymer and oil (mineral oil) used for preparation of bead. The gel beads were prepared, washed with distilled water and dried at 40◦C in tray drier till constant weight. Gel beads were evaluated for beads size, morphology, floating lag time, drug loading, entrapment efficiency, Differential Scanning Calorimetry (DSC), swelling invitro release and kinetic release model.

Results: The optimized bead have size, floating lag time, drug loading, entrapment efficiency, 1.0175±0.0026 with spherical in shape, 7min, 37.86%, 82.36% respectively. DSC graph show the paracetamol dispersed in to beads. The optimized batch showed more than 90 % in 12h with zero order through swollen matrix and relaxation of polymer at pH 1.2. Self life of bead was found to be 2.2yeas with very slow degradation (<5%).

Conclusion: It concluded that floating alginate bead promising drug delivery system, at reduced dosing frequency, reduced adverse effect and enhance bioavailability of drug.

SA-06419

LC/MS Analysis for Measurement of the Acetate Contents in Pharmaceutical Peptide

Eman Alshmmeri, Rani Qasema.

LC-MS/MS is a novel method which can measure the acetate content in different pharmaceutical peptides, as well as amino acids sequence, mass, and purity. The objective in this study is to assess the sensitivity and specificity of the LC-MS/MS method in comparison to HPLC method in measuring the acetate content in Cetrolix, which is the drug used as synthetic deca-peptide with gonadotropin releasing hormone (GnRH) antagonist effect. We studied the acetate content in injectable cetrorelix by the two methods (HPLC and LC-MS/MS). In LC-MS/MS method, Cetrolix was the active pharmaceutical ingredient (API) and formic acid was the solvent. The method uses gases to run the experiment with added C13 labeled acetate. 12 samples were prepared containing 10 ug/ml C13 and 1 ml C12 acetate with different API concentrations. LC-MS/MS method require to switch the ionized mode into a negative mode in order to measure the acetate content, then switch it to positive mode in order to detect other impurities. In the LC-MS/MS method average concentration for acetate is 0.0810 and 0.0836 in milligrams per vails for all samples, which were similar in both methods with recovery percentage accuracy 98.8%. The method was linear for acetate concentrations with a coefficient of determination (r2) equal to 0. 9997. The relative error of the calculated concentrations and actual ones were less than 5% for all reading. According to the chromatogram, the drug purity is 95%. In addition, the calculated molecular weight was equal to 1429.5 g/mol. Acetate peak retention time was 7.5 min using the HPLC method compared with 13 minutes using the LC-MS/MS. LC-MS/MS method is multiplexed method that help collecting quality criteria required in regulatory submissions such as the FDA in a single experimental setting. As a result, this helps in minimizing the cost and save time and effort.

SA-06519

Nutraceuticals as Potential Therapeutic Agent; An Evidence Based Clinical Review (2012-2018)

Wejdan Al-Anaki, Rizwan Ahmad, Fatimah Ismail

Background: Nutraceutical, bioactive materials isolated or purified from foods, are utilized in medicinal form to prevent and treat various ailments. As an emerging field, growing interests from people as well as more clinical trials have been reported regarding nutraceuticals.

Aim of study: To evaluate the current clinical status for nutraceuticals in terms of its therapeutic potential.

Methodology: A retrospective seven (07) years review was conducted using the keywords; clinical status/clinical trials/ clinical cases in nutraceuticals, uses of nutraceutical agents, current status of nutraceuticals, nutraceuticals in diseases etc. while utilizing different databases/journals and books such as; web of science, Scopus, PubMed, Science direct, Complementary therapies in clinical practice, Neurological Sciences, Advances in therapy, The American journal of cardiology, Nutrients, Wiley online library, Bio med central (BMC Complementary and Alternative Medicine), Journal of Intercultural Ethnopharmacology, Current Therapeutic Research and Advances in therapy etc.

Results: More than fifty (50) clinical cases/trials were found in the mentioned retrospective years whereby a wide scope for nutraceutical in terms of its use as well as research was observed. The extracted data from these clinical trials reveals a significant utilization of nutraceuticals for different health-related conditions such as; hyperlipidemia, hypertension, cardiovascular problems, Alzheimer disease, asthma, osteoarthritis, prevention and treatment of cancer, obesity, diabetes and infertility etc.

Conclusion: The amount of research been done regarding nutraceuticals as well as various application of nutraceuticals in terms of treating different diseases, have increased its demand.

SA-07119

Physicochemical and Microbiological Stability of Phenytoin Sodium Extemporaneously Compounded Suspension in Saudi Arabia Hospitals

Abdullah Alsaedi, Sameh Ahmed, Abdulmlik Alqurshi, Yaser Alahmadi, EL-Sayed Habib

Background: This study aimed to assess the physical, chemical and microbiological stability of the extemporaneous suspensions of Phenytoin sodium when stored at temperatures mimicking the harsh climate of Saudi Arabia.

Methodology: Phenytoin sodium suspension (20 mg/mL) was prepared by suspending capsule's contenting a mixture of dextrose (50% w/v) and water (2:1), filled into plastic prescription bottles, and stored at 4ºC, 25ºC, 40ºCand 54ºCfor up to 32 days. Physical characteristics, including color, odor, pH, viscosity and sedimentation volume were tested on a weekly basis. Chemical stability was tested by a validated reverse phase HPLC assay, using a mixture of acetonitrile and 10 mM phosphate buffer (pH=3.5) (40:60) as a mobile phase, while monitoring effluent at 220 nm. Following the United States pharmacopeia, the suspension was considered stable if drug content was maintained at ≥95%. Microbiological stability was also evaluated.

Results: The suspension showed no remarkable changes in pH, color, odor or sedimentation volumes after 16 days of storage at 4-25ºC.However, storage at 40-54ºC caused a prominent caramelization in color and odor, as well as observable caking and clumping of suspended particles. Drug content remained ≥ 95%when stored in the range of 4-25ºC for 16 days. Storage at 40-54ºC, for 8 or more days, have shown to cause drug loss of >5%, thus failing the USP limits. Microbial examination showed to be unaffected by high temperatures throughout the storage period.

Conclusions: Phenytoin sodium (20 mg/mL) suspension was stable for a period of up to 16 days when stored between 4 and 25ºC. Avoiding exposure to temperatures >25ºC is strongly recommended to ensure physical and chemical properties intact.

SA-07919

Design and Evaluation of Fast Dissolving Acetaminophen Tablets

Suliman Alabed, Abdulaziz Alzarea, Rayed Alnusair, Fahad Alsharari, Muhammad Ahmad

Background: Fast dissolving/melting, chewable and orally dissolving/disintegrating tablets are solid dosage forms that disintegrate rapidly and dissolve in the oral cavity without consumption of water. These tablets improve bioavailability, reduce dosing frequency, minimize the side effects and are cost-effective. The tablet disintegration is an essential step for fast drug release. Herein, we manufactured fast dissolving (FDT) acetaminophen tablets by using Plantagoovata seeds husk and alginate as superdisintegrants.

Method: Four batches of tablets were manufactured by direct compression method using single punch machine. Table formulations were consisted of acetaminophen (125mg), superdisintegrants (different concertation), mannitol as compression enhancer, magnesium stearate (lubricant) and talc (glidant). Pre- and post-compression tests were performed to evaluate suitability of the formulations.

Results: The results of Pre-compression tests suggested that powder blends possess excellent flow and compressibility, for preparation of tablets by direct compression, having Carr's index from 13-17, Hausner's ratio from 1.10-1.20, angle of repose from 29.25-32.10°. In post-compression tests, all FDTs formulations exhibited good mechanical properties having weight variation in the range of ±7.5%, thicknesses from 3.58-3.94 mm, hardness between 3.2-3.7 kg/cm2 and friability < 1.0% W/W. Moreover, the drug contents of FDTs were also within acceptable limit (99-102%) and disintegration & dissolution times were found to be less than 39 secs and 30 min, respectively.

Conclusion: Manufactured acetaminophen FDTs disintegrated and dissolved within the time specified in pharmacopeias. Among the tablet formulations F4 formulation exhibited best results. The findings of this study suggest that Plantago ovata seeds hsuk and alginate are promising material to replace superdisintegrants FDTs formulations.

SA-08019

Whole Exome Sequencing Identifies Novel Genes Associated with Hereditary Spastic Paraplegias among Saudi Patients

Ashwag Alyousef, Lama Aldawsari, Maha AlRasheed, Namik Kaya, Rawan Al-Mass

Background/Purpose: Hereditary Spastic Paraplegias (HSP) are diverse group of neurodegenerative disorders characterized by progressive dysfunction in the lower extremity and spasticity. In this study we aimed to identify disease causing mutations in Saudi HSP patients.

Methodology: Two consanguineous families with three affected individuals sharing the classical symptoms of HSP were included in the study at King Faisal Specialist Hospital & Research Centre. Peripheral blood samples were collected from the patients and family members. DNA was isolated and used for a comprehensive genetic analysis that included targeted gene panel screening, whole exome sequencing (WES), confirmatory Sanger sequencing for family segregation and comprehensive in silico bioinformatics analyses.

Results: The DNA was screened using a comprehensive neuropanel that included previously reported HSP genes and mutations. The screening did not yield any positive results in the patients. Then, we performed autozygosity mapping based on the genome-wide screening of loss of heterozygosity in the affected individuals using a comprehensive SNP genechip array. Concurrently, we run WES in the DNA from the index cases in each family. Our comprehensive filtering of WES coupled with autozygome and in silico bioinformatics analyses resulted in a few putative pathogenic variants in genes that were not previously linked to HSP. Segregation analyses

using Sanger sequencing confirmed the likely involvement of the variants. In the family 1, a missense variant (c.2324 C>T, p.P775L) was identified in KIAA1024 whereas in the family 2, another missense variant was found in SQSTM1 (c.571 G>A, p.G191R) that has been previously linked to ataxia but not to HSP.

Conclusion: We discovered likely disease-causing novel genes and variants that were not previously associated with HSP. Our work will create opportunities for genetic testing for diagnostic screenings for HSP in Saudi Arabia and may also facilitate acceleration for gene therapies and drug development for HSP in the future.

SA-08119

Ellagic Acid Nanocapsules: Enhancement of Oral Bioavailability and Anti-Cancer Bioactivity

Mohammed Alawaz, Fatma Mady, Mohamed Shaker

During the last decades, a lot of clinical investigations have demonstrated the therapeutic relevance of Ellagic acid (EA) as a naturally occurring bioactive antioxidant in cancer therapy. Despite of that fact, few studies have been reported for the effective strategy for enhancing its limited oral bioavailability. In this study, we formulate EA as loaded biodegradable nanocapsules (EA-NCs) as a trial to improve its bioavailability as well as bioactivity after oral administration. We select poly ε-caprolactone (PCL) as the biodegradable polymer for the preparation of EA-NCs through the emulsion-diffusion-evaporation method. The prepared nanocapsules have been characterized through measuring the following: particle size and zeta potential; FTIR; DSC; and XRD. The EA encapsulation efficiency and the release pattern were determined. In vitro cytotoxicity and cellular uptake of the prepared nanocapsules were examined using HCT-116 and Caco-2 cell lines, respectively. Furthermore, in vivo study has been done to determine the oral bioavailability of EA-NCs compared to free EA, using New Zealand rabbits. Nanocapsules with distinct spherical shape were prepared with high loading and encapsulation efficiencies. EA shows diffusion driven release from the obtained nanocapsules. HCT-116 cells treated with EA-NCs demonstrated relatively less cell viability compared to those cells treated with free EA. The cellular uptake and the efficient localization for EA-NCs were detected in the nuclear region of Caco-2 cells through the fluorometric imaging. In-vivo study revealed that oral administration of EA-NCs produces 3.6 times increase in AUC compared to that of EA. From these results, it can be concluded that incorporation of EA into PCL as nanocapsules enhance its oral bioavailability and anticancer bioactivity.

SA-10119

Folate-Conjugated Cholic Acid-Polyethylenimine Micelles as Potential In Vivo Carriers of Doxorubicin and Sirna to Tumor Cells

Saif Alkhaldi, Muhammad Wahab

Background: Multi drug resistance poses a great challenge in treating several cancers.

Methodology: In order to improve the targeting and co-delivery of doxorubicin and small interfering RNA (siRNA), we conjugated cholic acid-polyethylenimine polymer with folic acid (CA-PEI-FA) to integrate an anticancer effect and to overcome multidrug resistance.

Results: CA-PEI-FA exhibited high entrapment efficiency for doxorubicin (61.2% ± 1.7%, w/w) and siRNA. About 25.0% doxorubicin was released at pH 7.4 after 24 h, whereas more than 30.0% release was observed at pH 5. The D-CA-PEI-FA and D-CA-PEI-FA-S micelles inhibited in vivo growth of tumor. No significant difference in their in vitro cytotoxic activity or in vivo antitumor effect was observed. It can be stated that the presence of folate enhanced the activity of micelles whereas the siRNA co-loading did not exhibit a significant increase in the antitumor activity of D-CA-PEI-FA micelles. The D-CA-PEI-FA-S micelles exhibited the highest in vivo anti-tumor effect resulting in an average tumor volume of 223 mm3 in 20 days. Histological analysis revealed that the tumor tissue from the D-CA-PEI-FA-S-treated groups showed the lowest cancer cell density but the highest level of apoptosis and necrosis. The liver of mice treated with D-CA-PEI-FA-S micelles exhibited the lowest level of dihydropyrimidine dehydrogenase (DPD, 1174.6 ng/mg). The highest anti-vascular endothelial growth factor (VEGF) activity/the lowest VEGF concentration (24.4 pg/mL) was affected by D-CA-PEI-FA-S micelles co-loaded with siRNA encoding against VEGF (D-CA-PEI-FA-SV).

Conclusion: The results concluded that the developed nanoconjugate CA-PEI-FA has potential for targeted co-delivery of drugs and siRNA.

SA-10319

Ketamine Pharmacokinetics and Dosage Regimen Optimization in Pediatrics

Mohamad Al-Nuwayfi, Fahd Al-Ruwaili, Abdulkareem Al-Anzi, Nabil Al-Ruwaili, Mohammed Elkomy

Background/Purpose: Ketamine is a phencyclidine derivative which functions primarily as an antagonist of the N-methyl D-aspartate receptor. Even though it is approved for sedation of children prior to surgical interventions, its use for induction and maintenance of anesthesia is limited to adults. The aim of this investigation was to apply a pharmacokinetic modeling and simulation approach to test adult anesthetic doses in pediatrics in order to prescribe an optimal dosage regimen in this population.

Methodology: A non-compartmental method was used to estimate Ketamine PK parameters in 19 children aged 8 months to 16 years and weighing 5.5 to 67 kg. Elimination and

distribution parameters were correlated with age, body weight, body mass index, body surface area, and height. Ketamine plasma concentration-time profiles following administration of adult doses (IV bolus dose: 1-4.5 mg/kg + continuous IV infusion: 0.1-0.5 mg/ kg/min) were simulated. One-compartment open model was adopted in the simulations. Anesthesia induction and cessation periods were computed assuming adult dose/rate input.

Results: Ketamine showed a large distribution volume (3.3±1.3 L/kg), rapid clearance rate (0.025±0.008 L/kg/min), short terminal half-life (2.6±1 h), and mean residence time (2.3±0.64 h). A power model with exponent of 0.75 best characterized the relationship between body weight and both total body clearance and steady state distribution volume. Anesthesia induction in less than 20 minutes and maintenance for about 3 hours was feasible using a subset of the adult doses (IV bolus dose: 1-2.25 mg/kg + continuous IV infusion: 0.1 -0.2 mg/kg/min).

Conclusion: Pediatric short-term surgical operations could be established using ketamine as the sole anesthetic at approved adult doses. Though, evaluation in real clinical settings is mandatory before such dosage recommendations are applied in standard practice.

SA-10719

Drug Seeking Like Effect of Pregabalin Using Conditioned Place Preference Paradigm

Omar Alzahrani, Hussam Almalki, Abdulrahman Nasr, Atiah Almalki, Yusuf Althobaiti*

Addiction to several drugs and substances is a critical health issue in Saudi Arabia and worldwide. According to several reports, the prevalence of drug addiction is high in Saudi Arabia, with the associated problems such as hepatitis, HIV, crimes, and withdrawal from school and jobs. However, the well-designed scientific research and data on drug addiction in Saudi Arabia are extremely low despite these critical alarming signs. Of note, Pregabalin (Lyrica) abuse is becoming more common among young Saudis and others. This could be due to the fact that this drug is relatively cheap and can be obtained easily. Despite this high use of Pregabalin in Saudi Arabia and worldwide, limited studies have investigated the addictive potential of this drug. In this study, the abuse potential of pregabalin was assessed in conditioned place preference (CPP) paradigm. Male BALB/c mice were separated into five groups; the first group was given vehicle (1ml/kg/day, i.p.) for 8 days during the acquisition phase. The remaining groups received i.p. injections of pregabalin (30, 60, 90, or 120 mg/kg) every other day during the acquisition phase. The group that received 30 mg/kg did not significantly spend more time in drug-paired chamber as compared to the vehicle-paired chamber. Nonetheless, the time spent in drug-paired chamber as compared to the vehicle-paired chamber was significantly increased in animal treated with (60 and 90 mg/kg) of pregabalin. Higher dose of pregabalin (120 mg/kg) did not produce significant changes in time spent among the tested chambers. These results demonstrated for the first time the abuse potential of pregabalin in animal model of drug addiction.

SA-10819

Effects of Ceftriaxone Treatment on The Drug Seeking Like Effects of Pregabalin

Hussam Almalki, Omar Alzahrani, Abdulrahman Nasr, Yusuf Althobaiti*

Several case reports have raised the concern of pregabalin abuse potential. Moreover, endless efforts have been made by drug users to find new drugs that can substitute the old and banned substances. Currently, these new drugs are preferred by addicts because it is easily available, relatively cheap and its use is not prohibited or criminalized. In our previous preclinical studies, higher doses of pregabalin (60 mg/kg) can cause drug seeking like effects in conditioned place preference (CPP) mouse model. However, the mechanism by which pregabalin is inducing drug seeking like effects is not well understood. Glutamate homeostasis has been implicated in mediating drugs seeking like behavior. Glutamate is cleared from extra-synaptic space by the activity of glutamate transporters. Glutamate transporter type 1 (GLT-1) is considered the main transporter in clearing extracellular glutamate. Several previous reports from our work and others have shown that ceftriaxone (CEF) can upregulate GLT-1 in brain regions involved in the rewarding effects of drugs of abuse. We tested here the role of upregulating GLT-1 by CEF pretreatment on the acquisition of pregabalin CPP. Male BALB/c mice were randomly assigned to receive saline or CEF (200 mg/kg, i.p.), a dose that was consistently shown to upregulate GLT-1, in home cages and received saline or pregabalin (60 mg/kg) during conditioning training. Consistent with our previous studies, the time spent in drug-paired chamber as compared to the vehicle-paired chamber was significantly increased in pregabalin training. Importantly, CEF pretreatment for eight days blocked pregabalin induced CPP. These results showed for the possible role of GLT-1 in mediating the drug seeking like effects of pregabalin in CPP model of drug dependence.

SA-10919

Effects of Antioxidant N-acetylcysteine Treatment on The Acquisition of Pregabalin Conditioned Place Preference

Amal Alghorabi, Omar Alzahrani, Hussam Almalki, Yusuf Althobaiti

Pregabalin (Lyrica) is one of the most recent drugs to be abused by young population in Saudi Arabia and worldwide. Several clinical case reports documented patients who were hospitalized due to Pregabalin abuse. We have previously shown that pregabalin (60 mg/kg) can increase the time spent in pregabalin paired chamber in conditioned place preference (CPP) animal model. However, the molecular mechanism of pregabalin in inducing this seeking effect is not well understood. Of note, The glutamate/cystine antiporter (xCT) exchanges extracellular cystine for intracellular glutamate. Extra-synaptic release of glutamate mediates activation of presynaptic type 2 glutamatergic receptors, resulting in feedback inhibition of further synaptic glutamate release. This glutamate release can be a critical factor in the reinforcing and drug seeking effects of drugs of abuse. In this study we have used the antioxidant N-acetylcysteine (NAC) which is well known to provide cystine for xCT to be exchanged for glutamate which then activate presynaptic receptors and prevent further glutamate release. We have tested weather pregabalin drug seeking effects in

CPP model is mediated through this glutamatergic mechanism by pretreatment with this antioxidant. Mice were randomly assigned to receive saline or NAC (100 mg/kg, i.p.), in home cages and received saline or pregabalin (60 mg/kg) during conditioning training. Consistent with our previous studies, pregabalin significantly increased the time spent in drug-paired chamber as compared to the vehicle-paired chamber. Importantly, NAC pretreatment for eight days attenuated pregabalin drug seeking like effect. These results showed for the first time the possible involvement of xCT in mediating the drug seeking like effects of pregabalin.

SA-12119

Virtual Docking and Pharmacophore Modelling of New ROS1 Kinase Inhibitors: Inferences in the Structure Based Optimization of 4'-Aryl-2-(Pyridine-3-Yl)-4,5'-Bipyrimidine Scaffold

Ziad Alruwaili, Abdulelah Alanazi, Mohammad Al-Sanea

Proto-oncogene receptor tyrosine kinase ROS-1 is an attractive therapeutic target for the treatment of non-small cell lung cancer (NSCLC). An optimization of a hit compound, 4'-(2-chloro-4-fluorophenyl)-N-(3-methoxypropyl)-2'-methyl-2-(pyridin-3-yl)-[4,5'-bipyrimidin]-6-amine with IC50 of 1.3 µM was performed using a structure-based design strategy by which a validated docking procedure was followed via Molecular Operating Environment (MOE) software. We conducted the design of novel eight compounds sharing 5-(4'-aryl-[4,5'-bipyrimidin]-2-yl)pyridin-2-amine scaffold with expected improved activity over the parent hit compound against wild type (WT) ROS-1 protein. Moreover, via exploring crystal structures of ROS-1 co-crystallized with Lorlatinib and Crizotinib, MOE was used to develop receptor-ligand pharmacophore model. Five pharmacophoric features: three hydrophobic features (HY), one hydrogen bond acceptor (HBA) and one hydrogen bond donor (HBD) comprise mainly the developed pharmacophore model and were subsequently utilized for virtual screening of the same 8 suggested compounds.

Among the total eight compounds, two hits (AZM-3 and AZM-8) were selected for their good docking scores, good binding modes within the active site of ROS-1 and promising pharmacophore fit values. Moreover, AZM-3 has fulfilled the drug likeness properties without any violations. Therefore, the structures of AZM-3 has been chosen to execute its chemical synthesis and biological evaluation as potential ROS-1 kinase inhibitors.

SA-12919

The Metabolic Disorders Associated with Chronic Consumption of Soft Drinks and Energy Drinks in Rats

Ghadi Almaghamsi, Asmaa Alamri, Asmaa Aloufi, Heba Eltahir

Background: Energy Drinks (EDs) and Soft Drinks (SD) are widely consumed especially among adolescents and young adults. EDs and SDs contain variable amounts of caffeine which is considered as a central nervous system stimulator in addition to other ingredients like sugar, taurine, vitamins and herbal extracts. Several adverse effects have been reported for the excessive consumption of caffeine and sugar.

Objectives: This paper aims at providing a comparison between the metabolic disturbances induced by soft- and energy drink's consumption in rats on the biochemical as well as the histopathological level.

Methodology: Adult albino rats were randomly divided into three groups and treated for 4 weeks. Group 1: animals received 12.5ml/Kg/day of Power Horse®, Group 2: received 12.5ml/Kg/day of Pepsi®, and group 3: received water only. All animals had free access to water and standard animal chow. By the end of experiment, live weight was recorded and blood- and tissue sample were collected after cervical dislocation for biochemical analysis and histological examination.

Results: ED and SD groups showed a significant weight gain compared to control. ED animals also a showed a significant increase in blood glucose, serum lipids and serum urea in comparison to control and SD groups. Serum uric acid significantly increased in ED and SD. Histologically, ED group showed congestion and inflammation in their renal tissues in addition to splenomegaly and increased phagocyte infiltration.

Conclusion: ED epidemic should be taken more seriously, as the high caffeine-sugar content causes a more significant effect on more metabolic pathways than the SDs. They increase the incidence of cardiovascular diseases and tissue inflammation due to their effect on lipid profile and blood glucose. The other ingredients in EDs may play a role in the metabolic disturbances observed. Chronic use of EDs specially must be discouraged to avoid these negative effects.

SA-13619

Pulicaria Petiolaris Effectively Attenuates Lipopolysaccharide (LPS)-Induced Acute Lung Injury in Mice

Sarah Salamah, Dina El-Agamy, Nishat Ahmed, Heba Surrati, Sabrin Ibrahim

Members of the genus Pulicaria have been used in traditional medicine for alleviating several complaints as they have a rich pool of biometabolites. Acute lung injury (ALI) is a serious disease with an elevated mortality rate. The present investigation aimed to evaluate the total phenolic and flavonoid contents and antioxidant capacity of the methanolic extract of P. petiolaris Jaub. and Spach. (PP) (Asteraceae). Moreover, the potential protective potential of PP against lipopolysaccharide-(LPS)-induced ALI was assessed. PP is a rich source of phenolics and flavonoids. The total phenolic content (TPC) was 68.05 mg gallic acid equivalent (GAE)/g dried extract, and the total flavonoid content (TFC) was 45.86 mg quercetin equivalent (QE)/g dried extract. Additionally, PP possessed a promising DPPH-scavenging activity, with an IC50=27 µg/mL. Our results showed that PP lessened LPS-induced lung injury. PP effectively reduced pulmonary edema as it lowered total protein and the lung wet/dry weight (W/D) ratio in the bronchoalveolar lavage fluid (BALF). It also significantly ameliorated the level of lactate dehydrogenase (LDH) in the BALF and improved the histopathological lesions in the lung tissue. LPS-induced inflammatory cell infiltration was greatly depressed in PP-treated animals. PP showed antioxidant capacity as it reduced

the LPS-induced increase in the lipid peroxidation marker, malondialdehyde (MDA). It also increased the activity of superoxide dismutase (SOD) and the content of reduced glutathione (GSH). This study indicates that PP significantly decreased LPS-induced inflammation in the LPS-mediated ALI murine model, suggesting that it may become a significant preventive strategy for treating nonspecific inflammation of the lungs.

SA-14019

The Possible Effects of Linagliptin on Experimentally-Induced Polycystic Ovarian Syndrome in Albino Rats

Maymunah Jumah, Afnan Almahmoudi, Lamis Dahlawi, Walaa Qadah

Introduction: Polycystic Ovary Syndrome (PCOS) is a common endocrinological and metabolic disorder in women of reproductive age leading to infertility. Incretin based therapies is a new class of antihyperglycemic drugs for the treatment of type 2 diabetes mellitus by increasing insulin sensitivity. However, few studies have showed the efficacy of this therapeutic approach in patients with PCOS. This study was aimed to evaluate the benefits of linagliptin, a dipeptidyl peptidase-4 inhibitor (DPP-4i) and it is combination with liraglutide, glucagon-like peptide-1 (GLP-1) receptor agonists on letrozole-induced polycystic ovary syndrome (PCOS) in albino female rats Model.

Methods: A 7-weeks experimental study was conducted to thirty female albino Westar rats. They were randomized into four groups: control group, letrozole group (1mg/kg/day, p.o.) for 21 days, linagliptin group (3 mg/kg/day, p.o.) and combined treatment with linagliptin and liraglutide (1.2 mg/kg/day, S.C) for 4 weeks. Anthropometric parameters (body weight, BMI, and lee index), metabolic parameters (blood glucose indices, blood pressure, serum lipids), and histopathology of ovary were studied.

Results: Linagliptin and combined treatment induced significant improvement in percentage of weight increase, Lee index, ovary weight, ovarian fat and mesenteric fat compared to PCOS group ($P<0.05$), with more obvious effects in combined group regarding one of the anthropometric parameters. Moreover, linagliptin and/or combination with liraglutide associated with significant improvement of blood glucose indices and insulin level as well as lipid profile were significantly decreased compared to PCOS group ($P<0.05$). However, hemoglobin A1c, insulin, TC and LDL were more improved in combined drugs as compared to linagliptin alone ($P<0.05$). Histological results reveal that linagliptin and/or the combination treatment in PCOS rats denoting improvement of ovulation.

Conclusion: The results show linagliptin alone or combined with liraglutide are beneficial in treating the metabolic, endocrine and cardiovascular dysfunctions and might represent a new therapeutic modality for improving of PCOS.

SA-14319

Antibiotic Resistance Pattern Shown by Different Neonatal Infection-Causing Pathogens

Abdullah Al-Anazi, Muhammad Amjad

Background: Antibiotic resistance has become a global problem. This study was schemed to comprehend the latest kaleidoscopic trends of bacterial resistance in neonatal pathogens against all those antibiotics commonly employed as empirical therapy in neonates.

Methodology: The methodological approach included; isolation and subsequent identification of those pathogens having caused bacterial infections in neonates, application of antibiotic sensitivity testing and finally construing the conclusion depicting patterns of antibiotic resistance by various pathogens, isolated from neonatal biological samples.

Results: Antibiotic resistance patterns were evident in gram-positive as well as in gram-negative bacteria in all the eight species identified in this study. Even antibiotic drugs which are being commonly relied upon for treating multi-resistant bacterial infections, were found to be in effective against many newly emerged resistant bacteria, when used alone. Resistance Antibiotics drugs against which most prominent resistance pattern emerged include; Amikacin sulphate, Linezolid, Piperacillin / Tazobactam, Amoxicillin / Clavulanic acid, Vancomycin, Cefoperazone / Sulbactam, Ceftriaxone sodium, Ciprofloxacin, Cefixime trihydrate and Imipenem.

Conclusion: The inferred upshot suggests that antibiotic resistance is emerging fast and ever-changing phenomenon of antibiotic resistance has significantly reduced the therapeutic space to maneuver, particularly, in treating neonatal infections.

SA-15819

Physical, Chemical and Microbiological Stability of Furosemide Oral Liquid

Rehab Alsawi, Siham Abdoun

Background: The unavailability of oral preparation of some drugs is a challenge facing the pharmacist, furosemide is one of these drugs it is a loop diuretic used to treat hypertension., edematous states associated with cardiac, renal, and hepatic failure. It is available as tablet and injectable, for children use there is no oral preparation

Objectives: To prepare Furosemide oral liquid from commercially available tablet using water and orange juice, and determine the physical, chemical, and microbiological stability of these formulations.

Methods: Two liquid formulation of furosemide containing 2 mg /ml were prepared from commercially available tablet using water and orange juice. The preparation was transferred to plastic and amber glass bottles and kept 8°C and room temperature, sample was withdrawn on day one, 14, 21 and day 28 to study the stability.

Results: The two formulations showed physical stability as there is no change in the color and odor of the formulation throughout the 28 days of storage at 8°C and room temperature. Moreover, the pH values of both formulations in this condition are not differing from the initial pH values. The percentage of furosemide remaining in both formulations in the plastic and amber glass container at theses condition was more than 95%. This signify that furosemide formulation is chemically stable under studied condition for 28 days. There is no significant difference p-value < 0.05, were observed in stability of furosemide formulation in plastic and amber glass container.

Conclusion: The aqueous and orange juice furosemide formulations were stable for 28 days.

SA-17219

Combining PD-L1 Immune Checkpoint Inhibitors and Chemotherapy for selective chemo-guided immune modulation for Enhanced Anticancer Efficacy

Turki Alsubaie, Hashem Alsaab, Samaresh Sau, Arun Iyer

Background: Antibody drug conjugates (ADCs) are a new form of targeted therapy to cancer, consisting of an antibody, a conditionally stable linker, and a cytotoxic drug. Immune checkpoint molecules, such as programmed death ligand-1 (PDL1), are overexpressed in various tumors. Targeting this emerging protein has opened a new paradigm of cancer therapy. This is an emerging anticancer mechanism and more than four antibody inhibitors have been recently FDA approved against PD-1 or PD-L1 biomarker. However, the effect of anti-PDL1 therapy is limited to few cancer types, attributed to (i) the transient expression of PDL1 and (ii) difficulty in tumor stroma penetration. To overcome these, first time we report a new conjugate between the clinically approved PDL1 antibody Atezolizumab (ATZ) and the drug Doxorubicin (Dox), termed as PDL1-Dox.

Methods: This PDL1-Dox has been conjugated through hydrazone linker and polyethylene glycol (PEG2000) spacer. The purpose of using Dox is to disintegrate the tumor stroma so that ATZ can penetrate tumor core. Use of PEG-spacer with high molecular weight ATZ (144.61 kD) improves the solubility of PDL1-Dox. We verified the formation of PDL1-Dox using MALDI-TOF and UV analysis.

Results: The PDL1-Dox demonstrates significant cell killing, disruption of tumor spheroid and induction of apoptosis in MDA-MB-231. The significant increase of IFN-g amount compared to Dox treatment suggests PDL1-Dox can upmodulate T cell activation. The fluorescent imaging of PDL1 near infrared (NIR) dye conjugate in patient derived tumor xenograft (PDx) models supports the selective tumor targeting ability and core penetration of the construct.

Conclusion: Based on the synergistic anticancer effect and selective tumor targetability demonstrated in this study builds a strong rational of using PD-L1 ADC approach for cancer immune-chemo therapy and diagnosis.

SA-20119

In Vitro Antiglycation, Antioxidant and Antiproliferative Properties of Peptides Derived from Tryptic Hydrolysis of Soya Bean

Tahani Alghamdi, Abudukadeer Kuerban, Said Moselhy, Taha Kumosan

Background: Elevated blood sugar level accelerates advanced glycated end-products (AGEs) formation through glycation in which reducing sugars attack the free, reactive and functional amine group of proteins and impairs its functions. These glycated proteins than, undergo rearrangement, degradation and crosslinking, finally become AGEs that contribute the reactive oxygen species (ROS) generation, another hallmark of diseases that interfere cellular signal transduction. Soya bean is one of the protein-rich foods and used as nutritional supplementation due to its reported biological activity

Aim of the work: In this study, we have investigated the in-vitro antiglycation activity, antioxidant and antiproliferative activity of soya bean protein hydrolysates.

Methods: The in vitro antioxidant activity of peptides were tested by (DPPH) antioxidant assay and MCF-7, PC3, HepG2 cell lines were used to explore the antiproliferative potency of peptides.

Results: Peptide fractions trapped reducing sugars and reduced AGEs formation and exhibited well DPPH scavenging ability with IC50 8.96 mg/mL. Peptide fractions showed dose-dependent toxicity to the used cell lines.

Conclusion: Released bioactive peptides emphasized the value of Soya bean proteins to be used as a functional food or alternative supplementary to diseases.

SA-20219

A Survey for Assessment of Community Awareness of Aspirin Use in Saudi Arabia

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Background: Aspirin has many therapeutic indications, including pain, fever, inflammation and prevention of cardiovascular diseases, among others. Although it is available as over-the-counter, it can cause several side effects which can be life-threatening.

Aim: To assess the awareness of the population about the indications, side effects, precautions, drug interactions and contraindications of aspirin.

Methodology: An observational cross-sectional study design was used, 900 Samples were included, questionnaire survey was designed and shared through Social Media, then statistical analysis of findings was done.

Results: It was found that the prevalence of aspirin use was 49%. The prescription use of aspirin represented 27% of the sample, while the non-prescription use was 22%. The prevention or treatment of heart attacks represented 48.2% of all indications of aspirin use. Regarding its side effects, 39% of the sample didn't know that it has any side effects. The

awareness of drug interactions with aspirin was weak, 57% didn't know if it can interact with anticoagulants or not, and 35% didn't know if it has interactions with any other drug or no. The knowledge about contraindications to use aspirin was limited, 33% didn't know, and 8% were sure it has no contraindications. Moreover, 22% emphasized that aspirin is a safe drug for pregnant females and 31% didn't know if it is safe or not.

Conclusion: The current study showed that there are many points of weakness of the awareness about indications, safety, adverse effects, precautions and contraindications of aspirin. One of the pharmacist's, and other health care team, responsibilities and duties is to provide all patient using aspirin with the proper and sufficient information in order to optimize its use, increase its safety and minimize its complications.

SA-20619

Potential Toxic Effects of Radiation Exposure Among Saudi Male Medical Radiographers

Amal Al-Hodaib, Mansour Alsharidah, Maha Al-Dubayan, Somayah Al-Suhiabani, Rehab El-Gharbawy

Purpose: Evaluation of potential toxic effects of radiation among Saudi medical radiographers through measurement of some trace elements levels, haematological parameter, hair histopathological examination.

Methods: Collection of samples of blood and hair from 60 participants was undertaken. The participants were equally divided into three groups; the first group represented the control group and comprised healthy male participants without radiation exposure, the second group included male medical radiographers with X-ray exposure, and the third group comprised radiographers exposed to radiation from multiple sources (MRI, CT scan, nuclear medicine, X-ray). Inductive Coupled Plasma-Mass Spectrometry was used for measurement of trace elements in the blood. The key result was urinary 8-hydroxy-2'-deoxyguanosine (8-OHdG) concentration, which was subjected to assay with the DNA Damage EIA kit. Furthermore, the fully automatic blood cell counter permitted analysis of complete blood count, while electron microscopy was employed for examination of hair samples.

Results: Unlike the control group, the groups with exposure to X-ray and multiple radiation sources exhibited considerably higher levels of Ca, Cl, Na, Fe, Cu, Pb and Cd in the blood. Furthermore, there was a close correlation between urinary 8-OHdG concentration and the Pb levels in the group with X-ray exposure, as well as between urinary 8-OHdG concentration and Fe, Pb and Cd levels in the group with multiple-source exposure. The two exposure groups also exhibited substantially higher levels of white blood cells, haematocrit and lymphocytes, but significantly lower levels of haemoglobin than the control. When hair samples from the two exposure groups were subjected to electron microscopy, it was revealed that the lamellae underwent cuticle disorganisation deterioration and the whole cell was vacuolised.

Conclusion: The risk of toxicity among radiographers was high, most likely due to the high levels of trace elements in the blood and ultrathin structure modification in the hair follicles. A correlation was established between age and length of radiation exposure,on the one hand, and DNA damage and haematological change, on the other hand.

SA-21519

Therapeutic Effect of Using Safflower (Carthamus tinctorius**) Against Oral Fungal Infection**

Hanan Al-Harbi, Nadiah Hashish

Background: Candida albicans is a type of fungus that has been implicated as the most common of type the Candida species recovered from the infected mouth. It is estimated that up to 75% of the population have these species present within their oral cavity. Medical plants offer an alternative to other forms of drug therapy to reduce the effect of drug toxicity and resistance associated with synthetic antifungal agents. There is an antifungal activity of an edible plant namely; Safflower (Carthamus tinctorius) a member of Asteraceae family.

Purpose: To evaluate the antifungal activity of Carthamus tinctorius flower against common oral pathogens Candida albicans.

Methodology: Plant Material: The dried safflowers flowers were obtained from a local herbal store in Qassim, KSA. Test Organism: Strains of Candida albicans yeast was obtained by oral swab from a patient have cadidaisis from the dental clinic at Qassim University Hospital. Positive control: Antibiotic (Fluconazole) 10 µg/ml. Preparation of the plants extracts of the dry flowers: Three different extracts of Carthamus tinctorius flower: methanol, aqueous, and acetone extracts were screened in vitro against Candida albicans using agar diffusion method. Statistical analysis was performed by using Data Analysis and Statistical Software (STATA®), version 15. Data were presented as mean ± standard deviation (SD). For continuous variables, one-way between-groups ANOVA was used to assess group differences with a significant level of $p \leq 0.05$.

Results: Inhibition zones were observed only by the acetone extract. The statistical significance is 0.0491 and the minimum inhibitory concentration was estimated to be 0.2 mg/ml.

Conclusion: This study proved that the acetone extract of Carthamus tinctorius flower has significant antifungal activity against C. albicans.

SA-21719

Bioinformatics Prediction of Antigenic Epitopes of NS5 and Their Implications for Zika Vaccine Design

Touqa Ramadan, Abeer Alaanzy, Dania Hussain, Iman Almansour

Background: The current outbreaks that have occurred worldwide by Zika virus and the lack of licensed Zika drug or vaccines demands the development of Zika vaccine. Here, we predicted linear and conformational T and B cell epitopes of NS5 of Zika in both Asian and African lineages. Such data will be an important, first step towards the development of Zika vaccine and Immuno-theraputic directed against NS5.

Methods: Extraction Full Zika sequences of African and Asian

lineage from NCBI then we extracted NS5 reign from the most frequent Asian and African sequence and we use it to perform sequence aliment by MUSCLE tool after that, epitope prediction for B cell and T cell through Immune Epitope Database.

Results: The results of predicted linear and discontinuous B-cell epitopes using ElliPro method shows that 10 out of 18 predicted linear B-cell epitopes have high scores (above 0.85) while 6 out of 14 of predicted discontinuous B-cell epitopes have a high score; (0.80 and above) These high score reveal high affinity and binding to the antigen. While The predicted T-cell epitopes of MHC I and MHC II shows identity between Asian and African lineages of 83% and 68%, respectively.

Conclusion: Such results indicate that the predicted epitopes may have the potential to induce protective cellular immune response against Zika virus.

SA-22619

Knowledge and Attitude of Saudi Arabian Population about Bell's Palsy Disease

Shroug Ghander, Nadia Maysarah, Ray Alsuhaibani

Background: Bell's palsy is a condition described by an intense beginning of facial nerve paralysis without known reason.

Aim: We aimed to measure the level of knowledge and attitude of Saudi Arabian population about Bell's palsy disease.

Method: A cross-sectional study was conducted to achieve our objectives. This study directed to Saudi Arabia populations who participated in this study through an online questionnaire format in the duration of responses collection (Feb. to Apr. 2018). Data were analyzed using (SPSS) version 23.

Results: A total of 274 patients were participated in this survey. We found that highest percent was female by (90.1%), most of respondents (95.2%) think that the Bell's palsy is caused by viral or bacterial infection. Also, we found that there was a statistically significant association between knowledge of Bell's palsy disease among participants and if the patients received any treatment during the disease p-value < 0.05

Conclusion: It has been found that most of patients have poor knowledge about the disease but their attitude was good toward the treatment and this may be related of their fears of the disease. Also, most of patients take their source of information from physicians which may be related to their good attitude.

SA-23219

In Vitro Evaluation of Alkanna Plant as A Natural Antimicrobial Drug

Asma Almutairi, Nadia Hashish

Background/Purpose: The misuse of antibiotics resulted in the emergence of life-threatening drug-resistant microbes. In an attempt to overcome this danger, natural sources especially plants have been screened for their antimicrobial properties. The present investigation was carried out to evaluate the antimicrobial activity of extracts of Alkanna tinctoria root against some gram positive and gram-negative bacteria.

Methods: Agar diffusion method was performed to test different A. tinctoria extracts against four gram-positive bacteria namely: Staphylococcus aureus, Streptococcus agalactiae, an unidentified species of Macrococcus bacteria isolated from the oral cavity of a patient with periodontal inflammatory disease and Streptococcus pneumonia isolate. The sensitivity of three gram-negative bacteria namely Escherichia coli, Pseudomonas aeruginosa and Klebsiella pneumoniae were also tested against by the prepared extracts. Two concentrations of the alcohol, acetone, and petroleum ether extracts were prepared (0.1g/ml and 0.2g/ml) and the concentration of the aqueous decoction was 0.2 g/ml while the oil extract was a saturated solution.

Results: Alcohol extract (0.2 g/ml) showed the highest antibacterial activity against S. aureus, S. agalactiae, E. coli and P. aeruginosa with zones of inhibition (21.17±0.29mm, 27.17±0.29mm, 10.17± 0.29mm and 10.33±0.58mm) respectively. These results are statistically significant ($p<0.05$ when compared with positive control antibiotics).

Conclusion: Roots of Alkanna tinctoria plant is a potential natural alternative for antimicrobial drugs especially in case of S. aureus, S. agalactiae, E. coli, and P. aeruginosa infections.

SA-23419

Association Between Iron Deficiency Anemia and Type 2 Diabetes

Monerah Alabdullatif, Mona Alabdullatif, Amira Ahmed, Rehab Elgharabawy, Amal Al-Najjar.

Background/Purpose: Type 2 diabetes (DM2) and iron deficiency anemia (IDA) are common disorders. Approximately 30% of diabetic patients coexist with anemia. This study aimed to evaluate the relationship between the IDA and type 2 diabetes, to assess the effect of the IDA on the glucose level and glycated hemoglobin (HbA1c), and to evaluate the ameliorating effect of IDA treatment on progression of diabetes and its complications.

Subjects and methods: This study is a prospective cross-sectional study. The study included 125 Saudi participants divided into five groups; 25 control subjects (group I), 25 type 2 diabetic patients (group II), 25 patients with IDA (group III), 25 type 2 diabetic patients with untreated IDA (group IV), and 25 type 2 diabetic patients with IDA treated by iron supplementation (group V). The demographic characteristics, diabetes duration, complications, complete blood count, fasting blood glucose (FBG), HbA1c, serum ferritin, serum iron, and total iron binding capacity (TIBC) were monitored.

Results: The HbA1c and FBG levels were significantly higher in groups III and IV compared to group I. There was a significant decline in HbA1c and FBG level in group V compared to group IV. Negative significant correlations were observed between iron and ferritin with HbA1c and FBG. However, there was a positive significant correlation between TIBC and HbA1c. Diabetic complications incidence was significantly associated with IDA ($X2: 81.48$, $p < 0.001$). The reliable predictor of type 2 diabetes

in patients with IDA was ferritin and the best cut off value for ferritin was 31.56 ng/ml.

Conclusion: Decrease in iron level shows a crucial effect on glycemic status by increasing the level of HbA1 and FBG, IDA is strongly correlated with type 2 diabetes, and the iron supplementation for diabetic patients with IDA ameliorates the progression of diabetes and its complications.

SA-24819

Development and Optimization of Extended Release Cetirizine Microcapsules Using Response Surface Methodology

Lamya Aldosari, Sara Almofareh, Hadeel Alhedyan, Sarah Almalki.

Microcapsules have been introduced as a drug delivery system to improve the therapeutic efficacy of drugs. They drew the monumental scientific and industrial attention by virtue of their uniformity, and sustained release behavior. The main challenge in preparation of the microcapsules is the encapsulation of water-soluble drugs due to their tendency to escape from the microcapsules. In this study, the emulsion-solvent evaporation method (ESE) was used to overcome this undisputable challenge in preparing water-soluble cetirizine hydrochloride (CTZ)- loaded microcapsules with modified- release profile using a software-based response surface methodology.

Furthermore, different variables including the polymer loading percentage (Eudragit RLPO was used), the antitacking percentage, the emulsifier hydrophilic lipophilic balance (HLB) and the dispersed phase volume were investigated. The observed data was fitted into Statgraphics software and the resulted microcapsules of 18 batches were tested to produce the optimized formula that were spherically shaped with a smooth surface and good flowing properties.

As a result, we succeeded to produce the desired responses that granted an average size of 142.3 m, 87.1% of encapsulation efficiency, 84.43% of yielded production, acceptable 28.78% initial release, and 85% release of microcapsules content in 12 hours. Ultimately, these outcomes rationalize the benefit of using microcapsules to decrease the administered dose and the frequency of administration, and eventually help to minimize the adverse effects and improve patient's compliance to medication. Our near future goal is to investigate the in vivo behavior of the optimized microcapsules.

SA-24919

Formulation and Evaluation of Pharmaceutical Dosage Forms of Kaff-Mariam Plant Extract

Amira AlSharekh, Siham Mohammed

Background: Anastatica hierochunticais locally called 'Kaff Maryam' is plant that have been valued since early times in traditional medicine to treat various conditions like menstrual cramps, asthma, depression, gastrointestinal disorders, high blood pressure, malaria, indigestion and headache especially in Middle East countries.

Objectives: To study the pharmacological action of the Anastatica hierochunticais and design an oral pharmaceutical dosage form and evaluate the physical and chemical properties of the developed formula.

Materials and methods: Ethanol and water extracts of the whole plant was prepared, and the antispasmodic effect was studied using power lab instrument in addition the force swimming test was used to evaluate the antidepressant effect of 'Kaff Maryam'. The extract was formulated as effervescent granules, chemical and physical test was done to evaluate the quality of the extract and formulated granules.

Results: The formulated granules show effervescent properties within one second; water extract formulation granules give the best complete clarity within 45 seconds. The calibration curve of the absorbance vs concentration of water and ethanol extracts was found to be rectilinear in concentration (20- 60 mg/mL) with correlation coefficient of 0.997 and 0.994 respectively. The FTIR show that there is no incompatibility between the extract and the granule excipient. Pharmacological evaluation of antispasmodic effect shows obvious relaxation effect for water and ethanol extract with 7mN and 6mN drops in curve respectively, compared to Acetylcholine 13mN. Forced swimming test result shows a strong effect for 'Kaff Maryam' as antidepressant, the swimming time (mean± SD) was found 9.4± SD 0.43and 7.2±1for water and ethanol extract respectively compare to control mice 3.6 ± 0.69 and imipramine drug 7.4±1.9.

Conclusion: 'Kaff Maryam' evaluation shows a various pharmacological impact and good physical and chemical properties, which appears to be therapeutically effective. And this demonstrate the wide traditional use for many indications.

SA-25819

Comparative Evaluation of Quality Control of Two Different Brands of Ciprofloxacin Tablets.

Mohammed Alosaimi, Mohamed Amin.

Introduction: Ciprofloxacin is a Fluoroquinolones antibiotic that kills bacteria in our body. Quality control (QC) is part of good manufacturing practices related to the examination and guidance of the degree of excellence in order to obtain the best quality of the product by maintaining appropriate samples, specifications, testing, inspection, documentation and release. Quality control tests very helpful for researchers to avoid the confusion related to safety, potency, efficacy and stability of pharmaceuticals. It is therefore very important for pharmacists to be highly knowledgeable regarding all aspects of product quality and use of individual patient.

Objective: This study was carried out to evaluate the pharmaceutical quality of two brands of Ciprofloxacin 500mg tablets (Ciprogen® and Ciprodar®) which marketed in Saudi Arabia

Method: The properties of the tablets were evaluated by using

a quality control tests according to united states pharmacopeia (USP). These tests include weight variation, disintegration, friability, hardness, thickness, dissolution test and uniformity of drug content.

Results: Among two brands of ciprofloxacin it was found that Ciprogen® has higher average weight (805.75 mg) than Ciprodar ® (768.05 mg). The percentage loss of Ciprodar® (0.02%) was less than Ciprogen® (0.055%) after friability test was done. During the uniformity of drug content test, we found that Ciprogen® has higher percentage of content (102.45%) than Ciprodar® (101.40%). Disintegration time of Ciprodar® is higher than Ciprogen® which was done in acidic media HCl 0,1 N. When applied dissolution kinetics we observed that both Ciprogen® and Ciprodar ® flowed zero order and flowed Higuchi method. Regarding to dissimilarity factor f_1 it was found that both brands were not similar. Among the hardness and thickness, it was found that Ciprodar ® was higher than Ciprogen®.

Conclusion: Our results showed that both brands of ciprofloxacin HCL comply with USP specifications and all brands passed tests.

SA-25919

Antimicrobial Activity of Some Saudi Halophytic Plants

Nada Alnasyan, Hamdoon Mohammed, Basmah Almansour, Rana Alruthia.

Background: Suaeda vermiculata Forssk and Salsola cyclophylla Baker are two halophytic plants growing in marsh salted areas of central Saudi Arabia and are used for both feeding camel's and medicinal purposes. For this reason, the aim of our study is to evaluate the antimicrobial activity for S. vermiculata and S. cyclophylla.

Method: The antimicrobial activity of plants extracts was conducted through agar well diffusion method and by measuring the minimal inhibitory concentration (MIC) using widespread bacterial and fungal strains.

Results: Ethanolic extract of S. vermiculata showed antimicrobial activity against all stains under the test specially against Pseudomonas aeruginosa and Klebsiella pneumonia with inhibition zone diameter (IZD) 13mm and 12.5mm, respectively. S. cyclophylla ethanolic extract also showed strong inhibition for Pseudomonas aeruginosa and Proteus vulgaris with IZD, 15mm and 14.3mm, respectively. In MIC measurement, ethanolic extract of S. vermiculata showed good activity against Candida with MIC, 17.5-8.75mg/ml followed by Proteus mirabilis with MIC, 35-17.5mg/ml. The ethyl acetate extract of S. cyclophylla also exhibit strong activity against Methicillin resistance staphylococcus aureus (MRSA) with MIC equal to 8.75-4.37 mg/ml.

Conclusion: On the basis of the present finding Suaeda vermiculata and Salsola cyclophylla can be a good candidate in the search for a natural antimicrobial agent. This study provides scientific understanding to further evaluate the antimicrobial values and determine other pharmacological properties.

Clinical Practice Research

Proessionals Abstracts

SA-04319

Impact of Clinical Pharmacist-Led Diabetes Management Clinic on Patient-Related Health Outcomes at an Academic Tertiary Hospital: A Prospective Cohort Study

Bashayr Alsuwayni, Abdulaziz Alhossan

Background: Diabetes prevalence has dramatically increased in Saudi Arabia. It is estimated to reach 20.6 percent by 2030, putting Saudi Arabia up in sixth place. Studies have illustrated main reasons for uncontrolled patients and concluded: low level of awareness, limited access to healthcare providers, and lack of cooperation between different disciplines. The role of pharmacists has been proven to improve patient-related outcomes. This study was conducted to evaluate diabetes-related health outcomes in a pharmacist-led clinic.

Method: A prospective cohort study conducted from August 2017 until July 2018 at an academic hospital. The pharmacist-led clinic was providing the service for a half-day per week. The study included all adult diabetic patients referred to the pharmacist-led clinic and had -at least- three 3-month apart follow-up visits with no exclusions. The baseline assessments for patients receiving routine diabetic care was performed using HgbA1C level, blood pressure, lipid and thyroid panel, eye and foot examinations, preventive measures, and adherence. The baseline results were compared to the follow-up results thereafter. A descriptive analysis was used to report the differences between intervals.

Results: The study included thirty-five patients. The mean ±SD age was 56 ±10 years old. At baseline, mean HgbA1C was 9.5% ±1.3%. HgbA1C was greater ≥10% for 13 patients. Albuminuria was never previously assessed for 14 patients. Twenty percent were receiving incorrect dose compared to the guideline-recommended statin therapy. By the end of study, mean HgbA1C had significantly improved to be 8.3% ±1.4% (p=0.0004). Nine patients achieved their HgbA1C goal of <7%. All patients were assessed for albuminuria and managed accordingly. Thirty-two patients were eligible to receive statin therapy and prescribed appropriate doses. Additionally, peripheral neuropathy was assessed for all cohort, and seven patients received recommended vaccinations.

Conclusion: Pharmacist-led clinic demonstrated a successful collaborative practice to meet patient's HgbA1C goals, improve adherence, and adapt guidelines recommended preventative measures.

SA-04519

Impact of Implementation of "Sickle Cell Disease Acute Painful Crisis Clinical Pathway" at KFAFH: on Reducing the Number of ER Visits, Admission Rates, Opioids Consumption, and Cost.

Ahmad Alhartani, Aseel Jambi, Ali Alblowi

Background: Sickle cell disease (SCD) is an autosomal recessive disorder of hemoglobin, associated with consanguineous marriages in Saudi Arabia. The prevalence of SCD in Saudi Arabia varies from 1 % to 17 %. The vaso-occlusive crisis is the most common complication of sickle cell disease in adults, which is the primary reason why these patients seek medical care in emergency departments. Adequate pain management will result in a decreased number of episode crisis and reduce readmission rates.

Aim: The study goal is to ensure proper pain management to prevent relapses, to a lower rate of admission, readmission, ED visits and to control the consumption of opioids through the implementation of a clinical pathway.

Method: A total of 374 SCD Patients (12 years and above with isolated painful crisis) was identified by KFAFH Emergency department registration data. The primary source of patient information was conducted from the patient file, ED registration, and chart review for one year before (May 2016- April 2017) and one year (May 2017- April 2018) after implementation of the clinical pathway.

Results: Overall, the results showed a drop in ER visits, admission, and readmission by> 69.74%, 32.88 %, and 15.88 % respectively. Decrease in Meperidine and Tramadol consumption by > 33%, and 54 % respectively. Cost saved after implementation of the pathway is more than 410709 S.R/year.

Conclusion: Proper pain management after implementation of painful crisis management clinical pathway showed a lower rate of admission and a significant decrease in a number of ED visits. In addition to cost-effectiveness from reducing hospital admission and opioids consumptions.

SA-05619

Tacrolimus Trough Level Intra-Variability and Its Association with Allograft Survival Post Kidney Transplantation: A Retrospective, Cohort Study

Noor Al-Ashi, Mansour Khazi, Rawan AL-Ghamdi

Background: Tacrolimus is one of the maintenance immunosuppressant post kidney transplant and its intra variability in trough level had been proven by literature as an indicator for a poor graft outcome. Our study aimed to determine the association between tacrolimus trough level intra variability and the allograft survival following 3 – 12 months post transplantation.

Methods: An exploratory and descriptive study was conducted retrospectively among adult post kidney transplant patients at King Fahad Specialist Hospital, a hospital providing tertiary care for the Eastern Province of Saudi Arabia, with transplant as core competencies. This study was started from September 2017 to January 2019. Data was collected from the hospital information system. This study was approved by the IRB of King Fahad Specialist Hospital, Dammam, Saudi Arabia.

Results: 95.5% from patients were not having acute rejection, and 75% from patients were at high risk of rejection because of ABO incompatible, 12. 5 % because f HLA incompatible, Blood screening was performed for some of patients were 20% from patients were have CMV, BK (20%), and 60% for other. Lastly, 95.5% from patients were compliance, and as well as 95.5% were have no systemic kidney infection. Tacrolimus trough level was decreased with time, where Tacrolimus trough level overtime was 8.31 ± 1.18.

Conclusion: We observed that there is no statistically significant association between higher tacrolimus trough-level variability and allograft survival, however larger sample size is needed to investigate the factors affecting tacrolimus trough level and its correlation with graft survival, this research will be continued including all kidney transplanted patients during 2016 -2017.

SA-09219

Assessing Monitoring Practice of Endocrinopathies Associated with the Use of Novel Targeted Therapies in Solid Tumor Patients

Atika AlHarbi, Majed AlShamrani, Mohammed Aseeri, Abdelmajid Alnatsheh, Mansoor Khan

Background: Since cancer treatment have been changed dramatically towards the use of targeted molecular therapies which characterized by unique mechanism of action instead of nonspecific cytotoxic chemotherapy. Despite their effectiveness, they have a unique safety concerns, for instance, endocrinopathies; which defined as unfavorable metabolic alterations, including thyroid disorders, hyperglycemia, dyslipidemia, and adrenal insufficiency. These side effects necessitate additional monitoring and appropriate clinical review. The aim of our study is to assess the incidence of monitoring errors and develop strategies for safe practices in the monitoring of patients prescribed targeted therapies.

Method: A retrospective chart review study to assess the incidence of monitoring errors of endocrinopathies in cancer patients administered targeted therapies within the period of June, 2016 through December, 2017. All adult cancer patients diagnosed with solid tumor who received targeted therapies (Nivolumab, Atezolizumab, Everolimus, Sorafenib, Sunitinib, Pazopanib, Regorafenib, and Abiraterone) were included. The primary outcome was to determine the incidence of monitoring errors of endocrinopathies. While the secondary outcomes were to assess the incidence of endocrinopathies and referral practice to endocrinology services.

Results: A total of 128 adult solid tumor patients were included. The primary outcome revealed a total of 148 monitoring errors of endocrinopathies were detected. Monitoring error of thyroid

functions was the most common type of errors, accounted for 63 errors (92.6%) secondary to targeted therapies. Subsequently, 54(57%) monitoring errors of blood glucose, and 31(94%) monitoring errors of lipid profile were encountered. The secondary outcomes indicated that targeted therapies caused 63(49%) events of endocrinopathies which included; hyperglycemia in 32%, followed by thyroid disorders in 15.6%, and dyslipidemia in 1.5% of patients.

Conclusion: Our study showed high incidence of monitoring errors of the targeted therapies which has led to significant endocrinopathies. These findings emphasize the importance of adherence to the monitoring strategies and following up appropriate referral process.

SA-11219

Implementation of Clinical Practice Guideline for Management of Hypercalcemia of Malignancy at Tertiary Hospital

Salman Alabdali, Mansour Khan, Abdulamjiad Alnatsha

Background: Hypercalcemia of malignancy (HOM) is a common complication of patients with cancer. The degree of hypercalcemia, along with the rate of rise of serum calcium concentration, often determines symptoms and the urgency of therapy. The treatment of this condition includes hydration, furosemide, calcitonin, bisphosphonates, and denosumab.

Methods: A Retrospective study included adult patients with moderate to severe HOM treated per proposed institutional guideline between the period June 1, 2016 and December 31, 2017. Eligible patients were cancer patients greater than 18 years with corrected calcium level > 3 mmol/L and managed in inpatient setting. The primary end point was to determine and compare the percentage of patients who achieved normalization of serum calcium at 4 days and 7 days after initiation of treatment for moderate and severe HOM between patients managed per proposed institutional guideline versus those who were managed off the proposed guideline.

Results: Seven patients (43.47%) were treated as per proposed guideline and sixteen patients (56.5%) were treated off guideline. Normalization of corrected calcium at day four was seen in 71% (n=5) of patients treated per guideline and 43.75% (n=7) of patients treated off guideline (p = 0.37). At day seven, normalization of corrected calcium was achieved in all patients for both groups (p = 1.00). Moreover, twenty-three inappropriate interventions were observed in patient treated off guideline. These inappropriate interventions included; in appropriate hydration (35%), suboptimal dose of bisphosphonates (9%), late administration of bisphosphonates (17%), omission of bisphonates/denosumab (13%), and in appropriate administration of calcitonin (26%).

Conclusion: Our Study found proportionally more patients achieved normalization of corrected calcium when managed per the proposed guideline for HOM. Despite statistical insignificance of the results, implementation of the guideline will optimize the treatment of outcomes of our cancer patients.

SA-12619

Rates of Clostridium difficile Infection (CDI) at a Tertiary Academic Medical Center and Compliance with IDSA/SHEA, ACG, and ESCMID Guidelines for Treatment

Nouf Aljafel, Hadeel Al-shaikhy, Maram Alnahdi, Abrar Thabit

Background: CDI is a global medical issue; however, limited epidemiological data exist in Saudi Arabia. Compliance with CDI treatment guidelines is prudent for proper management and preventing recurrence. The study aimed to find the annual incidence of CDI and the compliance of treatment regimens with the guidelines.

Methods: This was a retrospective, single-arm, cohort study in a Saudi tertiary academic medical center for the period from February 2016 to January 2018. Epidemiological data and the clinical course of CDI were analyzed. Descriptive statistics, Pearson correlation, and linear regression were used with a P value of < 0.05 to indicate statistical significance.

Results: In 2017, 49 positive CDI cases were reported out of 614 total patients with diarrhea in whom C. difficile immunoassay was performed indicating an annual incidence of 8%. During the study period, a total of 50 patients were included where most were females with mean age of 56.6 ± 17.9 years. Patients had normal baseline temperature, white blood cell count, albumin, and mean change in serum creatinine from premorbid level. Most patients were admitted to medical wards and had non-severe CDI according to all three guidelines. Clinical cure was found in 86% of the cases although all-cause mortality rate was 32%. Median [IQR] hospitalization period was 18 [9-73] days. While clinical success and length of stay were not significantly correlated with guidelines compliance (P > 0.05 for all tests), compliance with IDSA/SHEA guidelines was significantly associated with 32% lower mortality (P = 0.01). Compliance with other guidelines did not correlate with decrease in mortality.

Conclusion: Although CDI incidence appears low, appropriate management and infection control can help limit its spread. As guidelines were prepared by a panel of experts using most reliable evidence, results shown in this study indicate the importance of following guidelines recommendations for better patient outcomes.

SA-13219

Impact of Pharmacist Led Medication Management in Preadmission Clinic for Adult Cardiac Surgery

Asma Alshahrani, Meshal Almutairi

Background: Perioperative clinic (POC) is a specialty clinic where patients are evaluated before surgery to establish a database upon risk assessment. The ultimate goal of preoperative evaluation clinic is to ensure a safe and efficient perioperative care for patients undergoing a complex type of surgery. The aim of this study to assess the impact of pharmacist led perioperative clinic on the adherence to medication management guideline in perioperative cardiac clinic.

Methods: Prospective single center study was conducted in POC, to evaluate the impact of pharmacist led pre-admission clinic for preoperative medication management. The primary endpoint was practitioner adherence to preoperative medication

management evidence-based guideline and secondary endpoint was percentage of intervention documented by pharmacist in POC and acceptance of this intervention by physician.

Result: The result for 49 patients in preoperative clinic. Average age was 53 ± 13 years old 51% were male. Seventy percent of patients underwent valve replacement/repair; 30.1% underwent coronary artery bypass. Sixty-seven percent of patients were prescribed antiplatelet agents, 76% beta-blockers, 48.9% statins, 48.9% ACE-I/ARB, 59.1% diuretics, 30.6% chronic anticoagulation and 46 on stress ulcer prophylaxis. The data showed only 20 out of 49 (40.8%) patient on appropriate management according the guideline. All patient on antiplatelet, anti-coagulant, diuretic and statin medication followed the guideline recommendations. While only 77.3 % of patient followed the preoperative recommendation of atrial fibrillation prophylaxis and 40.8% adhered to stress ulcer prophylaxis recommendation. Four patients on renin angiotensin inhibitor drugs didn't follow the guideline recommendation. A total of 320 pharmacist recommendations according the EACTS guideline 87.5 % of this recommendation were accepted.

Conclusion: Significant percent of patient were not following the guideline in POC and the involvement of a pharmacist as part of the multidisciplinary team in the surgical preadmission clinic can improve patient safety during hospital admission.

SA-13419

The Efficacy and Safety of Spironolactone in Comparison to Combination of Furosemide and Captopril in Children with Hypertension: Retrospective Cohort Clinical Trial

Mohammed Alkhuzaee, Naji Alsulami, Sattam Almutairi, Ashraf Alsaide, Anas Bushah

Background: Although hypertension in young children may be secondary to an underlying disorder, primary or essential hypertension accounts for most cases in adolescents. Hypertension in this age group is often linked to risk factors associated with the metabolic syndrome. This is of concern, given the rising prevalence of overweight children and adolescents. However, the use of agents that have been extensively tested and used in adults often is not supported by data obtained in children like Spironolactone. spironolactone is off label use in treatment of hypertension in pediatrics according to main references.

Method: A retrospective cohort study was conducted. Patient demographic information was collected. We chose 20 patients admitted to Maternity and Children Hospital from May 2016 to Nov at Mecca. Patients were grouped by medications to 2 groups. First group were receiving spironolactone beside furosemide and captopril while the second group were on captopril and furosemide alone. We assessed efficacy of spironolactone by measuring blood pressure and mean arterial pressure before starting the treatment and when finish it and potassium level to investigate the safety of spironolactone.

Result: Out of 123 patients only 20 patients were included. There is no significant difference with group 1 in comparison of group 2 who they receive the combination both of them shows decrease in blood pressure by using Mann-Whitney Test and Wilcoxon Signed Ranks Test.

Conclusion: Spironolactone is major diuretic used as off label in treatment pediatric hypertension. However, there is no superiority in decreasing blood pressure in comparing with combination of furosemide and captopril, moreover it will cause potassium disturbances.

SA-13519

Clinical Impact of a Pharmacist-Managed Aminoglycoside Protocol at a Tertiary

Saudi Hospital: A Pre- and Post-Intervention Study

Fatimah AlJohani, Sulaiman Al-Zubairy

Background: Aminoglycoside antibiotics have a narrow therapeutic index within which serum levels should be monitored. A medication use evaluation at our institution indicated challenges in aminoglycoside dosing and monitoring. Therefore, a protocol was established where pharmacist handled aminoglycoside dosing and monitoring. The aim of this study was to evaluate the impact of pharmacist managed aminoglycoside dosing and monitoring.

Methodology: A single-center, two-phase (pre/post), study. We included all patients who received intravenous aminoglycoside for at least 24 hours during the study periods. Patients who were pregnant or younger than 14 years were excluded. The primary end point was bacteriological cure as defined by negative cultures after therapy initiation. Secondary end points included the development of acute kidney impairment (AKI) as defined by the rise in serum creatinine (Scr) concentration by 0.5 mg/dL or more from baseline, achievement of aminoglycoside therapeutic levels, and the appropriate aminoglycoside monitoring as defined by the presence of any serum aminoglycoside level and renal functions monitoring.

Results: The total number of the patients included in our analysis was 102 (51 per phase), of which 23 were males (45%) in the pre-intervention phase and 26 (50%) post-intervention. The mean age was 58 ± 18.7. Bacteriological cure occurred in 25 patients (49%) in the pre-intervention phase and 30 patients (85%) post-intervention phase ($p = 0.016$). Five patients (9.8%) developed AKI in the pre-intervention phase compared with 4 (7.8%) post-intervention ($p = 0.64$). Twelve patients (23%) in the pre-intervention phase achieved target therapeutic aminoglycoside serum levels and 30 (58%) post-intervention ($p = 0.02$). Thirty-three patients (64%) were not appropriately monitored in the pre-intervention phase compared with 7 (13%) post-intervention ($p < 0.0001$).

Conclusion: Implementation of a pharmacist-managed aminoglycoside protocol improved the appropriateness of aminoglycoside dosing and monitoring. Thus, it enhanced the potential of achieving target therapeutic serum levels and subsequently bacteriological cure.

SA-14119

The Incidence of Seizure of Patients Who Are Treated with Either Meropenem or Imipenem/Cilastatin in a Tertiary Hospital

Mohammed Al Musawa, Abdilahi Abdikarim

Background: Seizure represents a neurological complication

associated with various risk factors including head trauma, stroke, hemorrhage, CNS infections, or even some lifesaving drugs such as antibiotics. Carbapenems are B-lactams antibiotic agents with an exceptional broad-spectrum activity including serious gram-negative and polymicrobial mixed aerobic and anaerobic infections. Meropenem and imipenem/cilastatin are widely used antibiotics in hospitalized patients with multidrug resistance organisms (MDROs). Although the majority of studies suggest that these agents display similar pharmacokinetics and pharmacodynamics activity in terms of treating MDROs. Nonetheless, some clinicians believe that imipenem is more epileptogenic than meropenem regardless of the lack of supportive clinical evidence.

Methodology: This study was approved by Institutional Review Board. The electronic medical record system was used to identify 18 years or older patients who have had received imipenem/cilastatin or meropenem for more than 48 hours and concurrently received anti-epileptics medications from January 2016 to January 2018. The following data will be collected age, gender, weight, height, serum creatinine, creatinine clearance, serum electrolytes, antibiotics, indication, doses and duration, cultures and comorbidities. If available, anti-epileptics medications, electroencephalogram report and adverse drug reaction will be collected. We will assess the prevalence of seizures between meropenem and imipenem/cilastatin. Statistical analysis will be performed using Statistical Package for Social Sciences (SPSS) version 19. Descriptive statistics will measure the frequency, central tendencies and deviances of nominal and ordinal data. Numerical data will be measured by student t-test to compare two means and ANOVA for more than two means. Chi-squared test will be used to compare the categorical variables.

Preliminary results: 104 patients reviewed, 36 patients did not meet the inclusion criteria. 42 patients received meropenem and 26 patients received imipenem. 11 patients on imipenem had seizure and 12 patients on meropenem had seizure.

Conclusions:

• Although the percentage of new onset of seizure is higher in imipenem group however, there was no statistically significant difference in the incidence of seizure between meropenem and imipenem groups

• Patient with history of seizure was significantly higher in the meropenem group because some clinicians believe that meropenem less epileptogenic than imipenem

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SA-15619

Ketamine as an Alternative to Opioids in ICU Settings: Review Article

Raghad Almehmadi, Ohoud Aljuhani

Background: Opioid agents are the cornerstones for pain relief in different kinds of pain such as acute or chronic, pre-, or post-operative pain. Opioid analgesics were recommended by the SCCM (society of critical care medicine) 2018 guidelines for pain as first-line in critical care cases. And while they were extensively and -in some cases-, solely, used to alleviate pain, opioids can also cause numerous side effects and addiction is a major one. Recently, due to the extensive use of opioids, there has been a global shortage of opioids derivatives such as fentanyl, morphine and hydromorphone. Many approaches were taken as converting routes of administration (e.g. transdermal patches) or reducing the doses. However, one of the recent approaches was to use a non-opioid agent which has analgesic effect such as ketamine. Ketamine is N-methyl-D-aspartate receptor Antagonist, which - if activated - leads to excitation of neurons causing pain. The S enantiomer of ketamine is shown to provide a better safety profile than the racemic ketamine.

Purpose: To compare the effectiveness of ketamine as analgesic agent with opioids derivatives as a primary outcome, and as a secondary outcome, the safety profile of ketamine.

Method: The method is based on reviewing randomized clinical trials (RCTs) on adults admitted to ED post-trauma, or post-surgery pain, that has been published in the last ten years (2008-2018) and have compared ketamine and opioid derivatives analgesic effects. Databases used were PubMed, Ovid and Scopus as well as clinicaltrial.gov. Key words used were: ketamine, analgesia, opioid shortage. RCTs on animals, or pediatric populations were excluded. Literatures were primarily compared according to pain scores given by the patient (VAS or NRS), side effects and change in opioid consumption.

Results: According to the first parameter of comparison, pain scores (i.e. VAS, or NRS), ketamine was mainly found non-inferior to opioid in terms of analgesic effect. On other hand, there was significant reduction in opioid consumption. In terms of side effects, ketamine has generally safe profile, however, few studies reported that some patients experienced hallucination.

Conclusion: In light of the literature review, ketamine is non-inferior to opioid in pain relieve in critical care settings and in the emergency department. on the other hand, ketamine had a relatively safe profile, only minor side effects. In conclusion, ketamine can replace opioids in opioid shortage conditions or with opioid-tolerant patients.

SA-16719

Evaluation of Oral Anticancer Medications Handling, Storage, and Disposal Practices Among Cancer Patients and Their Caregivers at Home Setting in Princess Norah Oncology Center

Ashwag Algethami, Majed Alshamrani, Atika Alharbi, Aeshah AlAzmi, Mansoor Khan

Background: Oral anticancer medications are commonly prescribed for variety of indications. Unfortunately, most of them are dispensed to patients/patient caregivers without proper counseling about safe handling. The aim of this study was to evaluate the handling, storage, and disposal practices of oral anticancer medications among cancer patients/patient caregivers at home setting.

Methodology: A questionnaire-based cross-sectional study was conducted on adult cancer patients/patient caregivers receiving oral anticancer medications and visited our oncology outpatient pharmacy. Pharmacists or pharmacy interns interviewed patients after obtaining the consent. Survey responses were analyzed using descriptive statistics.

Results: A total of 201 participants were eligible and agreed to be interviewed, 67% of the participants were female and nearly

44% of the participant's age ranged from 40 to 60 years. Most participants were educated (78%). The top five medications were: tamoxifen, capecitabine, letrozole, dasatinib, and imatinib. All participants reported that medications kept away from children and pets. Approximately (97.5%) of the participants stored their oral anticancer medications properly and kept in the original container. Hand washing and wearing gloves were not a consistent practice among the participants. Only nine patients (4.5%) reported "Always" wearing gloves; 48 patients (24%) reported "Always" washing hands after handling anticancer medications. Participants reported that they had been informed about safe handling and storage by their physician (47%) and pharmacist (30%), while 40% have not had been informed. In terms of disposal practice; around 66% did not have unused or expired medications, about 29% dispose them in the trash, and 27% return them to the pharmacy or doctor's office.

Conclusion: This study shows that our patients/patient caregivers handling practices of oral anticancer medications are inconsistent with the published recommendations. A comprehensive education is needed to minimize the risk of exposure to these agents at home setting.

SA-17119

Assessment of Antithrombotic Therapy Management Periendoscopy

Haifa Alotaibi, Abdulrahman Alfadda, Sahar Jbarah, Adnan Almahrouq, Abdulrazaq Aljazairi

Background: The clinical consequences of thrombosis and bleeding should be taken into consideration when developing an overall peri-endoscopic management plan in patients receiving chronic antithrombotic therapy. The American society for gastrointestinal endoscopy (ASGE) has published guidelines on managing these patients. However, recent observations of data demonstrate a wide variation among health care practitioners regarding antithrombotic therapy management peri-endoscopy. This emphasizes the need to assess current practice and its related clinical outcomes. Moreover, no data in regard to the adherence to the guidelines have been reported locally. We aimed to assess antithrombotic therapy management peri-endoscopy. Furthermore, we aimed to assess the ASGE adherence rate and clinical outcomes in terms of associated thromboembolic and bleeding events in patients who underwent or will undergo endoscopic procedure before and after thrombosis and bleeding risk stratification strategy implementation, in a prospective, historical controlled design.

Methods: This is a 2-part study. Part I is a retrospective study that is designed to assess the adherence rate to ASGE guidelines of antithrombotic therapy management peri-endoscopy. Part II is a prospective, historical controlled study that is designed to compare adherence rate and clinical outcomes in relation to the implementation of risk stratification system on antithrombotic therapy management peri-endoscopy. The primary endpoint was to assess the rate of adherence to ASGE recent guidelines with regard to antithrombotic therapy management periendoscopy before and after the implementation of risk stratification tools for bleeding and thrombosis. The tools included a risk stratification tool adopted from the ASGE recent guidelines. In addition to HAS-BLED score. Available evidence found the ASGE adherence rate to be around 50%. In order to improve the adherence rate by 15% with a power of 80% and type I error of 5%, 68 research subjects were required. The study was approved by the Research Advisory Council (RAC #2171 119).

Results: Preliminary, a total of 1368 endoscopy orders were screened retrospectively, 400 patients met the initial selection criteria, of them, only 192 had a documented antithrombotic management plan peri-endoscopy. Majority of the procedures were associated with high bleeding risk in the retrospective vs prospective arms (99 % vs. 76%). The most common procedure was colonoscopy (89.50% vs. 60%) followed by polypectomy (9.9% vs. 8%). Most of the patients were using aspirin in the retrospective vs prospective arm (86.4% vs. 76%), followed by clopidogrel (17.7 % vs. 16%), warfarin (5.7 % vs. 16%) and rivaroxaban (6.7 % vs. 4%). Majority of the patients were male in the retrospective part I (65%), compared to 50% in the prospective arm. The mean (±SD) age of the patients was 64.78 ± 11.23 years in retrospective versus 61.4 ± 12.09 years in the prospective arm.

The ASGE guidelines adherence rate in the retrospective arm was reported in 36/192, 18.75%. After the introduction of risk stratification tools, as recommended by ASGE, the adherence rate improved significantly and was reported in 33/50, 66.00%, p-value of 0.0001. Preliminary, the effect size of the tools implementation improved by 47%, with number needed to treat (NNTT) of 2. With regard to the secondary endpoints, 2/192 patients in the retrospective arm had bleeding event (1 major and 1 clinically relevant not major) and 1/50 patient in the prospective had major bleeding event, p-value= 0.8289. Three patients (3/192) compared to 1 (1/50) patient developed thrombotic event for the retrospective and prospective arms, respectively, p-value= 0.5854.

Conclusion: Preliminary, the adherence rate to the ASGE guidelines is sub-optimal in clinical practice. Adaption of risk stratification tool improves the adherence to the guidelines and optimize patient's safety.

SA-18119

Evaluation of Caspofungin Use in Adult Patients: Retrospective Cohort Study.

Abrar Alshehri, Mohammed Aseeri, Umair Ansari, Nour Shamas

Background: The Infectious Diseases Society of America (IDSA) guidelines recommend the use of caspofungin as salvage therapy to treat invasive aspergillosis (IA), and as initial therapy for invasive candidiasis (IC). Caspofungin is recommended over fluconazole to treat IC in critically ill, patients with azoles allergy, azoles intolerance, and patients with recent azoles exposure. Empiric caspofungin therapy is recommended for high-risk patients with prolonged neutropenia despite broad-spectrum antibiotic therapy.

Objectives: To evaluate the appropriateness of caspofungin use in adult patients in terms of indication, dose and duration.

Methods: We identified 244 inpatient adults whom received caspofungin from the 1st of January 2015 until the 30th of December 2015. Fifty patients were randomly selected to be evaluated for appropriateness of therapy, which included the following indications: stable febrile neutropenia (FN), alternative treatment choice for aspergillosis, and septic shock. The dose was evaluated for appropriateness according to the proper loading and maintenance dose being subsequently provided. The appropriateness of dose also factored any hepatic impairment dosing adjustments that were necessary

due to patient's calculated Child-Pugh score and any drug-drug interactions that were discovered and required dose adjustments. Cultures and laboratory tests were used to evaluate the appropriate duration of caspofungin therapy.

Results: Caspofungin was inappropriately used in (34/50) 68% of patients. This included (17/50) 34% of patients whom had an inappropriate indication, (27/50) 54% of patients whom had an inappropriate dose, and (5/50) 10% of patients whom had an inappropriate duration. Interestingly, (24/50) 48% of patients had more than one inappropriate use. Moreover, missing doses were seen in (38/50) 76% of patients.

Conclusion: The use of caspofungin in our institution was highly inappropriate. Hence, developing an antifungal stewardship and drug restriction program is highly recommended.

SA-19619

Pharmacists Related Interventions to Prevent Prescribing Errors among Hospitalized Patients in Acute Care Setting at a Tertiary Teaching Hospital in Saudi Arabia

Abdulhakim Alzahrani, Tariq Alhawassi, Yousif Asiri, Monira Alwhaibi.

Background: Prescribing errors (PEs) are common in practice and can cause morbidity and mortality. The pharmacist has an identified role in minimizing and preventing PEs; however, additional evidence is required to understand the nature of pharmacist's related interventions (PRIs) regarding preventing PEs.

Objective: To explore the different interventions conducted by pharmacists to prevent or minimize PEs among hospital admitted patients.

Design and setting: A retrospective analysis of PRIs to prevent or minimize PEs recorded between 1st April and 30th September 2017 in the electronic medical system of a tertiary teaching hospital in Riyadh were collected. Data were entered in a purposefully designed Excel sheet for this study. Collected data comprised patient demographic data, medication information, and related interventions by the pharmacist. An appropriate descriptive analysis was done for all variables and presented as frequencies and percentages. The study was ethically reviewed and approved by the hospital IRB committee [E-18-3251].

Results: A total of 2,564 PEs and PRIs including 1,565 patients with mean age (±SD) of (42.77±27.2) years were recorded. Wrong dose (54.3%), unauthorized prescription (21.9%) and prescribing of duplicated therapy (10.9%) were the most commonly encountered PEs. Anti-infectives for systemic use (49.2%) and alimentary tract and metabolism (18.2%) were the most common involved medications with PEs where parenteral medications had the highest rate of PEs (58.4%). PEs in intensive care unit (23.9%) followed by medical wards (23.2%) then surgical wards (15.2%) were the highest encounters. Most reported PRIs were dose adjustment (44.0%) followed by restricted medications approval (21.9%) and therapeutic duplications (11%).

Conclusion: Pharmacists play major role in preventing PEs consequences especially through dose adjustments. Prescribers can benefit the most from pharmacist's interventions; therefore, enhancing medication safety among patients.

SA-24519

Evaluation of Hospital Wide Implementation of Aminoglycoside Once Daily Dosing Protocol in Pediatrics

Yasmin Elsharawy, Reem Osman, Aljawharah Alkoraishi, Manal Abouelkheir

Background: Aminoglycosides are commonly used antibiotics to treat resistant infections in pediatrics. Aminoglycosides have concentration-dependent bactericidal activity with a long post-antibiotic effect. The pharmacodynamic target of Peak/MIC of 8-12 has been strongly associated with improved clinical outcomes and reduced mortality. In contrast, high trough concentrations have been associated with increased renal toxicity. Therefore, the main aim of this study was to evaluate the impact of a hospital wide implementation of the once daily (OD) aminoglycoside dosing protocol in children compared to traditional dosing (TD).

Method: This was a retrospective chart review including pediatric patients (age 1–12 years), who were admitted to the general wards or ICU at King Saud University Medical City (KSUMC) and received an aminoglycoside (gentamicin or amikacin) for suspected or proven gram-negative infection. Two different dosing regimens were evaluated: TD (from Jan. 2009 till Dec. 2014) and OD from (Jan. 2015 till Aug. 2018).

Results: A total of 161 patients who received gentamicin (91 as TD, 70 as OD) and 125 patients who received amikacin (39 as TD, 86 as OD) were included in the analysis. The mean peak serum concentrations in the OD groups were significantly higher than TD for both gentamicin and amikacin (10.8±4.62 vs. 5.53±2.50 and 29.3±11.52 vs. 19.54±7.21mg/L, $P<0.01$), respectively. Meanwhile, the percentages of patients with trough concentrations >1mg/L for gentamicin and >4mg/L for amikacin were significantly lower in the OD groups (0% vs. 12.1% and 1.2% vs. 38.5%, $P<0.01$), respectively. Likewise, the incidence of nephrotoxicity was significantly lower in the OD compared to TD for both gentamicin and amikacin (5% vs. 13.5% and 3.2% vs. 10%, $P<0.01$), respectively.

Conclusion: The OD aminoglycoside regimen increased the likelihood of achieving the pharmacodynamic target of Peak/MIC of 8-12, with reduced incidences of nephrotoxicity.

Students Abstracts

SA-03119

Potential Drug-Drug Interactions in Hospitalized Cardiac Patients in Asir Region.

Arwa Khalid, Suad Alfaifi, Tahani Issa, Abeer Alshahrani, Tahani Alasiri

Background: Drug-drug interactions (DDIs) are a major cause for concern in patients with cardiovascular disorders due to multiple co-existing conditions and the wide class of drugs they receive.

Objectives: The objective of our study was to identify potential drug-drug interactions among hospitalized cardiac patients and to identify the risk factors associated with these interactions.

Methods: After obtaining approval from Institutional Ethical Committee, a prospective observational study was carried out among 200 hospitalized cardiac patients in Aseer hospital. Cardiac patients prescribed at least two drugs and having hospital stay of more than 24-hour duration were enrolled into the study. The prescriptions were analyzed for potential DDIs using Micromedex multidrug interaction checker tool. Descriptive statistics, Student 't' test, ANOVA and Pearson correlation coefficient were used to analyze the results.

Results: The incidence of potential DDIs was 93% moderate interactions, 91.5% major interactions and 30.5 % minor interactions with 200 prescriptions having at least one potential DDI. 110 potentially interacting drug pairs were identified among which major and moderate interactions were of significant grade while only seven were minor interactions. Aspirin/clopidogrel (111), furosemide /aspirin (89), enoxaparin and clopidogrel (89) and Lisinopril / aspirin (60) were the most common interacting pairs. Drugs most commonly involved were aspirin, clopidogrel, heparin, furosemide, ranitidine and Lisinopril. The risk factors found associated with the potential DDIs Were Age, polypharmacy, and diabetes mellitus.

Conclusion: Proper therapeutic planning, routine monitoring of cardiac inpatients and usage of online DDI database will avoid potentially hazardous consequences in cardiac in-patients.

SA-04019

Prevalence of Non-Adherence to Immunosuppressive Medications in Kidney Transplant Recipients, Barriers and Predictors

Hajer Baghaffar, Duha Alnajjar, Shahd Taj, Nahed Almashabi, Sherine Ismail

Background: Non-adherence to immunosuppressant therapy (IST) is one of the major factors leading to graft rejection. To our knowledge, limited data exists on the prevalence of non-adherence in kidney transplant recipients in our center and in Saudi Arabia.

Objective: The study aims to assess the prevalence of non-adherence to IST among kidney transplant recipients at the Ambulatory Care Center, King Khalid hospital.

Methodology: A cross-sectional study was conducted from January 2017 to June 2018. Adult Kidney transplant recipients above 18 years of age, with functional kidney, were included and were excluded if they refused to participate or admitted during the administration of the survey. The Primary outcome was the prevalence of non-adherence among kidney transplant recipients. It was assessed using 1) A telephone-interview to administer the validated Immunosuppressant Therapy Adherence Instrument Scale (ITAS) survey (Cronbach alpha 0.81), 2) Average serum blood levels of IST within target therapeutic levels. Secondary outcomes include barriers for adherence and its predictors and were assessed using the validated Immunosuppressant Therapy Barriers for Adherence Survey (ITBS) (Cronbach alpha 0.91). A sample of 90 patients was estimated to provide prevalence of 30% of non-adherence, 95% confidence interval, 5% precision and alpha of 0.05.

Results: We enrolled and consented 98 /141 patients screened. The mean age was 48.8±15.8, 65% were males; mean baseline estimated glomerular filtration rate was 73.3±21.8 ml/min/1.73m2 and 75% received tacrolimus-based IST. The Prevalence of non-adherence was 6.1 % and 15.3 % using ITAS and serum blood therapeutic drug levels, respectively. The median ITBS score was 21; IQR (18-25) out of (13–65).

Conclusion: Our study demonstrates a low prevalence of non-adherence to IST among kidney transplant recipients and few barriers for adherence to IST, which warrants further patient-education to optimize therapeutic outcomes. Future studies to assess non-adherence in kidney transplant recipient at a multicenter scale.

SA-04619

Public Perceptions About Including Medication Awareness in Lifestyle Health Campaigns.

Manar Al-Matar, Kawther Al-Ameer, Zahra'a Al-Mousa, Wafa Alzlaiq, Faten Alhomoud

Background: The irrational use of medicines is likely to result in therapeutic failure, disease progression, and the need for more aggressive treatments. One of the ways to alter such behavior and increase public awareness about appropriate medication use is by designing and delivering a public health medicine awareness campaign.

Purpose: This study aims to evaluate the general public's awareness of medication use and public health campaigns.

Materials and methods: This is a cross-sectional survey study. Participants were aged 18 or over and able to speak Arabic or English. An online survey (Ranjabar's questionnaire) was distributed from January to March 2017 to a random sample of 451 participants by email and social media via an internet link leading to a web-based survey platform in QuestionPro. Data were entered and analysed using (SPSS) 22.

Results: Three hundred and forty-seven participants (76% female, aged 18-85 years) were on a mean (SD) of two (1.86) regular medicines and 225 were on non-prescription medications. Seventy-one and sixty-three percent of those surveyed consulted a doctor or a pharmacist respectively

for advice about their medications. Medication leaflet (59%), pharmacy (58%) and internet (53%) were reported as major sources of medication information. The participants were curious mainly about side effects of treatment (78.7%), followed by drug interactions (54.7%). Seventy-seven percent of participants reported seeing a public health campaign previously. TV (57.7%) and Twitter (54.6%) were reported as the most appropriate tools to help in delivering a good public health campaign. Ninety-one percent believed that a public health campaign can increase people's awareness about their lifestyle and 73% declared that the use of medication should be part of a public health campaign.

Conclusions: The findings of this study can be used as a basis for designing and delivering public health campaigns that raise medication awareness.

SA-07019

Prevalence of Complications in One Year Post-Renal Transplantation: Retrospective Study

Shahad Alhulail, Abdulkareem AlBekairy, Amjad Qandil, Aghsaan Alenizy, Renad AlShuraim, Mohammad Shawaqfeh

Background/Purpose: Kidney transplantation has been the treatment of choice for end stage kidney failure; however, there is a risk of developing some complications such as acute rejection, late rejection, infections, new onset diabetes mellitus (NODM), hypertension and hyperlipidemia. In previous studies evaluating the prevalence of these complications, concluded that the cumulative incidence of NODM was 24.0%. Also, 41% of patients are on statin therapy six months after the transplantation. Hypertension was present in half of the renal-transplant patients. Moreover, it showed that around 40% of patients developed a cardiovascular event 3 years post-renal transplantation. The aim of this research is to determine the prevalence of NODM, hypertension, dyslipidemia and cardiovascular events after kidney transplantation in National Guard Health Affairs (NGHA).

Methodology: Observational retrospective chart review study in NGHA. The development of NODM, hypertension and dyslipidemia were assessed by laboratory and diagnostic measures and/or on antidiabetic, antihypertensive, or lipid medication. Any documentation of post-transplant cardiovascular event was also checked. The sample size included 138 kidney transplant patients.

Study subjects: Non-critical care adult ≥18 years in-patients who are admitted to the kidney transplant center.

Results: After exclusion, none of the patients developed new onset diabetes (0 out of 68 patients), 41.77% developed dyslipidemia (33 out of 79). 23.5% developed hypertension (7 out of 34), and 8.69% had cardiovascular events (12 out of 138).

Conclusion: The percentages of developing dyslipidemia, hypertension, diabetes mellitus, and CV events in our cohort are less than those reported in other studies. This might be due intensive post-transplant care and follow-up. The findings would not be generalized due to the small sample sized and single-centered study. Furthermore, the effect of immunosuppressive drugs and corticosteroids that may lead to these complications may need longer than 1-year follow-up to develop.

SA-07219

Effect of Early Blood Glucose Correction on Length of Hospital Stay in Diabetic Patients Admitted into Emergency Department at KAMC

Reem Qubaiban, Haifa Aljaafary, Shmylan Alharbi

Background: While it has been shown that inpatient hyperglycemia due to any cause is associated with poor outcomes, limited information is available regarding the need of correction of elevated blood glucose (BG) levels in patients admitted to the emergency department (ED) with unrelated complaints. Long-term hyperglycemia may result in unfavorable outcomes. The objective of this study is to evaluate the effect of early BG correction within the first 24 hours on LOS in diabetic patients with hyperglycemia.

Methodology: A retrospective chart review was performed for all adult diabetic patients with hyperglycemia admitted into KAMC emergency department (ED) during 2017. Data on several demographic and clinical factors were gathered including age, gender, BMI, ED admission diagnosis, ED admission date, ED discharge date and comorbidities. BG correction (control achieved within the first 24 hours from triage) will be defined as having three consecutive BG normal readings. Statistical significance will be considered at p- value <0.05.

Results: A total of 365 patients were admitted to the emergency department with different kinds of medical conditions, were included. They were grouped according to the number of day that blood glucose was corrected. A sum of four groups, the first group their blood glucose was corrected at the first day of admission. Second group was corrected at the second day. Third group was corrected at the third day. Fourth group, more than three days until correction. The groups were compared with each other using the ANOVA test. The result by ANOVA test showed a significant difference between all groups in the length of stay and the P value was <0.05. Also, using T-test to compare individual groups, the first three groups (groups 1-3 showed no significant difference between each other, while all of them were significantly different than group 4).

Conclusion: the results were similar to reported literature findings that early BG correction is associated with shorter length of stay and better clinical outcome.

SA-09019

Assessment of Saudi Public Awareness about Proton Pump Inhibitors (PPIs)

Murooj Alharbi, Enas Almohammadi, Rawan Nassir, Ghaidaa Saifudden, Maryam Haddad

Background: Proton pump inhibitors (PPIs) are the cornerstone in treating gastric-acid related diseases. Including gastroesophageal reflux disease (GERD) and the prophylaxis of drugs-induced ulcers. There's a significant increase in PPIs use among Saudi population.

Aim: This study was designed to assess the perception of

public about proton bumps inhibitors use.

Method: This study was conducted among the community of Jeddah, Saudi Arabia. It included a representative sample of 156 participants aged 18 years old and above who use PPIs. The data was collected through a questionnaire that was distributed in public places and hospitals of Jeddah.

Results: The current study was applied on 156 participants included 48 men and 108 women with ages varying between 18 to 58 years and older. Participants use different PPIs but highest percent of them are using Omeprazole. The most common co-administered drug group was non- steroidal anti-inflammatory drugs (NSAIDs). Assessing the awareness of appropriate duration for PPIs use showed that only 5.13% aware of the correct duration. Considering the awareness of PPIs side effects, a majority of 95.51% didn't know any of the common side effects. 9.62% of the participants get PPIs by pharmacist recommendation and a similar percent of the participants get PPIs by family and friend's advices.

Conclusion: This study was conducted to assess the awareness of PPIs. The study found a lack of PPIs awareness. Where very few participants are aware of PPIs duration of use or the most common side effects. Several participants were found to take other medications that might interact with their PPI. While the others who use PPI for prolonged duration have not taken the required prophylaxis medications. Based on our outcomes, we recommend using PPI safely and effectively with minimal risk of adverse events by adhere to the guidelines and recommendations addressed by regulatory agencies to assure the accuracy of prescribing and counseling.

SA-09319

The Effect of Prescribing Broad-Spectrum Antibiotics and Proton Pump Inhibitors in Developing Clostridium Difficile **Infection in Adult Patients**

Lana Fagih, Mai Alawi, Lana Fagih, Seba Aljahdali, Raghad Fatani, Ohoud Al-Juhani

Background: Clostridium difficile infection (CDI) is one of the most common causes of diarrhea related to the healthcare facility. PPIs and broad-spectrum antibiotic use have led to increasing rates and severity of C. diff-associated disease (CDAD). The objective of this study is to estimate the prevalence of CDI in a tertiary academic medical center and to evaluate some of the common risk factors associated with CDI such as Proton Pump Inhibitors (PPI) and broad-spectrum antibiotics.

Methods: In May 2018, records between January 2013 and May 2018 in all medical wards were reviewed. Eligible patient's records were adults (≥ 18 years old) with confirmed C. diff diagnosis via lab results. Data were analyzed using descriptive statistics (number, percent, frequency). Qualitative variables compared by t-test and one-way ANOVA. A p value <0.05 was considered statistically significant.

Results: Out of 1886, 128 had positive lab results and met the inclusion criteria. The prevalence of CDI in the past five years was 6.8% at (KAUH). The number of patients who were exposed to PPI and broad-spectrum antibiotics (56%) are higher than patients who were taking either agent alone (36%). Piperacillin-tazobctam was the most common broad-spectrum antibiotic used (29.5%) while Omeprazole was the most PPI used (53%). There was no statistically significant difference between the type of PPI and the duration from starting PPI to developing CDI (p = 0.242), and between the duration from starting or discontinuing the antibiotics to the onset of CDI (p= 0.745, 0.241) respectively.

Conclusion: The overall CDI prevalence was low, the majority of the patients who developed CDI were found to be either on PPI and/or antibiotics which are known as strong predictable factors for the development of CDI. The appropriate prescribing of PPI and Abx managed by healthcare systems can decrease the risk of the infection.

SA-15219

The Correlation between Utilizing Nephrotoxic Medications and Starting Renal Replacement Therapies (RRT) in Acute Settings: An Observational Study

Lujain Hassan, Raneem Bukhari, Asmaa Alamoudi, Huda Aljedaani, Doaa Alghamdi, Ohoud Aljuhani

Acute kidney injury (AKI) showed a higher incidence throughout the past years. Acute kidney injury (AKI) occur in approximately 19-26% of hospitalized patients due to drug intake. When the GFR less than 15 ml/min/1.73m2 is defined as end stage renal disease (ESRD), dialysis is necessary for compensation. Our aim is to evaluate the correlation between nephrotoxic drugs and the incidence of AKI by evaluating dialysis need in ICU admitted patients at King Abdulaziz University Hospital in Jeddah, Saudi Arabia.

ICU retrospective record review conducted) from 22 May to 22 June 2018. inclusion criteria involved patients older than 18 years and who were admitted to Medical ICU or Surgical ICU started on one of the following drugs for more than 24 hours ARBs, ACEI, thiazide, amphotericin B, aminoglycoside, vancomycin, piperacillin/tazobactam, colistin, IV acyclovir, cisplatin, IV methotrexate. While patients on RRT before either ICU admission, nephrotoxic drugs were excluded. Statistical analysis was performed using SPSS V21

We included a total of 85 patients. Out of our total sample 38 (44.7%) were females and 47 (55.3%) were males. Mean age was 54.25 ±17.56 (19-79) years. The mortality rate was 41.2%. Patients who were admitted to MICU were 70 (82.4%) and 15 (17.6%) in SICU.

Twenty-four patients developed AKI (28.2%), 20 of them were above 41 years old and 8 (33.3%) of the them needed to start dialysis. We found a significant relationship between AKI development and exposure to acyclovir (p=0.005). Another significant association was found with vancomycin and ACEi with dialysis initiation, P values were (0.015), (0.048) respectively.

According to our findings we recommend close monitoring of ICU patients and continuous assessment of their kidney functions as long as they're treated with vancomycin, acyclovir and ACEI and other nephrotoxic agents.

SA-15519

Platelet Abnormalities with Piperacillin Compared to Other Beta-Lactams: A Meta-Analysis of Randomized Controlled Trials

Abdulwahed Sanari, Ali Basabein, Samah Alshehri, Khalid Eljaaly

Background/Purpose: Prolonged use of some β-lactams can lead to hematological side effects, particularly thrombocytopenia. Piperacillin/tazobactam can cause thrombocytopenia as an adverse drug reaction according to the statement of the manufacturer's package insert of the drug. The aim of this study is to compare the rate of serum platelets abnormalities between piperacillin/tazobactam and other β-lactams.

Methodology: We referred to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to complete this meta-analysis. Two researchers independently searched the PubMed database and the ClinicalTrials.gov and ClinicalTrialsRegister.eu websites for studies between 1 Jan 2000 and 25 Feb 2018. RCTs of hospitalized adult patients which compared piperacillin-containing regimens and other beta-lactams were screened and included if they reported rates of platelet dysfunction. Studies of different designs, including pediatrics, allowing other beta-lactams with the piperacillin-containing regimen group were excluded.

Results: Out of 503 screened articles, 8 RCTs were included. Four RCTs were double blinded and 4 were open-labeled. All were superiority studies except one was a non-inferiority study. Two studies were supported by drug companies. Carbapenems were the comparator in all studies except one in which the comparator was ampicillin/sulbactam. Piperacillin-containing regimen was associated with higher rate of platelet abnormalities (OR=1.649 [95% CI 1.170- 2.323], p=0.004; I2=0%).

Conclusion: The use of piperacillin-containing regimens is associated with higher rate of serum platelet abnormalities compared to other beta-lactams.

SA-15719

Comparison of Rate of Adverse Drug Reactions Between Erythromycin and Clarithromycin in Community-Acquired Pneumonia: A Systematic Review and Meta-Analysis

Ahmed Botaish, Mohamed Almehmadi, Ziyad Assabban, Fawaz Bahobail, Khalid Eljaaly

Background/Purpose: Macrolides are recommended for treatment of community-acquired pneumonia (CAP). Azithromycin is used for a shorter duration, but erythromycin and clarithromycin are used for a longer duration. Both have significant drug-drug interactions, but it is debatable whether erythromycin causes more adverse drug reactions (ADRs). Currently, all of these macrolides are options for CAP. The aim of this study is to compare adverse drug reactions in CAP patients treated with erythromycin versus clarithromycin.

Methodology: Two investigators independently searched the PubMed, EMBASE and Cochrane Library databases through July 15, 2018. Any randomized-controlled trials (RCT) comparing ADRs of therapy with erythromycin course versus clarithromycin in patients with CAP were included. Studies missing one of these criteria were excluded. We estimated absolute risk differences (RD) with 95% confidence intervals (CIs) using random-effects model and evaluated heterogeneity (I2). Risk of bias was assessed by Cochrane risk of bias tool for RCTs.

Results: Five RCTs (total of 736 patients) were included. A significantly higher discontinuation due to ADRs was found with erythromycin compared to clarithromycin (RD, 0.120; 95% CI, 0.038 to 0.202; P-value=0.004; I2=0%). The overall ADRs occurred more significantly with erythromycin compared to clarithromycin (RD, 0.189; 95% CI, 0.086 to 0.291; P-value <0.001; I2=0.057%). With regard to gastrointestinal (GI) ADRs, they were also higher with erythromycin (RD, 0.180; 95% CI, 0.014 to 0.345; P-value=0.034; I2=0%).

Conclusion: Based on this meta-analysis of RCTs, it was confirmed that erythromycin results in higher incidence of overall ADRs, GI ADRs, and discontinuation due to ADRs. Accordingly, and since it is not more effective than clarithromycin, it should be clarified in clinical practice guidelines that recommend erythromycin that it should not be used unless other macrolides cannot be used.

SA-17919

Comparative Effectiveness and Safety of Intensive Blood Pressure Lowering Treatment Vs. Standard Slandered Treatment in Older and Younger Adults: A Meta-Analysis of Randomized Trials

Faisal Alzahrani, Yazeed Alsubaihi, Ziyad Almalki

Background: Blood pressure goals in people with high risk of cardiovascular disease have been extensively debated over the past few years. Recent hypertension guidelines have reversed previous recommendations for lower blood pressure targets in this population. This change represents uncertainty about whether intensive blood pressure-lowering strategies are associated with greater reductions in risk of cardiovascular events. We aimed to investigate if intensive compared with standard blood pressure control is associated with reduced cardiovascular events risk.

Methods: For this systematic review and meta-analysis, we systematically searched MEDLINE, for trials published until October 3, 2018. We included randomized controlled trials that randomly assigned participants to intensive versus standard intensive blood pressure-lowering treatment, with different blood pressure targets or different blood pressure changes from baseline. We did not use any age or language restrictions. We did a meta-analysis of blood pressure reductions on odds ratio (OR) of major cardiovascular events (myocardial infarction, stroke, heart failure, or cardiovascular death, separately and combined).

Results: We identified 17 trials including 51806 participants, in whom 3320 major cardiovascular events were recorded during a mean 2·8 years of follow-up (range 0.4–5·3 years). Our meta-analysis showed that intensive blood pressure-lowering treatment achieved OR reductions for overall cardiovascular

events (21% [95% Confidence Interval (CI) 5–27]), myocardial infarction (8% [0–22]), stroke (11% [0–22]), heart failure (16% [1–30]), and cardiovascular death (28% [16–39]).

Conclusion: In high-risk patients, intensive blood pressure lowering provided greater vascular protection than standard strategy. It significantly reduced overall and heart failure events with the greatest benefit seen in cardiovascular death.

SA-19419

Drug Utilization Study in Geriatric Patients in Tertiary Care Hospital

Abdulraheem Alkhattabi, Faisal Alqurashi, Mohammad Albeshri, Abdulaziz Saggat, Kayamkani Khan

Background: The geriatric population is on the rise worldwide. This population is vulnerable to many diseases and drug-related problems. Limited data are available in general, and in Saudi Arabia in particular, on drug utilization in this population. We undertook this study in order to understand the pattern of drug use and related issues in geriatric patient.

Aim: To evaluate the drug utilization pattern in geriatric patients in tertiary care hospital.

Methodology: A prospective observational study was undertaken from September 2018 to November 2018 in tertiary care Hospital, Jeddah. A Sample size of total 202 patients of the geriatric age group (≥65 years), from the outpatient Departments of tertiary care Hospital, Jeddah were included in the study. Patients of either gender who had completed 65 years of age on 31st July 2018, or earlier and who were come to Outpatient department were included in the study. Patients who are unwilling to participate in the study were excluded.

Results: A total of 202 elderly patients fulfilled the inclusion criteria, Total 92 male and 110 females were included in the study. The gender distribution of the elderly in which 92 (45.45%) were males and 110 (54.45%) were females. Total number of drugs prescribed based on therapeutic category wise shown. Average number of drugs per prescription was 4.33 (875/202) which shows polypharmacy.

Conclusion: This study provides insights into the patterns of drug use and appropriateness of prescriptions. The assessment of WHO core indicators helped to improve the prescribing pattern and even to minimize the cost burden of patients. The percentage of drugs prescribed from WHO essential drug lists was fair, use of injections and antibiotics was moderate. A regular medication chart review by the clinical pharmacist can reduce the frequency of prescribing drugs without indications and thereby reducing polypharmacy.

SA-20819

Management of Vancomycin Level to Reduce Resistance of Organisms and Renal Toxicity in Hospitalized Adult Patients

Enad Almalki

Background: Intensive care units (ICU) have a high rate of nosocomial infections that can affect admitted patients. Those patients are highly susceptible to certain types of microorganisms such as Enterococci and gram-positive strains of Staphylococcus aureus, which are the most common pathogens in ICU.

According to evidence, critically ill patients are associated with severe or complex medical conditions such as sepsis, acute kidney injury (AKI), or multiple organ failures. Those clinical conditions can affect the body's physiology and significantly alter the pharmacokinetic behaviour of antibiotics. In individual patients, changes in the PK parameters can occur due to the alteration of disease severity, as the dose that was appropriate on one day may be inadequate a few days later. Therefore, management of antibacterial doses in this population remains challenging.

Some studies recommend increasing loading doses in order to obtain therapeutic drug concentrations in critically ill patients. Thus, sufficient drug concentration is necessary for killing or suppressing the growth of bacteria at the site of infection. Therefore, optimisation of antibiotic regimen can be considered for achieving therapeutic drug concentrations. Furthermore, Under-dosing of vancomycin contributes to vancomycin resistance and ineffective treatment while over-dosing is associated with toxicity. Optimizing vancomycin therapy with therapeutic drug monitoring (TDM) is recommended.

Objective: To optimize using of vancomycin in KAMC and reduce vancomycin resistance of organism and toxicity of vancomycin on the renal functions.

Materials and Methods: retrospective study was conducted among adult patients who received vancomycin for a suspected or proven gram-positive infection during the period from (June 2012 – February 2013) at King Abdulla Medical City (KAMC), In Makkah. Patient demographics data, concurrent nephrotoxic medication, frequency of vancomycin dose-holding, frequency of exceeding upper limit of vancomycin therapeutic level, frequency of reaching under vancomycin therapeutic level, and what is the action in case of exceeding upper or reaching under vancomycin therapeutic level, were collected from medica plus system in KAMC.

Result: 59 patients (34 males and 25 female), the mean age of patients 51.59+18.965 years old and mean duration therapy 12.90+6.205 day. We found 35 patients (59.32%) were exceed upper limit of vancomycin therapeutic level (>20 ug/ml) during their treatment by vancomycin. 17 patients from them were also on other concomitant nephrotoxins, and 18 patients of them suffering from decrease creatinine clearance. The physicians adjusted the dose in only 8 patients, held the dose in 16 patients and didn't do any action for 11 patients. And 36 patients (61.02%) were under vancomycin therapeutic level (<10 ug/ml) during their treatment by vancomycin, and 13 patients of them were receive vancomycin to treat complicated infections and the physicians increased the dose of 4 patients (30.8%) and didn't do any action for 6 patients (69.2%). Also 18 patients (31%) suffering from fluctuating level of vancomycin due to on and off dosing.

Conclusion: Holding the dose or reduce the dose are not right ways to adjust the dose of vancomycin when the upper limit of

vancomycin therapeutic level, the right is to increase the dose interval. Because holding the dose and then continue same dose (on and off dosing) is the main cause of fluctuation level. This fluctuation in vancomycin concentration level is indicator for bad management and may lead to treatment failure due to survive less susceptible strains “MIC creep”. Patients with renal failure and on concomitant nephrotoxins need close monitoring of vancomycin concentration level and serum creatinine to decrease the risk of nephrotoxicity.

SA-20919

Awareness of Women in Saudi Arabia about the Side Effects of Hormonal Contraceptives

Khalil Radwan, Hind Al-Rifai, Abdulrahman Zrari, Rawan Al-Qurashi, Saja Samanudi.

Background: While hormonal contraceptive drugs were invented to improve reproductive health and provide appropriate birth control, many women use these drugs without being fully aware of their side effects. This could be attributed to prescribers giving incomplete information, buying these drugs from over-the-counter without professional consultation, lack of education, etc... The objective of this research is to assess the awareness of women and their partners on the side effects of hormonal contraceptives and to find out their source of information, pattern, and cause of use (if they used HCs).

Method: A cross sectional study (n= 2002) was carried out amongst women in Saudi Arabia. An online self-administered survey was shared through social media, and women above the age of puberty who used HCs for treatment, delay of menstruation, or contraception, as well as those who never used HCs, were asked to fill out the survey.

Results: 24.04% of women claimed that their physicians educated them on all of the possible side effects and 22.89% claimed that they read about them on trusted medical websites/ books. However only 2 out of 29 side effects of HCs listed were known by more than 50% of the women; these side effects were mood swings and depression, known by 77.08% of women, and weight gain, known by 63.16% of women.

Conclusion: The study clearly reveals a lack of awareness regarding the side effects of hormonal contraceptives. Healthcare professionals should provide more honest consultations. Social media platforms could also be an effective way through which to raise awareness and provide better understanding of hormonal contraceptive’s use and safety.

SA-21419

Risk Factors Associated with Development of Cholestasis in Infants on Prolonged Parenteral Nutrition

Maram Aljohani, Faisal Al-Sehlie, Rama Aldukheel.

Background: Prolong preantral nutrition among infants may lead to serious complication such as parenteral nutrition associated cholestasis (PNAC). The aim of this study is to determine the incidence of cholestasis at our institution and assess the impact of dextrose, protein, and lipids dose on the development of cholestasis in infants on prolonged parenteral nutrition.

Method: This is a retrospective chart review of all infants admitted to the neonatal intensive care unit (NICU) and Pediatric specialty at King Abdul-Aziz Medical City, and King Abdullah specialized children’s hospital - Riyadh, Saudi Arabia, between January 2010 and December 2015. The study included all infant received PN for more than 30 days. Excluded were patients initiated on ECMO during hospitalization or had a diagnosis of primary hepatobiliary disease.

Results: A total of 2362 infants were admitted to the hospital during study period of these, 107 patients were met the inclusion criteria. The incidence of cholestasis was 34.6% (37 out of 107). The mean duration of TPN was 49.73 days (P=0.048). Regarding the components of TPN 76.6 % (82 patients) received Intra-lipid > 2g\kg\day; of these, 78.4% experiencing cholestasis (P= 0.815) . While the patients received ≤ 2 g\kg\day, 21.6% of them developed cholestasis as well. No differences were observed between patient received > 3 g/kg/min or < 3 g/kg/day regarding cholestasis. For patients received dextrose, the incidence of cholestasis was 6% higher among patients who received GIR >14 mg/kg/min.

Conclusion: In conclusion, higher amount of lipids, dextrose, and amino acid is associated with developing cholestasis. our result was not statistically significant regarding the association between the macronutrients and cholestasis. however, the results consider to be clinically significant. Thus, we are planning to increase the sample size to confirm the hypothesis.

SA-21919

Comparison of Efficacy of Definitive Therapy of Beta-Lactams Versus Vancomycin for Methicillin-Susceptible Staphylococcus Aureus Bacteremia: A Systematic Review and Meta-Analysis

Sarah Almalki, Rahaf Almelabi, Raghad Alsaedi, Khadijah Alammari, Khalid Eljaaly

Background/Purpose: Vancomycin is commonly started empirically for staphylococcal bacteremia. However, when culture results show methicillin-susceptible Staphylococcus aureus (MSSA), some clinicians continue vancomycin, particularly if patients were improving, and sometimes the busy clinicians might just forget to de-escalate. The purpose of this study is to compare the efficacy of beta-lactams versus vancomycin as definitive therapy for MSSA bacteremia.

Methodology: Two authors independently searched the PubMed, EMBASE and International Pharmaceutical Abstracts through Nov 01, 2018. Any studies comparing efficacy of definitive therapy with cefazolin or antistaphylococcal penicillins versus vancomycin were considered for inclusion. Studies missing one of these criteria were excluded. We estimated the relative risk (RR) with 95% confidence intervals (CIs) using random-effects model and evaluated heterogeneity (I2).

Results: Six observational studies (total of 920 patients) were

included. A significantly lower all-cause mortality was found with beta-lactams compared to vancomycin (RR, 0.473; 95% CI, 0.253 to 0.885; P-value=0.019; I2=0%). The relapse occurred less significantly with beta-lactams compared to vancomycin (RR, 0.386; 95% CI, 0.155 to 0.963; P-value=041; I2=0%). With regard to persistent bacteremia more than 3 days, it was also lower with beta-lactams (RR, 0.135; 95% CI, 0.022 to 0.812; P-value=0.029; I2=0%).

Conclusion: This meta-analysis provides support for the higher efficacy of beta-lactams over vancomycin as definitive therapy. Pharmacist should ensure that empiric vancomycin is de-escalated to beta-lactams once culture results confirm that the causative pathogen for bacteremia is MSSA.

SA-22219

Awareness of Medications Related Fall Risk among Saudi Elderly

Norah Alsaeed, Tahani Ibrahim.

Background: Fall is a remarkable health problem especially in elderly. The effect of medications on elderly is considered to be the reason for many of falls. Most patients with no history of fall not recognizing the risk until they fall.

Aim: Our study is to evaluate the awareness of elderly regarding the risk of falling due to medication they use, and the impact of pharmacist role in educating and counseling the patient to minimize risk of fall.

Method: This is a descriptive, cross-sectional survey, which was conducted as prevalidated modified questionnaire with four sections: sociodemographic data of the respondents, past history of fall, knowledge of medication falls risk and source of respondent's information regarding medications fall risk. The study was conducted in Saudi Arabia from March 2018 to April 2018. Data was analyzed using Minitab program.

Results: Out of a total of 355 participants, 287 (81%) were less than 60 years, most of them were female 122 (62%). More than half of the participants use medications and only 34.1% of them take more than 4 medications. Regarding history of fall, 117(33%) of participants have prior fall and those who had a fall less than 2 times were more aware about the risk than those who fall more than 2 times (P-value= 0.042). Moreover, most participants 74.1% scored below 70% regarding their awareness level about medication related to fall risk, most of respondent (81%) reported receiving medication risk information from non-health care providers while only 11% received it from pharmacist.

Conclusion: Most of participants have lack of awareness regarding medications fall risk and as the number of medications increase the level of awareness decrease. Further activation to the role of pharmacist in educating and counseling patients is required

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SA-22719

Evaluation of Routine Monitoring of Digoxin and Electrolytes in Patients with Heart Failure and Atrial Fibrillation

Amal AlQumia, Nadia Maysarah, Alanoud AlMutairi, Tahani Ibrahim, Suhaila AlGhunnam.

Background: Digoxin has been used successfully in management of Heart failure (HF) and atrial fibrillation (AF) for several years. However, it has been associated with toxicity due to its narrow therapeutic index. This toxicity can be induced by electrolytes abnormities and renal dysfunction which need to be monitored closely to avoid toxicity.

Objective: To evaluate the frequency of serum digoxin concentration and electrolytes measurements in patients with heart failure and/or atrial fibrillation in Prince Sultan Cardiac Centre in Buraydah and King Saud Hospital in Unaizah.

Method: A retrospective multicenter study evaluates the data collected from charts of patients with heart failure (HF) and/or atrial fibrillation (AF) who have been treated with digoxin and with complete data. The data were analyzed by using Statistical Package for the Social Sciences (SPSS) version 20. The association between variables was evaluated by using chi-square test. A P-value ≤ 0.05 considered statistically significant.

Results: A total number of 101 patient's charts were enrolled in the study. Mean age of the patients was 65.7 ± 16.2 and 55.4% of them were males. Forty-seven patients (46.5%) had atrial fibrillation. The digoxin level has been measured for only 3.0% of the patients. Monitoring of potassium was done regularly for 70.3% of patients, while it was irregularly monitored for calcium and magnesium in 58.4% and 61.4% of patients, respectively. Creatinine and BUN were regularly monitored for 64.4% and 61.4% of patients, respectively. While ALT was irregularly monitored for 53.5% and AST was irregularly monitored for 50.5% of patients.

Conclusion: It was found that ECG, potassium, creatinine and BUN concentrations are regularly monitored. In the other hand, serum digoxin, magnesium, and calcium concentrations are not being monitored regularly. Deficiency in knowledge of the healthcare professionals about the recommended monitoring parameters during digoxin treatment may be the reason.

SA-22819

Assessment of Caffeine Intake Effect on Fertility; A Cross Sectional Study among Saudi Women in Al Qassim Region

Joud Alobaidullah, Jana Alsalamah, Amal Ahmed, Nassra Ellabban.

Background: Caffeinated beverages consumption in Arabian communities is well known but studies of caffeine effects on reproduction is still an argument because of difficulty of confounders adjustment and different methods of assessment and caffeine dosages and forms among populations. We aimed to detect the effects of caffeine intake on time to pregnancy (TTP), among Saudi females in Qassim region.

Methodology: We conducted a cross sectional study using

questionnaire among randomly selected 918 married Saudi females about their daily intake of caffeine and the time they needed to conceive after marriage without using contraception methods with different questions assessing confounders like history of abortion, pelvic inflammatory disease, irregular cycle and polycystic ovarian syndrome frequencies and correlations were identified by using SPSS version 25.

Results: Out of total 83.6 % of the studied group were in the age group between (30-45) with only 9.9% never got pregnant while (22.3%) conceived after 12 months. Approximately (88.7%) reported intake of caffeine with (36.1%) consume more than 7 cups of coffee per day while (43.2%) are daily having tea and cola in addition to coffee.

Conclusion: No relationship between caffeine administration and time to pregnancy we recommend similar studies to involve couples to assess effect of male caffeine intake on the process.

SA-23019

Assessment of Reused and Disposing of Unused Medications Among Saudi Population

Manal Aharbi, Rami Faraj

Background: In Saudi Arabia, there is a lot of misunderstanding in the way of eliminating undesirable and unused medications. Some published works in the literature have shown that most patients dispose their medications improperly at home. Improper medications disposing at home may result in unwanted or accidental dangers. In some cases, the side effects or even improvement of symptoms may lead to discontinue of medications by patients. These medications are kept for reuse in the other time without any consulting which may have effects on the public health as antimicrobial resistance or leading to ineffective treatment.

Objectives: To examine the behavior of individuals with respect to the disposal of unused medications. Furthermore, we aimed to assess patient's knowledge and attitude regarding the reuse and disposal of medications.

Methods: A cross-sectional survey was conducted using an anonymous, structured, and validated questionnaire among Saudi population between 1-15 April 2018. The data were collected by using online Google Forms and analyzed them by Microsoft Excel 2010.

Results: Within 1022 participant, the most reused medications were observed (91.7%) analgesic followed by the antibiotic (35%). The emergencies were the chief purpose to use again the unused medications (48%). Participants were mostly throwing the leftover medications in the garbage, as stated by the majority of the respondents (76.3%). The responses of never disposing of the medications were the second common response with (15.9%) participants reported never disposed their medications and keeping them at home.

Conclusion: The analgesics are the most common reused medicines and the emergencies were the main reason behind reuses of unused medications. Majority of participants were disposing their unused medications in the trash or garbage. So, we conclude that the importance of develop policies that will help to reduce the improper reuse and disposal of unused medications.

SA- 23719

Assessment and Association of Polypharmacy in Chronic Diseases by Elderly Patients

Reham Al-Jamea, Tahani Alghamdi, Lizhar Sayed.

Background: Polypharmacy is a reliable indicator of irrational prescribing particularly among elderly patients. Polypharmacy may be defined as patients visiting multiple pharmacies which may be associated with safety concerns relating to potential outcomes such as medication duplication, drug-drug interactions, and adverse effects. Polypharmacy increases the risk of drug-drug interaction exponentially imposing the higher economic burden. The present study was carried out to asses and correlate how medicaments are used by elderly patients during the treatment of chronic diseases.

Methods: A cross-sectional survey study was conducted by questionnaires.

Results: The study was carried out in both male (32%) and female (68%) elderly patients. Polypharmacy was noted in 58.8% of the elderly, of which 53.6% had cumulative comorbidity (≥4 diagnoses). The survey reveals that 65% of the elderly patients within age group of 75-79 years suffer from a chronic disease like diabetes, arthritis and cardiovascular disease. It was found that 55% of elderly patients use more than 4 for the treatment of chronic disease, this may lead to drug-drug interaction. 75.05% of the geriatric patients lack the knowledge for the timing of the medication to be taken and also the side effects associated. 65.08% of elderly patients take the same drugs for more than 4 years.

Conclusion: A significant association of Polypharmacy was noted with cumulative co-morbidities. Drug Utilization Review (DUR) by the hospitals and the medical aid group, a national campaign, and education for elderly patients, additional education for health care professionals is needed to reduce polypharmacy among the elderly patient.

SA-23819

Factors Associated with Parent's Use of Antibiotics for Children in a Cohort Sample in Saudi Arabia

Jouza AlQussair, Yasser Almogbel

Background/Purpose: A lack of understanding of antibiotics may cause unwanted consequences, including side effects and bacterial resistance. The aim of this study was to identify factors associated with parent's use of antibiotics in a cohort sample in Saudi Arabia.

Methods: A cross-sectional study using convenience sampling was conducted at elementary schools in the Qassim area. Using the Students file, a pretested, validated, paper-based, self-administered questionnaire and consent letter were sent to each student. All parents had at least one child of 12 years or younger. Parents who specialized in health sciences were not included. The data were entered using Excel and analyzed with SPSS.

Results: A total of 490 completed questionnaires were received (96% response rate). The mean age of respondents was 38.6

(±6.8) years. The mean age of each family's youngest child was 4.3 (±3.1) years. Most participants were married (98.2%) and female (83.7%). Around half (51%) of the respondents had three to five children. The majority (77.8%) of respondents went to a pharmacy for antibiotics if they had a prescription. Most respondents (60%) gave suspected infection as the reason for giving antibiotic drugs to their children. About 10% of parents thought that a fever always requires antibiotics. Only unmarried parents were significantly associated with giving antibiotics without prescription to their feverish children (P<0.001).

Conclusion: The finding that only single parents gave antibiotics without prescription may be due to their lack of social support. Although respondents were not misusing antibiotics in general, still significant misuse was recorded. The need for the proper use of antibiotics for children to save lives and prevent resistance increase indicates that effort continues to be required for clarification among parents about antibiotic usage.

SA-23919

The Antibiotics Resistance and Prescription's Pattern in Urinary Tract Infections at King Fahad Specialist Hospital

Norah Alnqer, Mugahid Mobark, Areej AlJasser.

Background: Urinary tract infection (UTI) is one of the diseases with highest prevalence in the world. This study evaluated the prescribing pattern of antibiotics for UTI and correlated it with antibiotics resistant with aim to participate as an effective monitoring study that enhances rational antibiotic's prescription.

Method: A retrospective cross sectional, hospital-based study was approved by the Regional Research Ethics Committee and conducted at King Fahad Specialist Hospital (KFSH) from May to October 2018. A total of 306 patients were included, 204 diagnosed with UTI and treated empirically and 102 patients had positive results of urine culture and sensitivity tests. Two data collection forms were used and results were analyzed using SPSS (Version 23), chi-squared test and Fisher test were used and P value <0.05 was considered significant.

Result: UTI in both the empirically treated patients and urine culture results showed high occurrence in female representing 61% and 65% respectively. The mean age of empirically treated patients was 39.44 years while the mean age for whom culture was performed was 55.8 years. Sulfamethoxazole + trimethoprim (TMP+SMX) and ciprofloxacin were the most commonly prescribed antibiotics representing 60.29% and 14.7% respectively. Among 102 urine culture, E. coli was the most common isolated organism (36.3%) followed by Klebsiella pneumonia (30%). 41.17% of organisms were sensitive to TMP+SMX and E. coli represented 17% of them, while 37% were resistant to it. Amikacin and gentamicin were sensitive in 14% and 10% respectively while ampicillin was resistant in 19%.

Conclusion: The study of UTI at KFSH showed alignment with international studies as it was most common in female and commonly caused by E. coli. Beside the high sensitivity to TMP+SMX, a significant resistance organisms were isolated and need to be considered in empirical therapy for UTI.

SA-24019

Assessing the Incidence, Frequency and Pattern of Bleeding with Rivaroxaban Among Patients at Tertiary Care Hospital, Riyadh, Saudi Arabia

Lina Alanzai, Shahd Al-Fudail, Fatimah Al-Zahrani, Reem Al-Mutairi, Nouf Al-Mohawis

Background: Rivaroxaban (Xarelto®) is a selective direct factor Xa inhibitor oral anticoagulant, which has been shown to be as effective as vitamin K antagonist with a lower incidence of intracranial hemorrhage. However, it still carries a risk of bleeding in high-risk patients, especially gastrointestinal bleeding.

Objective: The study aim is to determine the incidence, frequency and pattern of bleeding associated with the use of rivaroxaban among patients at King Faisal Specialist Hospital and Research Centre (KFSHRC), Riyadh.

Methods: A retrospective, observational study of all patients who received rivaroxaban from 01 January 2012 to 01 January 2018. The medical record numbers were obtained from the pharmacy electronic record. Of those 1720 patients were included in the final analysis after applying the exclusion criteria.

Results: The total number of patients who bled was 101 (5.87%). There were 61 (3.55%) patients in the atrial fibrillation (AF) group and 40 (2.33%) patients in the venous thromboembolism (VTE) group. Among those 37 (2.15%) had major bleeding and 64 (3.72%) had minor bleeding. From the patients who bled, nine would have been excluded from the major clinical trial due to their creatinine clearance (CrCl) being <30 mL/min.

Conclusion: The incidence of bleeding in our patient population might be somewhat lower compared to the real-world study results. Appropriate patient selection and close follow up are recommended.

SA-24419

Projected Clinical and Cost-Effectiveness of More Intensive Blood Pressure Treatment in High-Risk Patients in Saudi Arabia: A Modeling Study

Suliman Alfaiz, Yasser Alsaidan, Omar Almohana, Bader Almaklefi, Abdullah Alanezi, Ziyad Almalki

Background: More intensive blood pressure control provided greater vascular protection than standard control in high-risk patients. In this analysis we evaluated the potential clinical implications and cost-effectiveness of more intensive blood pressure treatment compared to standard control over patient lifetime.

Methods: A Markov state-transition model was developed to estimate the lifetime incremental cost effectiveness (in dollars per quality-adjusted years of life) using evidence published from a meta-analysis. We explored incremental cost-effectiveness between groups. The model used a life-time framework adopting a third-party payer's perspective. Incremental cost-effectiveness ratio (ICER) was calculated. We performed a

probabilistic sensitivity analysis (PSA) to explore variable uncertainty. Probabilistic input distribution sampling informed 95% uncertainty intervals (UIs). Incremental cost-effectiveness ratios (ICERs) < $22,649/QALY gained were considered cost-effective.

Results: Treating 10,000 million hypertensive high-risk adults would prevent about 7,817 a total of CVD events annually. The incremental costs per QALY of more intensive blood pressure treatment compared to standard control adjusted for age and CVD risk therapy were $6,247. Probabilistic sensitivity analysis suggested more intensive control would be a cost-effective compared with less control blood pressure at 66.5% of the time.

Conclusion: The result of this study showed that more intensive blood pressure treatment compared to less intensive control is a great strategy in order to ensure that high risk patients in Saudi Arabia with hypertension are better controlled. Thus, this study provides strong evidence for the adoption of this strategy within the KSA healthcare system.

Social and Behavioral Sciences Research

Proessionals Abstracts

SA-25119

Health Related Quality of Life Among Health Care Providers in Alkharj, Saudi Arabia

Anwar Alotaibi, Ahmed Albassam, Muhammad Iqbal, Mohammad Ruh Alain

Background: The term 'health related quality of life' (HRQOL) represents the influences of health state, health policies and medical action on these perceptions of welfare. Studies have shown that poor health status is a risk factor for undesirable outcomes in practices and could result in a decrease in the quality of health care.

Purpose: The aim of this study was to determine the current level of HRQOL and to evaluate factors influencing health quality of life among Health care providers (HCPs).

Methodology: A prospective cross-sectional study was done among HCPs in Alkharj, Saudi Arabia by using a standardized research tools BREF-WHOQOL. A self-administrated questionnaire was distributed in the hospitals, Medical colleges at Prince Sattam Bin Abdulaziz University and community pharmacies. Descriptive, comparative and inferential statistics were performed by SPSS.

Results: A total of 289 HCPs agreed to participate in the study and 52% of them were female. The highest percentage of the participants were pharmacists (35.6%) and nurses (33.9%). More than (49%) were between ages 26-35 and (30%) were over 36 years. The years of experience of most of them are between 6-10 years (34%). Statistically significant differences were found in gender, nationality, age, marital status, profession, smoking habit and year of practice regarding HRQOL of HCPs (p=0.05).

Conclusion: The majority of participants in the current study believe that their general quality of life is very good (33%) and good (56%). Most of the HCPs were satisfied with their general health and personal relationships.

Students Abstracts

SA-01819

National Rates of Emergency Department Visits Associated with Diabetes in Saudi Arabia, 2011-2015

Maaly Alqurashi, Mohammed Alnakhli, Mohammed Alnusyan, Fahad Alanzai, Ziyad Almalki

Background: Despite the fact that diabetes is an important component of the burden of disease on the individual and on the national healthcare systems in the Kingdom of Saudi Arabia (KSA), knowledge on the volume of emergency department (ED) visits for diabetes is unclear. To address this lack of information, this study examines the changes in ED visit rates associated with diabetes that occurred from 2011 through 2015 in the KSA.

Methods: Publicly available books of health statistics published annually by the Saudi Ministry of Health from 2011 through 2015 were used to extract ED visits related to diabetes. ED visits associated with diabetes were compared over time and by gender. We calculated diabetes-specific rates per 10,000 persons for each sex category by dividing the total number of diabetes-associated ED visits in that category by the sex-specific population. We used ED visit rates for the years 2011 and 2015 of the study years and calculated the rate difference (RD) between the two years with 95% CIs for the RD.

Results: From 2011 to 2015, a total of 102.2 million visits were made to EDs in the Ministry of Health (MOH) hospitals in the KSA. Total annual visits to the ED for management of diabetes increased from 617,683 cases in 2011 to 748,605 in 2015. The annual number of ED visits associated with diabetes increased by 21% over the study period and 20% and 23% for males and females, respectively. Compared to males, female individuals exhibited a larger increase in visit rates from 240.5 to 249.8 visits per 10,000 women over the study years (RD, 9.6; 95% CI, -16.4 to 26.6; P=.01).

Conclusion: Although there is an improvement in the trend of diabetes-associated ED visit rates, there is an urgent need for implementing more effective preventive diabetes programs targeting the ED settings in the KSA to improve health outcomes among individuals with diabetes and consequently prevent the use of ED visits and other expensive healthcare resources.

SA-02319

Experience and Attitudes toward Research among Pharmaceutical Sciences and PharmD Students in Saudi Arabia

Rahaf Alqahtani, Malak Aldahash, Shahad Alhulail, Mohammed Alzahrani.

Purpose: The aim of this study was to investigate attitudes toward, experience of, and perceived barriers to conducting research among Pharmaceutical Sciences and Doctor of Pharmacy (PharmD) students in pharmacy colleges in Saudi

Arabia.

Methods: We conducted across-sectional study using a validated questionnaire distributed electronically between July and August 2016 to a convenient sample of Pharmaceutical Sciences and PharmD students in Riyadh, Saudi Arabia. The questionnaire consisted of four sections: demographic information, perceptions, experience, and knowledge of conducting research.

Results: Of the 245 respondents, most (73.5%) agreed that research is important. Sixty percent agreed that conducting research should be mandatory for Pharm D students. However, the majority disagreed that research experience should be a criterion for acceptance on a residency program. Of the Pharm D students, 73.8% believed that research projects would improve their ability to work and think independently, whereas only 58% of Pharmaceutical Sciences students agreed (P= 0.03). More Pharm D students than Pharmaceutical Sciences students believed that they would learn from research experience (65.2% vs.40.7% [P= 0.00]) and publishing or presenting research work (61.6% vs .39.5% [P= 0.26]). The Students major motivations to perform research were that it is a mandatory requirement of the curriculum (43.7%), is a positive addition to one's résumé (22.4%) and facilitates acceptance to a residency program (18.8%). Lack of time and training courses were the most commonly cited barriers to conducting research. Regarding knowledge about performing research, PharmD students had a slightly better average score than Pharmaceutical Sciences students (38.6vs.37.28 [P=0.49]) in an objective assessment of knowledge.

Conclusion: Overall, PharmD and Pharmaceutical Sciences students share a positive perception of the importance of research. However, their general knowledge about conducting research is low; thus, more training on time management and research processes is recommended.

SA-23319

Pharmacy Students Perceptions and Attitudes Towards Professionalism on Social media: A Cross-Sectional Study

Ghaida Alahmari, Nada Alnahdi, Fatmah Aljamil, Abdulaziz Alhossan, Mansour Almetwazi.

Background: Social media use in Saudi Arabia has increased by 32% from Jan 2017 to Jan 2018, which is the highest percentage globally. Gender difference may have a role in the level of engagement in the social media. Females have shown more awareness about the expected professional behavior than males. Perceptions on social media professionalism differ by program year due to different experiences and exposures. Objectives of the study were to determine the perceptions and attitudes towards social media professionalism among pharmacy students in King Saud University (KSU), and to assess differences in perceptions and attitudes according to gender and program year.

Methodology: A cross-sectional study using an online survey was sent through the academic affairs at the college of pharmacy to all female and male undergraduate students at KSU. Descriptive statistics were conducted using Stata software. Chi square test was used to determine the difference between groups. Percentages were used to present the categorical variables and mean was calculated to present the age variable.

Results: Of all eligible participants, 239 completed the survey, with females comprising 62.8%. Males agreed more on taking pictures of colleagues and faculty members without their knowledge than females (p=0.0001). On the other hand, females agreed more on the importance of using privacy settings in social media sites to limit public access to personal information than males (p=0.017) and that item was agreed on most by 5th year students (p=0.026). Fifth-year students disagreed most on posting descriptions of how to break school or job rules on social media (p=0.043). The mean age of participants was 20.79 years.

Conclusion: Perceptions and attitudes towards social media professionalism appeared to be affected by gender and program year. The prevalent use of social media necessitates the emphasis of adding rules and regulations of using social media in school curriculum.

THE 5TH ANNUAL RESIDENTS RESEARCH DAY


SIPHA
Saudi International Pharmaceutical Science
Meeting & Workshops

THE 5TH ANNUAL RESIDENTS RESEARCH DAY

WELCOMING MESSAGE

The Saudi Commission for Healthcare Specialties (SCFHS) Resident Research Day is an annual event in which our pharmacy residents are able to present their research and have an opportunity to mingle with one another during a day that is dedicated to practice and clinical research.

Attendees will enjoy scientific and professional discussions on practice and clinical research. At total of 40-45 study will be presented (as poster and podium). It is a great opportunity for residents to share their 2-year work of research and compete among each other's. An anonymized judge panelists will rank each research separately and decide on the top three winners.

Join us and enjoy the discussion!

Abdulrazaq S Al-Jazairi,
Pharm.D., MBA, FCCP, BCPS (AQ-Cardiology)
Chairman, Scientific Pharmacy Board
Director, Pharmaceutical Care Division
King Faisal Specialis Hospital & Research Centre

JUDGE PANEL

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PharmD, BCPS, BCCCP, FCCP, FCCM
Leader, Judge Panel
Clinical Pharmacy Consultant, Critical Care
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Member, Judge Panel
Assistant Professor of Infectious Disease Pharmacotherapy
Head of the Interprofessional Research Branch
King Abdulaziz University

THE 5TH ANNUAL RESIDENTS RESEARCH DAY

THURSDAY JANUARY 24, 2019

TIME	SUBMISSION ID	TITLE	RESIDENT
08:30 - 08:40		Opening Remarks	
08:40 - 08:50	3704503	Outcomes with Rivaroxaban as a part of Triple Antithrombotic Therapy in Atrial Fibrillation Patients Undergoing Percutaneous Coronary Intervention	**Hanan Alshareef** PSCC
08:55 - 09:05	3702301	Quantifying the Impact of Clinical Pharmacists on Patient Care in A Tertiary Healthcare Hospital Utilizing Key Performance Indicators	**Adel Alnakhli** KFSH&RC
09:10 - 09:20	3705931	Effect of Extended Thromboprophylaxis Prophylaxis after Bariatric Surgery on Venous Thromboembolism in a Tertiary Care Hospital	**Abdullah Almalki** KFMC
09:25 - 09:35	3706298	The pattern of direct oral anticoagulant use in Saudis' clinical practice, a retrospective cross sectional descriptive study	**Wesal Alalayet** King Saud University Medical City
09:40 - 09:50	3705942	Prescribing Pattern of Granulocyte Colony Stimulating Factor (G-CSF) at Tertiary Care Hospital in Riyadh: An Observational Study	**Yahya Mohzari** PSMMC
09:55 - 10:05	3706286	Evaluation of Medication Discrepancies upon Discharge from Intensive Care Units at an Academic Medical Center in Riyadh, Saudi Arabia	**Samaher Alatmi** KSUMC
10:10 - 10:20	3708609	Physician Adherence to American Heart Association Guidelines towards AngiotensinConverting Enzyme Inhibitor or Angiotensin II Receptor Blocker Prescribing for Systolic Heart Failure upon Discharge- Cross Sectional Study	**Fatima Al-Haddad** King Fahad Specialist Hospital-Dammam
10:25 - 10:35	3696540	The Utilization of Spironolactone in Heart Failure Patients at a Tertiary Hospital in Riyadh	**Abdulmalik Alotaibi** King Abdulaziz Medical City

10:35 - 10:45		**Coffee Break**	
10:45 - 10:55	3707180	**Clinical Impact of a Pharmacist-managed Aminoglycoside Protocol at a Tertiary Saudi hospital: a pre- and post-intervention study**	**Fatimah Aljohani** Johns Hopkins Aramco Healthcare
11:00 - 11:10	3708854	**Impact of Unit-based Pharmacists Compared to Service-Based Pharmacists and a HybridModel of Both Approaches: A Prospective Study**	**Hala Hijazi** KFSH&RC
11:15 - 11:25	3694457	**Evaluation of Eltrombopag in Thrombocytopenia Post Hematopoietic Cell Transplantation: Retrospective Cohort Trial**	**Hadeel Samarkandi** KFSH&RC
11:30 - 11:40	3701753	**The Prevalence of Medication-related Problems in Kidney Transplant Recipients**	**Danyah Katlan** King Fahad Armed Forces Hospital
11:45 - 11:55	3706192	**Epoetin Use through a Protocol Reduced Venous Thromboemolism in Chronic Kidney Disease at a Saudi Health System: a Pre- and Post-intervention**	**Maha Islami** King Abdulaziz Medical City
12:00 - 12:10	3706540	**Anticoagulation control of vitamin-K antagonist in pharmacist-led clinic versus physician-led clinic**	**Abdullah Alzahrani** KSUMC
12:15 - 12:25	3708503	**Assessment of Medication Devices Regulations and Healthcare Stakeholders Awareness in Saudi Arabia**	**Shatha Almuhideb** KFSH&RC
12:25 - 13:20		**Lunch & Prayer Break**	
13:20 - 13:30	3705471	**Assessing Monitoring Practice of Endocrinopathies Associated with the Use of Novel Targeted Therapies in Solid Tumor Patients**	**Atika Alharbi** KAMC-Jeddah
13:35 - 13:45	3702979	**Peri-endoscopy Patients' Risk Stratification Led by Pharmacist: Impact on Adherence,Thrombosis, and Bleeding**	**Haifa Alotaibi** KFSH&RC

13:50 - 14:00	3705638	**Incidence and causes of Rivaroxaban related major bleeding in a tertiary care hospital**	**Zekra Aljehani** KFSH&RC-Jeddah
14:05 - 14:15	3702643	**Impact of Pharmacist Led Medication Management in Preadmission Clinic for Adult Cardiac Surgery**	**Asma Alshahrani** KKUH
14:20 - 14:30	3693479	**Antifungal Resistance in Patients with Candidemia: A Retrospective Cohort Study**	**Namareq Aldardeer** KFSH&RC-Jeddah
16:00 - 17:00		**Award Distribution (Main Hall: Ballroom 1)**	

Resident research ID # 3704503:

Outcomes with Rivaroxaban as a Part of Triple Antithrombotic Therapy in Atrial Fibrillation Patients Undergoing Percutaneous Coronary Intervention

Hanan Alshareef, Zaid Alanezi

Background: Triple antithrombotic (TA) therapy, a combination of dual antiplatelet (DAP) and oral anticoagulant, used in patients undergoing percutaneous coronary intervention (PCI) and have indication for oral anticoagulation such as Atrial fibrillation (AF). Current guidelines recommended TA, for definite duration according to individual thrombotic and bleeding risk with preferences to use non-vitamin k oral anticoagulant in lower tested dose for stroke prevention, based on small observational and few open-label randomized trials.

Aim: To assess the safety and efficacy of rivaroxaban as a part of TA in relation to duration.

Methods: Retrospective observational single center study conducted from January 2016 to December 2017. We included patients 18 years and older with non-valvular AF underwent PCI and discharged from hospital receiving TA (aspirin, clopidogrel and rivaroxaban) for one month or more. Primary endpoint was incidence of major bleeding or clinically relevant non-major bleeding. Secondary endpoint was incidence of death or thrombotic events. Patients were followed-up for 6 months. Study was approved by hospital's IRB. Statistical analysis was conducted using SPSS.

Results: 43 patients were enrolled in the study, 13 patients received TA for short duration (SD); one month and 30 patients for extended duration (ED). CHA2DS2-VASc risk score was significantly higher in SD group; (4.38 ± 1.44 vs 3.37 ± 1.37; p=0.034). HAS-BLED risk score significantly higher in SD (3.23 ± 0.83 vs 2.6 ± 0.84; p=0.025). The primary endpoint bleeding rate was non-significantly higher in the ED group (18.6% vs 11.6%; p=0.485). No significant difference in the secondary endpoint between SD and ED (7% vs 4.7% respectively; p=0.153).

Conclusion: The finding of this study showed that TA therapy with rivaroxaban is associated with non-significantly higher bleeding risk if used for more than one month with no difference in thrombotic events, MI, stroke and stent thrombosis.

Resident research ID # 3702301:

Quantifying the Impact of Clinical Pharmacists on Patient Care in A Tertiary Healthcare Hospital Utilizing Key Performance Indicators

Adel Alnakhli, Abdulrazag Al-Jazairi

Background/Purpose: Key performance indicators (KPIs) are widely utilized to quantifiably measure quality of healthcare services. Since healthcare system privatization in Saudi Arabia is inevitable, there is a crucial need to justify clinical pharmacists' (CP) presence, prove their value and impact on patient care and medication-cost-minimization. Our aim was to quantify the impact of CP on patient care utilizing pre-defined CpKPIs.

Methodology: This was a prospective, observational study conducted at KFSH&RC-Riyadh. Each CP submitted CpKPIs on a monthly basis for 12 months during 2017. All CP up to managerial level were included in the study. Data were analyzed, stratified and correlated utilizing Microsoft Excel and JMP statistical software with Spearman correlation.

Results: Clinical Pharmacists reviewed 104,728 patient encounters. They did an average 4.4 interventions per CP per day (cp/d) with an acceptance rate 91.5%. CP worked up an average 1.68 TPN consultations and follow-ups per cp/d and reported an average 2 adverse drug reactions (ADRs). They reported an average 1.68 medication errors per CP per month. CP precepted and average 32 residents/interns per month, and conducted 15 medication-use evaluations over one year with an associated cost-saving SR4,938.9 per cp/d. There was no statistically significant correlation between intervention number and parentage during clinical rounds and CP gender, experience, board certification, residency training, or hierarch. A trend toward significance was noted with CP degree (P=0.055). Significant inverse relationship was seen for number of reported ADRs with CP degree (R=-0.344, P=0.027). Statistical significance with positive correlation was noted for number of precepted residents/students and CP experience (R=0.382, P=0.013) and board certification (R=0.428, P=0.0047).

Conclusion: CpKPIs quantified the impact of clinical pharmacists on patient care and cost-saving which will hopefully lead to improve, standardize and benchmark CP activities in the region.

Resident research ID #3705931:

Effect of Extended Thromboprophylaxis Prophylaxis after Bariatric Surgery on Venous Thromboembolism in a Tertiary Care Hospital

Abdullah Almalki, Heba Alrecheq, Eshtyag Bajnaid

Background: Bariatric surgery is a relatively new and effective treatment for obesity. Sometimes complicated by venous thromboembolism (VTE) which associated with considerable morbidity. Evidences are controversial regarding thromboprophylaxis recommendation.

Purpose: To compare VTE rate between patients who received in-hospital thromboprophylaxis (IHTP) versus extended thromboprophylaxis (ETP) after bariatric surgery.

Methods: We conducted a descriptive, retrospective chart review study in a tertiary care hospital of all patients underwent bariatric surgery from January 1st, 2015 until December 31st, 2016. Inclusion criteria; age >18 years, underwent bariatric surgery, and received thromboprophylaxis post bariatric surgery. Exclusion criteria; hypersensitivity to heparin, cancer, on anticoagulants for other reasons. We compared patients who received IHTP (heparin 5000 IU subcutaneously one hour

before surgery and Q8h until discharge) to those who received ETP (in hospital thromboprophylaxis then enoxaparin 40-60 mg once or twice daily for 14-21 days post-discharge). Data collected included demographic data, surgery information, and comorbidities. Our primary outcome was 30-day incidence of VTE post bariatric surgery. Secondary was incidence of major bleeding, hemoglobin drop of ≥2 g/dL. We used chi-square test to analyze qualitative data, and the t test for quantitative data. Statistics analysis made by SPSS v.21.

Results: We included 684 patients, 502 (73.3%) received IHTP and 182 (26.7%) received ETP. Baseline characteristics were significantly different between groups with more smokers, higher BMI and higher comorbidities in ETP group. The percentage of patients with BMI>50 in ETP was 69.8% versus 20.1% in IHTP group. The 30-day incidence of VTE in IHTP group 0.8% (4/502) versus 1.1% (2/182) in ETP group (p=0.458). The incidence of bleeding was 1% (5/502) in IHTP group compared to 1.1% (2/182) in ETP group (p=0.568).

Conclusion: Our study didn't find any statistically significant deference in the incidence of VTE or bleeding with ETP compared to IHTP.

Resident research ID # 3706298:

The Pattern of Direct Oral Anticoagulant Use in Saudis' Clinical Practice: A Retrospective Cross-Sectional Descriptive Study

Wesal Alalayet, Khalid Alburikan, Sultan Alghadeer

Background: The use of anticoagulation in thromboembolism prevention has been widely expanded over the past years. Oral anticoagulants are considered at least as effective as warfarin. Each DOAC have specific criteria for dosing and adjustment, however there is limited data on the adherence to these criteria by practitioners in Saudi Arabia. This study assessed DOACs pattern of use and highlighted the current prescribing condition.

Methods: A retrospective cross-sectional descriptive study, involving patients prescribed DOACs at a tertiary care teaching hospital in Riyadh was conducted during the period from May 2015 through January 2017. Patients initiated on DOAC as well as those who were continued on DOAC as outpatient were included in our study. Patients with any missing information including medical history or laboratory data were excluded. All obtained information was assessed based on pre-specified criteria. The primary outcome was to determine the percentage of patients who were appropriately prescribed DOACs. The data was analyzed by SPSS, results were expressed as percentage, mean and standard deviation.

Results: Total of 230 patients prescribed DOACs were identified. Dabigatran was prescribed to 22.6% of the patients while rivaroxaban was prescribed to 77.4%. Overall, appropriate prescribing was observed in 34.7%. Dabigatran and rivaroxaban were appropriately prescribed in 19.2% and 39.3% of patients respectively. The main reason for inappropriate use was inappropriate dose including renal adjustment & subtherapeutic dose in 42.2% of patients followed by unapproved indications in 22.6%. Duplicated anticoagulants therapy was observed in 29.6% of patients. Around 35.7% of patients had bleeding & 75.6% of them received blood transfusion. Only 5.7% had recurrent thrombotic event and 10.4% of the patients died.

Conclusion: Inappropriate prescriptions of DOACs were highly prevalent among Saudi patients. Detection and correction of inappropriate DOACs use are needed in order to optimize DOACs prescribing and minimize patients' harm.

Resident research ID # 3705942:

Prescribing Pattern of Granulocyte Colony Stimulating Factor (G-CSF) at Tertiary Care Hospital in Riyadh: An Observational Study

Yahya Mohzari, Wafa Alfahad, Mohammed Almeziny, Najwa Ibrahim, Abdulaziz Al-Towaijri

Background: Febrile Neutropenia (FN) is one of the common lethal side effect that necessities hospitalization with fever and life-threatening infections in patients receiving chemotherapy. Several regulatory guidelines recommend the prophylactic use of medications such as G-CSF to overcome this situation by increasing the production of neutrophils. However, G-CSF is known to cause many side effects including thrombocytopenia. Therefore, it is necessary to promote its rational use. Hence current study was designed to evaluate the pattern of GCSF utilization in our hospital and subsequently assess the appropriateness of its prescription with an estimation on cost factor.

Methods: A prospective observational study conducted between December 2017 to February 2018 in the chemotherapy day unit of Prince Sultan Military Medical City, Riyadh, Saudi Arabia, on patients diagnosed with any type of cancer and receiving chemotherapy with GCSF. The appropriate use of GCSFs for FN prophylaxis was evaluated based on American Society for clinical oncology (ASCO) guidelines and published data. The demographic, clinical data and G-CSF prescribing data were collected by the clinical pharmacist from patient's files and the electronic records. Descriptive analysis was done by using Excel 2017.

Results: Out of 118 patients who fulfills our inclusion criteria, 26% and 15% of them were breast cancer and colorectal cancer patients, respectively. Based on ASCO guidelines and published literature, only 42.4% of them were eligible for GCSF prescription, while 57.6% of them received GCSF inappropriately. The major reasons for inappropriate prescription were unfamiliarity with chemotherapy regimens. Due to inappropriate prescription, around 61.70% of the cost of GCSF was wasted.

Conclusion: As outlined above, main cause for inappropriate prescription of GCSF was unfamiliar with chemotherapy risk of FN. Clinical pharmacists play major role beside oncology physicians in improving GCSF prescribing pattern. Additionally, availability of comprehensive hospital guidelines may rationalize the therapeutic approach in GCSF prescription.

Resident research ID # 3706286:

Evaluation of Medication Discrepancies upon Discharge from Intensive Care Units at an Academic Medical Center in Riyadh, Saudi Arabia.

Samaher Alatmi, Abdullah Alhammad, Mohamed Aljawadi

Purpose: Prior studies demonstrated that medications initiated in the intensive care units (ICUs) for short-term use are sometimes continued beyond ICU admission. Additionally, unintentional discontinuation of home medications upon ICU discharge can also occur. This study is intended to describe the frequency and types of medication discrepancies in ICU patients upon discharge at an Academic Medical Center in Riyadh, Saudi Arabia.

Methods: Retrospective cohort study of adult patients who were admitted in 2017 to our medical and surgical ICUs and were discharged on one or more medication. Patients were excluded if they were not discharged from ICU during the study period, died during their ICU admission, or when accurate medication history could not be obtained. The data were analyzed by Stata statistical software.

Results: 121 patients were included. The mean age was 51 ± 16 years. The median (IQR) for ICU length of stay was 3 [2-7] days. The most common comorbidities were cardiovascular disorders (28%), followed by endocrine disorders (19%). In total, 216 discrepancies were identified; only 19% of the patients were discharged without any discrepancies. The mean discrepancies identified per patient were 2 ± 1. The most common type of discrepancies identified were no indication of therapy (35%) followed by drug omissions (27%) .The top ten medications associated with discrepancies were: pantoprazole (17%), cefazolin (10%), intravenous paracetamol (9%), atorvastatin (6%), esomeprazole (4%), aspirin (4%), levetiracetam (3%), bisoprolol (3%), ranitdine (3%), and phenytoin (2%).

Conclusion: Our study demonstrated a high number of medication discrepancies among patient discharged from ICUs. The lack of systematic approach of medication reconciliation might contribute to increased number of discrepancies. Establishing a process that includes pharmacist-driven medication reconciliation is needed. Second Phase of this study is now conducted prospectively targeting the impact of pharmacist-driven medication reconciliation model on reducing the rate of discrepancies at our institution.

Resident research ID # 3708609:

Physician Adherence to American Heart Association Guidelines towards Angiotensin Converting Enzyme Inhibitor or Angiotensin II Receptor Blocker Prescribing for Systolic Heart Failure upon Discharge- Cross Sectional Study.

Fatima Al-Haddad, Ahmed Mayet, Hussain Al-Omar

Background: The American Heart Association and the Heart Failure Society of America recommend prescribing ACE inhibitors or ARBs to patients of Congestive Heart Failure with Reduced Ejection Fraction (HFrEF) to alleviate their symptoms, prevent remodeling, improve morbidity and mortality. Several studies reported that those drugs are under prescribed in CHF patients in the absence of contraindications. Our study aimed to assess if the guideline recommendations for the use of ACEs/ ARBs are adopted in clinical practice within our population.

Methods: We conducted a retrospective cross-sectional study over one-year period in a tertiary hospital in Riyadh. All adult Electronic Medical Records who received ACE/ ARBs upon discharge were retrieved, and among them, patients with documented HFrEF were identified, then we checked if the maximum tolerated dose reported for HF were reached. The contraindications of ACEs/ ABRs were; pregnancy, bilateral renal artery stenosis, angioedema, acute kidney injury and serum potassium >5 mmol/L. All relevant data were extracted. Descriptive statistics presented as a mean± SD for the continuous variables and as a number and percentage for categorical variables. P value for significance was set as less than 0.05. Statistical analysis was conducted using SPSS.

Results: A total of 175 patients was obtained. Their mean age was 62.43 ±13 years. Only 78.3% patients received either ACEs/ ARBs. The doses were not optimized in 94.2% due to reduced creatinine clearance (46.9%), low blood pressure (16.9%), and hyperkalemia (12.3%), while no clear justifications was found for the remaining patients. 9.7% had contraindications against their use; 7.4% had AKI and 2.3% had hyperkalemia. After adjustment for contraindications, the compliance rate for ACEs/ARBs prescribing was 88%.

Conclusion: The compliance to ACEs/ ARBs prescribing in HFrEF upon discharge was best possible, but the doses were not optimized. Attempts should be made for dose optimization and maximum benefit.

Resident research ID # 3696540:

The Utilization of Spironolactone in Heart Failure Patients at a Tertiary Hospital in Riyadh.

Abdulmalik Alotaibi, Numan Al Abdan, Abdullah Alotaibi, Mohammed Alqahtani

Background: Heart failure is a common clinical syndrome with growing incidence and prevalence. In Saudi Arabia, the overall 30-day mortality rate for 1090 acute HF patients was 7.5%. Many trials have shown the added benefits of mineralocorticoid receptor antagonists (MRA), commonly spironolactone, which has shown a 30% reduction in all-cause mortality, as well as a reduction in hospitalizations, and sudden death. However, some data showed low prescription rate of MRA in hospitalized patients with HF. The purpose of this study is to assess the use of spironolactone in indicated HF patients and to provide insights about the current practice in a tertiary hospital in Riyadh, and to identify most common barrier that affects spironolactone prescribing in HF patients.

Methodology: A retrospective chart review of patients with a HF diagnosis from Feb 2016 to Feb 2017 that was conducted in King Abdul-Aziz Medical City-Riyadh. Method of analysis through using the electronic system to generate a list of patients. Data were analyzed using the appropriate descriptive statistics for the primary and secondary endpoints. To compare continuous data (e.g. Scr) for the two groups, a 2-sample t-test is used. The Chi Square test is used to evaluate nominal data (e.g. patient comorbidities).

Results: 1181 patients were screened among whom 166 patients met the inclusion criteria. Only 97 from 166 patients were eligible to spironolactone. Out of those 97 patients, 50.5% received it. We did a multivariate logistic regression analysis which showed that only serum creatinine was associated with low utilization; Increased creatinine was associated with lower use of spironolactone (p=0.02).

Conclusions: For heart failure patients, spironolactone is being underutilized. In our study, the serum creatinine was the only factor that is significantly affecting spironolactone utilization. Further studies are warranted to identify other factors that affect the prescribing of spironolactone in HF patients.

Resident research ID # 3707180:

Clinical Impact of a Pharmacist-Managed Aminoglycoside Protocol at a Tertiary Saudi Hospital: A Pre- and Post-Intervention Study

Fatimah Aljohani, Sulaiman Al-Zubairy

Background: Aminoglycoside antibiotics have a narrow therapeutic index within which serum levels should be monitored. A medication use evaluation at our institution indicated challenges in aminoglycoside dosing and monitoring. Therefore, a protocol was established where pharmacist handled aminoglycoside dosing and monitoring. The aim of this study was to evaluate the impact of pharmacist managed aminoglycoside protocol.

Methodology: A single-center, pre/post study. We included all patients who received intravenous aminoglycoside for at least 24 hours during the study periods. Patients who were pregnant or younger than 14 years were excluded. The primary end point was bacteriological cure as defined by negative cultures after therapy initiation. Secondary end points included the development of acute kidney impairment (AKI) as defined by the rise in serum creatinine (Scr) concentration by 0.5 mg/dL or more from baseline, achievement of aminoglycoside therapeutic levels, and the appropriate aminoglycoside monitoring as defined by the presence of any serum aminoglycoside level and renal functions monitoring.

Results: The total number of the patients included in our analysis was 102 (51 per phase), of which 23 were males (45%) in the pre-intervention phase and 26 (50%) post-intervention. The mean age was 58 ± 18.7. Bacteriological cure occurred in 25 patients (49%) in the pre-intervention phase and 30 patients (85%) post-intervention phase (p = 0.016). Five patients (9.8%) developed AKI in the pre-intervention phase compared with 4 (7.8%) post-intervention (p = 0.64). Twelve patients (23%) in the pre-intervention phase achieved target therapeutic aminoglycoside serum levels and 30 (58%) post-intervention (p = 0.02). Thirty-three patients (64%) were not appropriately monitored in the pre-intervention phase compared with 7 (13%) post-intervention (p < 0.0001).

Conclusion: Implementation of a pharmacist-managed aminoglycoside protocol improved the appropriateness of aminoglycoside dosing and monitoring. Thus, it enhanced the potential of achieving target therapeutic serum levels and subsequently bacteriological cure.

Resident research ID # 3708854:

Impact of Unit-based Pharmacists Compared to Service-Based Pharmacists and a Hybrid Model of Both Approaches: A Prospective Study

Hala Hijazi, Abdulrazaq Aljazairi, Hadeel Samarkandi, Ahmed Aljedai, Nathem Akhras, Ibrahim Hamasni

Current pharmacy-models include unit-based, service-based and hybrid-based-model of both approaches. Unit-based are in-charge of patients in specific locations, placing emphasis on order-verification in addition to clinical-services. Whereas, service-based-pharmacists are assigned a multi-disciplinary team where they provide consultations without order verification. Hybrid-based-pharmacists provide clinical services with half-day order-verification. There are conflicting opinions regarding the best approach and currently, there are no studies comparing the three approaches. Therefore, our study objective is to compare the house-staff satisfaction with respect to these three approaches.

This is a prospective, non-interventional-study conducted over two-years at a tertiary-care-hospital comparing the above-mentioned models of practice. The primary endpoint was to compare the impact of unit-based-pharmacist services on the satisfaction of nurses, physicians, pharmacy-peers, patients and self-satisfaction, compared to the other models. Assuming 15% difference, 116 observations were required for each arm. Data was entered on RedCap and analyzed using JMP-v13.0. Raw data was an average overall-satisfaction of the different categories in each arm with a score of 5. Linear scores used an average of 100 to calculate a difference between the arms. The study was approved by Research-Advisory-Council (RAC #2171 118).

Results: Three-hundred-seventy-seven surveys were collected, 54.1% (n=204) were nurses, 20.4% (n=77) patients, 16.7% (n=63) peers, 4.51% (n=17) physicians and 3.9% (n=15) pharmacist self-satisfaction surveys. Nurses and patients favored unit-based-pharmacists with a satisfaction rate of 72% and 89%, respectively. However, physicians were more satisfied with hybrid-based-pharmacists with a rate of 76%. Interestingly, pharmacists-peers favored service-based-pharmacists with satisfaction rate 63%. It was also found that unit-based-pharmacists were most satisfied amongst all three arms in the self-satisfaction surveys with a rate of 76%.

Based on our study, the unit-based-approach was favored among nurses and patients. Although physicians favored

hybrid-based-pharmacists and pharmacy-peers favored service-based-pharmacists, those who filled self-satisfaction surveys were most satisfied in the unit-based-arm among all three approaches.

Resident research ID # 3694457:

Evaluation of Eltrombopag in Thrombocytopenia Post Hematopoietic Cell Transplantation: Retrospective Cohort Trial

Hadeel Samarkandi, Mohammad Al Nahedh, Muhned Alhumaid, Feras Alfraih, Afnan Al-Najem, Edward De Vol, Hazzaa Alzahrani, Mahmoud Aljurf

Thrombocytopenia remains a life-threatening late complication of hematopoietic stem cell transplantation HSCT. Thrombocytopenia post HSCT necessitates platelet transfusions which is associated with multiple complications and places a significant burden on healthcare system. Currently, there is no approved drug for this indication. Eltrombopag is an oral thrombopoietin receptor agonist approved for the treatment of thrombocytopenia associated with different diseases. The objective of this study is to assess the effectiveness and safety of eltrombopag for patients with persistent thrombocytopenia post HSCT.

Retrospective cohort study evaluating the effect of eltrombopag on platelet recovery post HSCT. The study was conducted at a tertiary hospital. The study protocol was approved by REC.

All adult and pediatric patients who underwent HSCT and received eltrombopag for persistent thrombocytopenia from 2014-2017 were included if they had persistent thrombocytopenia.

The primary endpoint was platelet recovery to ≥ 20,000/μL for 7 consecutive days without transfusion support after eltrombopag. Secondary endpoints were platelet recovery to ≥50,000/μL for 7 consecutive days, success rates and adverse events.

Descriptive statistics for the continuous variables are reported as mean ± standard deviations and categorical variables are summarized as frequencies and percentages. The continuous variables in the study were compared using Student's t-test. The statistical level of significance is set as $p<0.05$.

Before starting eltrombopag treatment, 16 patients were dependent on platelet transfusions. Twelve of 16 transfusion-dependent patients became transfusion-independent. Ten of 16 transfusion-dependent patients achieved the primary endpoint. Seven patients had successful platelet recovery (≥ 50,000/μL without transfusion support). The cumulative incidence of platelet recovery to either ≥ 20 20,000/μL or ≥ 50,000/μL for 7 days, without platelet transfusion is 57% (95% CI; 36% to 75%). Eltrombopag was well tolerated.

Our findings demonstrated that oral eltrombopag appears to have a clinically significant impact on platelet counts recovery in persistent thrombocytopenic patients post HSCT.

Resident research ID #3701753:

The Prevalence of Medication-related Problems in Kidney Transplant Recipients

Danyah Katlan, Hani Hasan, Mohammed Aseeri, Abrar Alsubhi, Sherine Esmail

Background/Purpose: Kidney-transplant recipients have complex medication regimens due to chronic comorbidities and the use of immunosuppressive agents, which lead to serious medication-related problems (MRPs). Studies reported that clinical pharmacists joining renal-transplant clinics have a potential impact in identifying, assessing MRPs and improving patient-centered outcomes. There is a paucity of data on prevalence of MRPs in kidney-transplant patients at King-Abdulaziz Medical City, Jeddah. Therefore, the study aims to determine the prevalence and types of MRPs in kidney-transplant recipients.

Methods: We conducted a cross-sectional study at the ambulatory care center from June-2016 to June-2017. Patients were included if they were above 18years, receiving immunosuppressive-agents and had their kidney transplant at least 3 months before the study. The primary objective was to determine the prevalence of MRPs in kidney-transplant recipients. Secondary objectives were to determine the pharmacological classes of medications contributed to the MRPs and to identify categories of MRPs. A sample of 80 patients was estimated to detect a prevalence of MRPs of 31% with a 95% confidence-interval, 5% precision and an alpha of 0.05. Descriptive statistics were used as mean ± SD for continuous variables, proportions for binary and categorical variables as deemed necessary.

Results: We've enrolled 108 renal-transplant recipients from 129 screened. The mean age was 50±15.75, 66.3% were males. The most common comorbidities were hypertension (62%), diabetes (42.5%) and dyslipidemia (17.5%). The prevalence of MRPs was 26.6% in 1397 medication orders reviewed. The most frequent types of MRPs were drug-drug interactions (47.5%), duplication (13%), medication use without indication (11.5%) and underdose (6%). Immunosuppressive-agents were the most common class of medications leading to MRPs (27.85%), followed by cardiac medications.

Conclusion: Our results demonstrated that MRPs are highly prevalent in kidney-transplant recipients and the presence of clinical pharmacist in the ambulatory care setting may facilitate identification, reduction of MRPs and optimizing therapeutic outcomes in this population.

Resident research ID # 3706192:

Epoetin Use through a Protocol Reduced Venous Thromboemolism in Chronic Kidney Disease at a Saudi Health System: A Pre- and Post-Intervention Study

Maha Islami, Sulaiman Alzubairy

Background: The FDA changed erythropoiesis-stimulating agents labeling to target Hgb level "10 – 11" g/dL. Therefore, a

pharmacist-monitored protocol was established at institution to target an Hgb of 10 to 11.3. The study purpose was to assess the protocol's clinical and financial impacts.

Methods: A single-center pre- and post-intervention study. The study included adult patients who had epoetin orders renewal after implementation of the protocol (August 13, 2017) and have been receiving epoetin for a duration between six and 12 months. The primary end point was the development of thrombosis during the study periods. Secondary end points were thrombus-related mortality, any Hgb level more than 11.3 or less than 9 g/dL, the average transferrin saturation (TSAT), and mean epoetin alpha direct cost per patient before and after the implementation.

Results: The first 61 patients who met the study inclusion and exclusion criteria were studied. The patients' median age was 71 years and 42% of them were on hemodialysis. Eleven VTE events occurred in the six months before implementation of the protocol and one after ($p < 0.0001$; 95% CI OR of 2%), and one thrombus-related death occurred before implementing the protocol and none after ($p < 0.0001$), and 62% of patients had Hgb measurements more than 11.3 g/dL before implementing the protocol and 30% after ($p = 0.0004$), and 36% had Hgb less than 9 g/dL before implementing the protocol and 45% after ($p = 0.3188$). The mean TSAT before implementing the protocol was 24 + 13% and 23 + 14% after ($p = 0.3937$). Epoetin alpha average cost per patient was $526 before the protocol implementation and $504 after ($p = 0.8415$).

Conclusion: targeting an Hgb level below 11.3 g/dL with epoetin decreased thrombosis in our study but did not improve serum iron levels nor reduce epoetin direct drug cost.

Resident research ID # 3706540:

Anticoagulation Control of Vitamin-K Antagonist in Pharmacist-Led Clinic Versus Physician-Led Clinic

Abdullah Alzahrani, Sultan Alghadeer

Background: Individual INR readings may not reflect the actual time spent in the target INR range during the entire treatment period. Time in therapeutic range calculation is a common method to estimate the actual time spent in the target INR range and it reflects the INR reading between the visits. The objective of this study is to measure the TTR difference between different healthcare specialties for patients on warfarin following in anticoagulation clinics.

Method: This is an observational study in which patients were followed prospectively from June 2017 to July 2018, in two anticoagulation clinics, one clinic was run by clinical-pharmacists and another by physicians. Adult patients who were anticoagulated on warfarin that were following in either anticoagulation clinic were included. All patients who were on DOAC, admitted to the hospital during the follow-up period, visited emergency department for bleeding that resulted in holding Warfarin, or crossed over between the study clinics were excluded. Patients were being followed with INR measurements and warfarin dose in each visit. Our primary end-point is TTR, measured using Rosendaal-interpolation method.

Results: Total of 62 patients were enrolled; 33 patients were followed by pharmacist-led-clinic while 29 patients were followed by physician-led-clinic. The age of patients was statistically significant between the patients followed by clinical-pharmacist versus those followed by physicians (58.76±2.07 versus 46.86±3.6; $p=0.002$), all other demographic data were very comparable between the two groups. Mean TTR level was statistically higher among patients in pharmacist-led-clinic than that in physician-led-clinic (87.27%±3.82 and 52.48%±5.49; $p<0.001$). Secondary analysis was conducted among same patients followed retrospectively by physicians and prospectively by clinical-pharmacists, and it's found that TTR level was statistically higher during the period of clinical-pharmacists care (91.70%±2.93 versus 61.39%±5.11; $p<0.001$).

Conclusion: The findings of our study demonstrate that patients followed in in pharmacist-led-clinic had higher TTR levels than those followed in physician-led-clinic.

Resident research ID # 3708503:

Assessment of Medication Devices Regulations and Healthcare Stakeholders Awareness in Saudi Arabia

Shatha Almuhideb, Sakra Balhareth, Abdulrazaq Al-Jazairi, Roaa Al-Gain, Mohamed Al-Nahedh, Nasser Alqahtani, Abraham Hartzema.

Background: A medication-device is defined by the Institution of Safe Medication Practices as equipment used to prepare/deliver medications. Medication-device could be metered-dose inhaler or infusion pump. Though hospitals have clear process of handling medications, there is no clear one for medication-devices. Since there is no clear/standard process for reviewing medication devices, the aim of our study is to assess patients and healthcare stakeholders' awareness of medication-devices regulations and utilization and review national/international medication-device regulations.

Methodology: This is a cross-sectional, case-study. The Study is divided into two components; regulations review and awareness surveys. Devices used to administer chemotherapeutics, iloprost, and tobramycin, were chosen for the case study. Healthcare-providers in the specialized tertiary centers, manufactures of the three devices, and patients utilizing any of the devices were included. The main components of the surveys are awareness of utilization and regulations. The surveys were validated in pilot phase. The primary outcome is the stakeholder awareness of the medication devices use and SFDA regulation. Awareness score defined as; 2 completely-aware. Study was conducted with power of 80% with delta of 10% at 5% significance level. Sixty-four participants were needed for each group.

Result: Total of 154 patients were included. Majority of patients were completely-unaware (92.2%). Healthcare providers were not different to patients, total of 146 responses received with 67% completely-unaware. Only two manufacturers responded, there was inconsistent understanding of Saudi-FDA regulations. Review of authorities' regulations revealed challenges to develop practically useful guidance on medication-devices consistent with medications regulations. This is also true at hospital-level.

Conclusion: Serious errors due to medications devices are not uncommon and have been reported frequently in the literature. Lack of awareness and absence of well-structured review process might be detrimental. Regulatory authorities and healthcare systems should establish clear work frame to avoid unfortunate consequences.

Resident research ID # 3705471:

Assessing Monitoring Practice of Endocrinopathies Associated with the Use of Novel Targeted Therapies in Solid Tumor Patients

Atika Al-Harbi, Mohammed Aseeri, Abdelmajid Alnatsheh, Mansoor Khan, Majed AlShamrani.

Background: Since cancer treatment have been changed dramatically towards the use of targeted molecular therapies which characterized by unique mechanism of action instead of nonspecific cytotoxic chemotherapy. Despite their effectiveness, they have a unique safety concerns, for instance, endocrinopathies; which defined as unfavorable metabolic alterations, including thyroid disorders, hyperglycemia, dyslipidemia, and adrenal insufficiency. These side effects necessitate additional monitoring and appropriate clinical review. The aim of our study is to assess the incidence of monitoring errors and develop strategies for safe practices in the monitoring of patients prescribed targeted therapies.

Method: A retrospective chart review study to assess the incidence of monitoring errors of endocrinopathies in cancer patients administered targeted therapies within the period of June 2016 through December 2017. All adult cancer patients diagnosed with solid tumor who received targeted therapies (Nivolumab, Atezolizumab, Everolimus, Sorafenib, Sunitinib, Pazopanib, Regorafenib, and Abiraterone) were included. The primary outcome was to determine the incidence of monitoring errors of endocrinopathies. While the secondary outcomes were to assess the incidence of endocrinopathies and referral practice to endocrinology services.

Results: A total of 128 adult solid tumor patients were included. The primary outcome revealed a total of 148 monitoring errors of endocrinepahties were detected. Monitoring error of thyroid functions was the most common type of errors, accounted for 63 errors (92.6%) secondary to targeted therapies. Subsequently, 54(57%) monitoring errors of blood glucose, and 31(94%) monitoring errors of lipid profile were encountered. The secondary outcomes indicated that targeted therapies caused 63(49%) events of endocrinopathies which included; hyperglycemia in 32%, followed by thyroid disorders in 15.6%, and dyslipidemia in 1.5% of patients.

Conclusion: Our study showed high incidence of monitoring errors of the targeted therapies which has led to significant endocrinopathies. These findings emphasize the importance of adherence to the monitoring strategies and following up appropriate referral process.

Resident research ID # 3702979:

Peri-endoscopy Patients' Risk Stratification Led by Pharmacist: Impact on Adherence, Thrombosis, and Bleeding

Haifa Alotaibi, Abdulrazaq Aljazairi, Abdulrahman Alfadda, Luai Ashari, Adnan Almahrouq, Sahar Jbarah, Edward De Vol

Background: The clinical consequences of thrombosis and bleeding should be taken into consideration when developing an overall peri-endoscopic management plan in patients receiving antithrombotic therapy. Therefore, we aimed to assess the guidelines adherence rate and clinical outcomes before and after the implementation of Pharmacist-led thrombosis and bleeding risk stratification strategy.

Methods: This is a prospective, historical controlled study designed to compare adherence rate to the American Society for Gastrointestinal Endoscopy (ASGE) guidelines and clinical outcomes in relation to the implementation of risk stratification system led by Pharmacist on antithrombotic therapy management peri-endoscopy. Given the assumptions of alpha 0.05, beta 0.20, and effect size of 15%, 68 patients will be required in the prospective arm. The study was approved by the institutional review board.

Results: Preliminary, a total of 1368 endoscopy were screened retrospectively, 400 patients met the selection criteria, only 192 had a documented antithrombotic management plan peri-endoscopy. The adherence rate improved significantly after the implementation of Pharmacist-led thrombosis and bleeding risk stratification strategy, 18.75% (36/192) compared to 66.0% (33/50), p-value of 0.0001, with number needed to treat (NNTT) of 2. Two out of 192 patients (1.04%) in the retrospective arm had bleeding compared to 1/50 in the prospective arm (2%), p-value= 0.8289. Three patients (3/192, 1.56%) compared to 1 (1/50, 2%) patient developed thrombotic event for the retrospective and prospective arms, respectively, p-value= 0.5854.

Conclusion: Adaption of pharmacist-led risk stratification strategy improves the adherence to the ASGE guidelines and optimize patients' safety.

Resident research ID # 3705638:

Incidence and Causes of Rivaroxaban Related Major Bleeding in a Tertiary Care Hospital

Zekra Aljehani, Kawther Salah, Randa Eldyb, Halah Al-Enizi, Reem Almansouri, Rawan Alhassani, Yousef Barakat

Background: Clinical trials have demonstrated the safety and efficacy of rivaroxaban as an alternative to warfarin for long term anticoagulation therapy. However, warfarin remains the preferred anticoagulant for many healthcare providers due to the observed increase in bleeding events with rivaroxaban use and the lack of effective and feasible monitoring parameters. The objective of this study is to evaluate the rate of rivaroxaban-related-complications, and to further investigate the possible underlying causes for their development in a tertiary care

facility.

Methodology: Single center, retrospective chart-review. The study included all patients on Rivaroxaban and excluded those taking it for thromboprophylaxis following knee or hip replacement.

Results: 560 eligible patients between May 2013 and December 2016 were identified; of which 250 patients were randomly selected for evaluation. Rate of all adverse drug events related to rivaroxaban use was (73, 29.2%). Major and non-major bleeding events were equivalent (28, 11.2% vs maximum of 6% in literature data), of which (4,1.6%) were fatal. Other adverse events noted included Abdominal pain, nausea, vomiting and flue like symptoms. Possible causes for the development of these complications were mostly related to patients' comorbidities (34, 46.5%), drug-drug interactions or duplication (13, 17.8%), prescriber error (7, 9.5%), patient's compliance (5, 6.8%). There was significant association between bleeding and the following: anemia 37% (OR= 2.8, 95% CI 1.4-5.4, p= 0.002), History of MI 18.5% (OR= 3.8, 95%CI 1.5-9.5 p=0.003), history of peptic ulcer 9.3% (OR= 4.898, 95% CI= 1.268 -18.925, p=0.012), active cancer 18.5% (OR= 2.393, 95% CI= 1.025- 5.587).

Conclusion: The study results indicate an increased rate of rivaroxaban related bleeding compared to previously published international data; which may necessitate more caution in prescribing and monitoring this medication. These findings warrant further detailed investigation with subgroup analysis and on a larger scale of patients with multiple comorbidities.

Resident research ID # 3702643:

Impact of Pharmacist Led Medication Management in Preadmission Clinic for Adult Cardiac Surgery

Asma Alshahrani, Meshal Almutairi

Background: Perioperative clinic (POC) is a specialty clinic where patients are evaluated before surgery to establish a database upon risk assessment and perioperative management decisions can be made. Involvement of clinical pharmacist in perioperative clinic on medication management and information transfer prior to admission and upon discharge associated with improved patient outcomes. The aim of this study to assess the impact of pharmacist led perioperative clinic on the adherence to medication management guideline in perioperative cardiac clinic.

Methods: Prospective single center study was conducted in POC, to evaluate the impact of pharmacist led pre-admission clinic for preoperative medication management. The primary endpoint was practitioner adherence to preoperative medication management evidence-based guideline and secondary endpoint was percentage of intervention documented by pharmacist in POC and acceptance of this intervention by physician.

Result: The result for 49 patients in preoperative clinic. Seventy percent of patients underwent valve replacement/ repair; 30.1% underwent coronary artery bypass. Sixty seven percent of patients were prescribed antiplatelet agents, 76% beta-blockers, 48.9% statins, 48.9% ACE-I/ARB, 59.1% diuretics, 30.6% chronic anticoagulation and 46 on stress ulcer prophylaxis. The data showed only 20 out of 49 (40.8%) patient on appropriate management according the guideline. All patient on antiplatelet, anti-coagulant, diuretic and statin medication followed the guideline recommendations. While only 77.3 % of patient followed the preoperative recommendation of atrial fibrillation prophylaxis and 40.8% adhered to stress ulcer prophylaxis recommendation. A total of 320 pharmacist recommendations according the EACTS guideline 87.5 % of this recommendation were accepted.

Conclusion: Significant percent of patient were not following the guideline in POC and the pharmacist had important role to assess preoperative medication management. The involvement of a pharmacist as part of the multidisciplinary team in the surgical preadmission clinic can improve patient safety during hospital admission.

Resident research ID # 3693479:

Antifungal Resistance in Patients with Candidemia: A Retrospective Cohort Study

Namareq Aldardeer, Majda Al-Attas, Basem Alraddadi, Hadiel Albar

Background: Antifungal resistances is becoming a primary concern for most healthcare providers. The notable increase in resistance rate with the limited availability of antifungal agents could complicate the course of therapy. Our study aimed to identify predisposing factors associated with antifungal resistance among patients with candidemia.

Methodology: A retrospective cohort study conducted at a tertiary hospital. Adult patients diagnosed with candida bloodstream infection (BSI) between January 2006 and December 2017 were included. The primary outcomes were to identify the distribution of candida and risk factors associated with antifungal resistance. Secondary outcomes were evaluating the association of antifungal resistance on length of ICU stay, hospital length of stay, and on 30- day mortality. We used descriptive statistics and Chi-square test to compare continues and categorical variables, respectively. The study approved by hospital institutional review board.

Results: A total of 196 Candida BSI were identified in 94 males (49.74%) and 95 females (50.26%). C. glabrata was the most common isolated Candida 59 (30.1%). Antifungal resistance risk factors analysis was performed for 122/189 (64.5%) patients in which 26/122 (21.3%) found to have one or more antifungal resistance. Risk factors significantly associated with drug resistance include previous echinocandin exposure (OR, 1.38; 95% CI (1.02-1.85); P= 0.006) and invasive ventilation (OR, 1.3; 95% CI (1.08-1.57); P= 0.005). Median length of ICU and hospital stay was 29 days [range12-49 days] and 51 days [range 21-138 days] in antifungal resistance group vs. 18 days [range 6.7-37.5 days] and 35 days [range 17-77 days] in antifungal sensitive group, respectively. Thirty-day mortality reached 15 (57.7%) among antifungal resistance group. Sub analysis was preformed to evaluate rate of fluconazole resistant C. parapsilosis, it reached 32%.

Conclusion: Our results indicate a shift to non-albicans candidemia. Rate of antifungal resistance is higher compared with previous data. C. parapsilosis resistance to fluconazole is alarming.

Resident research ID # 3694088:

Impact of Clinical Pharmacist-Led Diabetes Management Clinic on Patient-Related Health Outcomes at an Academic Tertiary Hospital: A Prospective Cohort Study

Bashayr Alsuwayni, Abdulaziz Alhossan

Diabetes prevalence has dramatically increased in Saudi Arabia. It is estimated to reach 20.6 percent by 2030, putting Saudi Arabia up in sixth place. Studies have illustrated main reasons for uncontrolled patients and concluded: low level of awareness, limited access to healthcare providers, and lack of cooperation between different disciplines. The role of pharmacists has been proven to improve patient-related outcomes. This study was conducted to evaluate diabetes-related health outcomes in a pharmacist-led clinic.

A prospective cohort study conducted from August 2017 until July 2018 at an academic hospital. The pharmacist-led clinic was providing the service for a half-day per week. The study included all adult diabetic patients referred to the pharmacist-led clinic and had -at least- three 3-month apart follow-up visits with no exclusions. The baseline assessments for patients receiving routine diabetic care was performed using HgbA1C level, blood pressure, lipid and thyroid panel, eye and foot examinations, preventive measures, and adherence. The baseline results were compared to the follow-up results thereafter. A descriptive analysis was used to report the differences between intervals.

The study included thirty-five patients. The mean ±SD age was 56 ±10 years old. At baseline, mean HgbA1C was 9.5% ±1.3%. HgbA1C was greater ≥10% for 13 patients. Albuminuria was never previously assessed for 14 patients. Twenty percent were receiving incorrect dose compared to the guideline-recommended statin therapy. By the end of study, mean HgbA1C had significantly improved to be 8.3% ±1.4% (p=0.0004). Nine patients achieved their HgbA1C goal of <7%. All patients were assessed for albuminuria and managed accordingly. Thirty-two patients were eligible to receive statin therapy and prescribed appropriate doses. Additionally, peripheral neuropathy was assessed for all cohort, and seven patients received recommended vaccinations.

Pharmacist-led clinic demonstrated a successful collaborative practice to meet patients' HgbA1C goals, improve adherence, and adapt guidelines recommended preventative measures.

Resident research ID # 3703914:

The Impact of Drug Use Policy on Use of the New Direct Acting Antiviral Agents (DAAs) on Hepatitis C Management at King Abdul Aziz Medical City, Jeddah

Ahmed Alotaibi, Nour Shamas, Umair Uddin Ansari, Faisal Sanai, Mohammed Aseeri,

Background: Ministry of National Guard–Health Affairs in Saudi Arabia approved a drug use policy for the new direct-acting antivirals (DAAs) used for hepatitis C treatment due to the high cost associated with the DAAs, safety concerns and availability of alternatives. This study evaluated the impact of the drug use policy on the utilization of the new hepatitis C medications a year before and a year after the policy approval. Our goal is to assess the prescriber compliance to the policy and its impact on the utilization of the new DAAs.

Methods: This is a Quasi Experiment, pre and post study evaluating the impact of drug use policy on utilization of DAAs within the period from December 1st, 2014 to November 30th, 2016. Data were collected and analyzed from patient files and electronic medical records. Treatment eligibility, treatment options and monitoring parameters were considered to assess the compliance and the impact of the policy. SVR12 achievement was also looked at. Discrepancies were represented as percentages.

Results: 103 patients were enrolled, 46 in the before and 57 in the after-policy group. We found that prescriber compliance to baseline monitoring parameters was 67.4% in the before policy group which increased by 15% in the after-policy group (p = 0.076). Before the policy, treatment options matched the policy by 52.2% compared to 82.5% after policy implementation (p=0.001). There was an increase in SVR12 from 91.3% to 96.5% (p=0.182).

Conclusion: Patient monitoring at the baseline and throughout the use of DAAs improved after policy implementation. However, this can be further improved by implementation of pre-set orders in the system. The policy is safe and beneficial, however better documentation of potential DDIs is warranted. The policy has improved the proper utilization of DAAs and has had a good impact on their use.

Resident research ID # 3704949:

Management of Community-Acquired Pneumonia at A Tertiary-Care Teaching Hospital

Mukhtar Alomar, Ahmed Mayet

Background: The implementation of community-acquired pneumonia (CAP) guidelines can improve pneumonia-related morbidity and mortality. The aims of this study were to evaluate the adherence to Infectious Diseases Society of America (IDSA) guidelines for the diagnosis and treatment of patients hospitalized with CAP at King Saud University Medical City.

Methods: The charts of all patients admitted with a diagnosis of CAP were prospectively reviewed from April 1st until July 31st, 2018. Patients were eligible to participate in the analysis if they were at least 18 years of age and working diagnosis of CAP. The appropriateness of the treatment was derived by comparing the therapeutic options found in the patients 'records with those developed in most widely referenced guidelines for treatment of CAP.

Results: During the study period 138 eligible patients, 51.4 % were female, with a mean age of 59.14 years. The mean duration of hospitalization was 11 days and the fatality rate was 1.4%. Various antimicrobial agents were used, either as monotherapy (8.0%) or as combination therapy 92% during hospital stay with an average duration of 8 days. Overall 88.4% of the patients received appropriate treatment on the first day of hospitalization. Eighty-one (58.7%) of the patients had a change in antimicrobial regimen during the hospital admission. Overall, 58.0% of patients were treated according to the guideline recommendation while 42% were not. Severe respiratory illness found to be the most significant independent risk factor for non-adherence to treatment guidelines with OR 0.24 (0.09-0.64, p=0.004).

Conclusions: The result shows good adherence to the guidelines for empirical therapy while overall appropriateness was not. Severe respiratory illness found to be significant predictors of inappropriate therapy. The major challenge for the future is to implement the processes necessary to improve the management of CAP.

Resident research ID # 3707644:

The Impact of Clinical Pharmacist Managed Anticoagulation Clinic on Patient Outcome and Satisfaction Within Tertiary Hospitals in Riyadh

Asma Alenezi, Maram Abuzaid, Eman Alobari, Miteb Alanazi, Sahar Alshomar, Shatha Al Samarrai

Background: Warfarin has become the most widely used oral anticoagulant since its introduction in 1954. The role of clinical pharmacist managing anticoagulation clinic was reviewed in the literature but the benefit in term of international normalized ratio [INRs] in the therapeutic range and a decrease in hospitalizations for thromboembolic or bleeding events was not reported. This study was conducted to evaluate the impact of clinical pharmacist running anticoagulation clinic on anticoagulation control, adverse events, and patient satisfaction.

Method: It is a multicenter cohort study and the data were collected over a period of 6 months. The primary endpoint is to measure the quality and safety of anticoagulation management. The secondary endpoint is to measure the patient satisfaction with the service. SPSS program was used for statistical analysis. The continuous variables were presented as the means ± standard deviations and the categorical variables were presented as frequencies (%).

Results: Total of 316 patients were enrolled in this study. The average time in therapeutic range [TTR] was 65.2 % which considered to be of good quality according to the National Institute for Health and Care Excellence guideline. In term of adverse events, 98.4% of participants have no venous thromboembolic events, compared to 1.3% for 1 event and 0.3% for two VTE events. Major bleeding was stated as only 5.3% of total participants while 11.7% of total participants were had have minor bleeding. Overall, the patients were very satisfied with the clinic with an average score of 4.8 out of 5 in the survey.

Conclusion: Pharmacy-managed anticoagulant therapy improves the quality and safety of warfarin therapy in the outpatient setting, through reducing both hospitalizations and emergency department visits due to anticoagulation-related adverse drug effects. Patients were satisfied with the pharmacist managing anticoagulation program and recommended continuation of the program.

Resident research ID # 3699785:

Implementation Process of Commercially Available Electronic Careset and its Impact on Adherence to Best Practice Guidelines: Pediatric Septic Shock Careset as a Model

Razan Alghunaim, Roa'a Al-Gain, Abdulrazaq Al-Jazairi, Sakra Balhareth, Mohamed Ahmed

Background/Purpose: Caresets defined as group of standardized orders used to facilitate entry of multiple orders for specific condition. It could be developed in-house or adopted from commercial vendor. Caresets potentially minimize medication errors, enhance workflow and improve adherence to guidelines. Several studies reported the impact of implementing internally developed caresets. However, little is known about the impact and implementation process of commercial electronic caresets.

Methods: First-fold: descriptive. We described the process and challenges of implementing commercial electronic careset at our organization. Second-fold: comparative, before and after implementation of pediatric septic shock careset. Primary endpoint is adherence to septic shock key performance indicators as bundle: adequate administration of intravenous fluid (IV); administration of first dose of antibiotic within 60 minutes; appropriate selection and dosing of antibiotic(s); and appropriate administration of vasoactive agent(s). Total of 171 subjects (retrospective arm) were included and 25 subjects (prospective arm) will be enrolled to achieve 10% difference in adherence rate using electronic careset with power of 80% and type I error of 5%.

Results: From November 2012 through April 2016, total of 430 patients were screened. Of those, 171 met our inclusion criteria. The median age was 54 months. Fifty (29.2%) patients presented to emergency department with septic shock. Pneumonia was the primary infectious site in 56 (32.7%) patients. Overall adherence to the bundle was 6.4%. Sixty-seven (39%) patients received IV fluids within 60 minutes. Total of 124 (72.5%) patients received appropriate antibiotic(s) while 68 (39.7%) patients received appropriate dose. Median time to receive antibiotic was 75 minutes. Only one patient received vasoactive drug appropriately. We are still recruiting patients in the prospective arm.

Conclusion: Current practice with regards to adherence to best practice guidelines is sub-optimal. Further analysis to assess the impact of implementing electronic pediatric septic shock careset will be conducted upon study completion.

Resident research ID # 3708209:

Prevalence of Prescribing Beta Blockers for Heart Failure Patients with Reduced Ejection Fraction upon Discharge: A - Cross Sectional Study

Laila Alaman, Ahmed Mayet, Hussain AlOmar

Background: Heart failure (HF) is a leading cause of hospitalization with high morbidity and mortality rate. Worldwide, a prevalence rate of CHF is ≥10% among elderly. Beta-blocker (BBs) are an integral part of Congestive Heart Failure (CHF) management to control symptoms in all stable patients with current or prior symptoms of HF and reduced LVEF unless they are contraindicated. Our study aim is to assess the prevalence of prescribing BBs for the patients with Heart Failure with Reduced Ejection Fraction (EF) upon hospital discharge.

Methods: We conducted a retrospective, cross-sectional study from 1st of January 2016 to 31st December 2016 in a tertiary hospital in Riyadh, Saudi Arabia after obtaining institution IRB approval. We retrieved all adult patients with age ≥ 18 years old who were prescribed BBs on the hospital discharge, and among them, we identified those patients with documented systolic heart failure [left ventricular ejection fraction (LVEF ≤45%)] and discharged on any one of the following BBs - Bisoprolol, Metoprolol succinate, Carvedilol - are included in the study. All clinical, laboratory, and demographic data relevant to CHF were extracted from the electronic medical records.

Results: Among 3455 patients who received BBs on discharged, we identified 176 patients with documented HFrEF; 119 (68%) patients had severe left ventricular dysfunction with EF 2 comorbidities). Only 10 (5%) patients had the contraindication to BBs and only 20 (11.9%) patients received optimal BBs doses.

Conclusion: Our result suggests that the compliance rate of prescribing Beta Blockers in CHF patients upon hospital discharge was excellent, but the doses were not optimized. Adequate attempts should be made to increase the BBs dose to the highest level tolerated because they are associated with the increased benefit.

Resident research ID # 3708973:

Prevalence of Depressive and Anxiety Symptoms among Hemodialysis Patients at Tertiary Hospital in Riyadh

Buthainah Alammash, Mohammed Alwaily, Abdulaziz Altowijri, Rakan Abu-jamel

Background: Chronic Kidney disease and its treatment have a major stress impact in patients and required huge social adaption. In Saudi Arabia, the prevalence of depression and anxiety among HD patients is not well investigated. Also factors that can augment these symptoms remain unidentified.

Method: The study was conducted as a Cross-sectional study of patients with end stage renal disease (ESRD) at HD unit for two months from March 2018 to April 2018. We aim to evaluate the Prevalence of anxiety and depression and explore the factors that may be related to these symptoms as age, sex, family support, employment status, planning for transplant, progression of disease, HD time, duration and frequency, admission, previous visit of psychologist, medications and comorbidities using HADS Scale.

Results: The study includes 103 patients from the HD unit. The analysis showed that around 30% of the patients may have either depression or anxiety. About 10.6 % for anxiety and 5.8 % for depression are considered as abnormal cases while 5.8 % for anxiety and 15.5 % for depression were considered as borderline cases. In term of factors augmenting anxiety, a significant higher score level of anxiety was seen in female patients (P=0.005), among unemployed patients (p=0.002), Patient with previous visit for psychologist (P=0.001), and use of antidepressants (p=0.006). In term of depression, significant higher score was seen among unemployed patients (p=0.02), low family support (p=0.026), diabetes mellitus (p=0.003) and use of antidepressant medications (p=0.018).

Conclusion: Anxiety and depressive symptoms are prevalent among ESRD patients in Saudi Arabia especially females. Family support and employment status strongly affect the patient psychological manner. Early detection, management of depression and anxiety and family support might improve clinical outcomes. Future research is required to investigate any other factors that may have impact on depression and anxiety among HD patients.

Resident research ID # 3693023:

Comparing Antifungal Prophylaxis Efficacy Between Fluconazole and Amphotericin B Lipid Complex in Adult Acute Lymphocytic Leukemia and Acute Lymphoblastic Lymphoma (ALL) Patients Receiving HyperCVAD Based Chemotherapy

Afnan Alamrey, Mansoor Khan, Mohammed Aseeri, Ahmed Absi, Abdelmajid Alnatsheh

Background/Purpose: Fungal infection is common in acute lymphocytic leukemia (ALL). Our aim is to compare the efficacy of antifungal prophylaxis using fluconazole 400 mg once daily versus Amphotericin B lipid complex (Abelcet) 2.5mg/kg three times per week in adult ALL patients during the neutropenic nadir who received HyperCVAD.

Methods: Retrospective, cohort chart review conducted on ALL patients who received HyperCVAD chemotherapy between January 1, 2007 and December 31, 2016 at KAMC, Jeddah. We included ALL patients who completed at least one course of HyperCVAD and received antifungal prophylaxis with age >14 years. We excluded patients who received BFM regimen. Data collected using hospital information system. The primary endpoint was the incidence of fungal infection. The secondary

endpoints: QTc prolongation in Ph+ve ALL associated with fluconazole TKI and cost impact based on the type of antifungal prophylaxis used.

Results: Total of 105 cycles of HyperCVAD was reviewed. In 70 cycles of fluconazole was used and in 35 cycles of abelcet was used as antifungal prophylaxis. Microbiologically documented fungal infection has been found in 2 out of 70 cycles in fluconazole arm and radiologically documented fungal infections were found in one patient in the fluconazole group. QTc prolongation was observed in 12 cycles. In 9 out of 12 cycles, of QTc prolongation observed during the study, fluconazole was used as antifungal prophylaxis and patients were on TKI. In 3 out of 12 cycles, of QTc prolongation were observed during the study, abelcet was used as antifungal prophylaxis and patients were on TKI.

Conclusion: Fluconazole is considered standard antifungal prophylaxis in ALL patients with acceptable safety profiles. Fluconazole had comparable efficacy to abelcet. Fluconazole may cause QTc prolongation when used in combination with TKIs and need to monitor the patients more closely when this combination is used in Ph+Ve ALL patients.

Resident research ID # 3694953:

Efficacy of Rituximab Monotherapy on Anti-human Leukocyte Antigen Antibodies in Highly Sensitized Living Donor Kidney Transplant Patients

Douaa Sindi, Ahmed Al Jedai, Jens Brockmann, Moheeb Al-Awwami, Hassan AlEid, Dema Alissa, Edward De Vol, Hana Al Khabbaz, Layal Fajji

Purpose: We aim to examine the efficacy of Rituximab (RTX) monotherapy in reducing DSA in Highly Sensitized Living Donor Kidney Transplant (HS-LDKT) candidates and potentially improve their chance of receiving a suitable organ.

Methods: A retrospective cohort study of all sensitized patients who received RTX therapy before kidney transplantation and met the inclusion criteria (HS adults and received RTX monotherapy). Patients were excluded if they were pediatrics, underwent other organ transplantation, received RTX/IVIG at the same time, were pregnant or on the deceased donor list. Study duration was from 2008 through 2016. The primary endpoint was the percentage reduction in MFI-DSA in HS-LDKT patients after receiving one dose RTX. Secondary endpoints included patients and graft survival, acute antibody mediated rejection (AMR) and adverse reactions. Patients' sera were analyzed to compare both class I and class II HLA DSA, which was assessed using Mean Fluorescence Intensity (MFI), before and after RTX, but prior to IVIG administration. Subjects were followed using an intention to treat analysis.

Results: 70 patients (68%) met the inclusion criteria and were included in the intention to treat analysis. Fifty-seven patients (81%) had anti-HLA antibodies against class 1, while 41 patients (58.5%) had anti-HLA class II. Desensitization with RTX alone decreased MFI values of class I HLA DSA by a median of 20.9% and class II HLA DSA by a median of 29.2% at a median time of 3 months post RTX administration. All patients were successfully transplanted. No major adverse events were identified. Mean ± SD serum creatinine was 79.5 ± 16.7 μmol/L at 1 year.

Conclusions: Desensitization using RTX administration in LDKT helps cross the HLA-barrier but it should be implemented as part of a holistic desensitization approach. Larger and randomized clinical trials addressing antibody reduction with B-cell depletion are required to support this study's findings.

Resident research ID # 3703212:

The Impact of Aflibercept on Diabetic Macular Edema Patients Unresponsive to Ranibizumab in a Tertiary Care Eye Specialist Hospital – Saudi Arabia

Arwa Aldahash, Abdullah AlHumaidan, Hassan AlDhibi, Marco Mura, Muhammad Mazhar, Rajiv Khandekar, Sitah AlZuman, Wejdan AlMusallam

Purpose: The aim of study was to assess short-term functional and anatomical outcomes of Diabetic Macular Edema (DME) patients who were unresponsive to ranibizumab and switched to aflibercept.

Methods: A retrospective cohort study, included DME patients aged 18 years and older, and received 0.5mg/0.05mL intravitreal injection of ranibizumab then switched to 2mg/0.05mL intravitreal injection of aflibercept, during the period from February 2017 – January 2018. We excluded patients with prior treatment with Intravitreal Corticosteroid, laser photocoagulation, cataract surgery, or pars plana vitrectomy (unless 6-months washout period), less than three ranibizumab intravitreal injections prior to the conversion to aflibercept, less than three aflibercept intravitreal injections, and incomplete imaging or clinical data. The primary outcomes were the change of the Best-Corrected Visual Acuity (BCVA), and the central subfoveal thickness which was measured by Optical Coherence Tomography (OCT). Patients' BCVA, and central subfoveal thickness were measured at baseline, after three injections of ranibizumab and then after three injections of aflibercept. Improvement of the BCVA or reduction of the OCT was considered a success.

Results: The medical records of 50 patients (74 eyes) were reviewed. There was no significant difference in the improvement of visual impairment grade after ranibizumab (P=0.4) as well as after aflibercept (P=0.4) injections. The mean difference of central subfoveal thickness before and after aflibercept injections was not significant (matched pair analysis Difference of mean -19.6 μ; 95% Confidence interval -58; 19; P = 0.3). The mean reduction of central subfoveal thickness before and after aflibercept injections was significant (matched pair analysis Difference of mean -104.0 μ; 95% Confidence interval -136.4;-72.5 P <0.001).

Conclusion: A regimen of three Intravitreal injections of aflibercept is helpful in improving anatomical but not functional status of the macula in DME patients who were unresponsive to the regimen of three Intravitreal injections of ranibizumab.

Resident research ID # 3691793:

Evaluation and Implementation of Strategies to Reduce IV Admixture Returns: Intervention Study

Ahmed Alrashed, Nora Albanyan, Catherine Zillenger, Safar Alshahrani

Background: Accumulation of pharmaceutical sterile wastes within inpatient pharmacy service increases the interest developing multiple strategies to minimize the IV returns. There are no published studies evaluating the impact of batching or pharmacy rounding strategy in Saudi Arabian hospitals. The purpose of this study is to implement both methodologies to reduce the IV return and waste.

Method: This intervention study was conducted at IV room of the in-patient pharmacy at KFMC. Pharmacy round strategy and twice daily batching strategy were implemented as IV return reduction methodology in only the general intensive care unit (ICU) to compare IV returns and associated cost of wasted product before and after adopting both strategies. The Duration of the study was three months, one month for measuring and assessing the baseline, second and third month for IV pharmacy round plan, and twice daily batching plan, respectively.

Results: Out of 3750 prepared items of IV medications, 408 items of total IV returns were collected at baseline (226 recycled 182 wasted items). Total number of IV returns during baseline phase is 10.88% and the cost of wasted items represents (4.85%) of IV returns which is estimated to be 2128.02 USD. After adopting IV pharmacy round strategy, the total number IV returns were decreased by 10.29% from baseline while the total cost of wasted items dropped by 10.19%. The burden of the cost in this strategy decreased to 1911.02USD. However, establishing twice daily batching strategy dropped the total IV returns by 40.19% and IV waste cost by 40.03%. The cost of IV wasted items dropped to 11276.05USD. The annual estimated cost saving from both pharmacy round and batching plan is 12,827.64 USD

Conclusion: After adopting the methodologies, the total returns (recycled and wasted items) were dropped. Twice daily batching has greater impact in reducing IV returns compared to IV pharmacy round.

Resident research ID # 3704214:

Warfarin Dosing Requirement According to Body Mass Index

Abdlaah Alshammari, Abdullah Altuwayjiri, Ziad Alshaharani, Hind Almodaimegh, Lilian Albukiri, Rami Bustami

Background/Purpose: Warfarin is an anticoagulant medication that can be used in venous thromboembolic or atrial fibrillation patients. There are many factors affecting the required dose of warfarin including body weight which is mentioned only in few studies. Our study was conducted to use Body Mass Index (BMI) in order to assess the requirements for warfarin dosing.

Methodology: A retrospective study that included adults who used warfarin for more than 4 months with at least two consecutive international ratio (INR) readings within therapeutic range.

Results: Over 301 patients were included, the higher dose of warfarin was required in obese patients compered to others by 20%: (32.2 ± 15.2 vs. 27.4 ±17.3 and 26.8 ± 12.7) for normal BMI and overweight patients, respectively; p = 0.013.

Conclusion: Obese patients required higher dose in comparison to other patients and should be considered when initiating or adjusting the warfarin dose.

Resident research ID # 3723936:

Evaluation of Drug Interaction Impact in Renal and liver transplant patients at King Abdulaziz Medical City in Riyadh

Waad Alghamdi, Abdulkareem Albekairy, Mohammad Shawaqfeh

Adverse drug reactions (ADEs) are one of the leading causes of death in the United States, and drug-drug interactions (DDIs) is a major reason associated with mortality and morbidity especially with immunosuppressant medications.

This is a retrospective study, the main objectives are to assess documented and pDDIs prevalence, and assess the HCP management for ADEs. Secondary objectives include the average number of medications per patient, signs and symptoms of documented ADEs and food-drug interaction.

Inclusion criteria were adult transplant patients prescribed more than 2 medications & medications collected was for the first 3 months after transplant. Clinical decision support system (CDSS) instruments were used to conduct pDDIs including Lexicomp® and Micromedex®.

Data analysis was done using SPSS statistics. A total of 93 transplant patients were screened, and the number of identified pDDIs by Micromedex® and Lexicomp® were 610 and 1083, respectively.

The average number of medications per patient was 21 ± 6 and the average pDDIs was 12 ± 3. Around 14% of DDIs were documented and 57% were managed by HCP.

Signs and symptoms of ADEs include tremors, seizures and nephrotoxicity. The management by HCP was changing of immunosuppression, replacing and monitoring electrolyte and echocardiogram.

The most common pDDIs generated by Lexicomp® and Micromedex® were respectively as the following; Tacrolimus & mycophenolate with esomeprazole (7.76%,13.77%), tacrolimus and mycophenolate with magnesium oxide (6.28%, 10.66%) and tacrolimus with calcium channel blocker(CCB) (3.88%,6.39%). Around 53% of pDDIs were category C that require monitoring. Micromedex® identified 33% major drug interaction (P= 0.0076). Potential effects of interactions include; decrease mycophenolate (29%), increase tacrolimus (23%), decrease tacrolimus (16.4%).

We conclude that transplant patients have high frequency of pDDIs, fourteen percent were documented and are possibly avoidable, and half of the interactions were managed by HCP.

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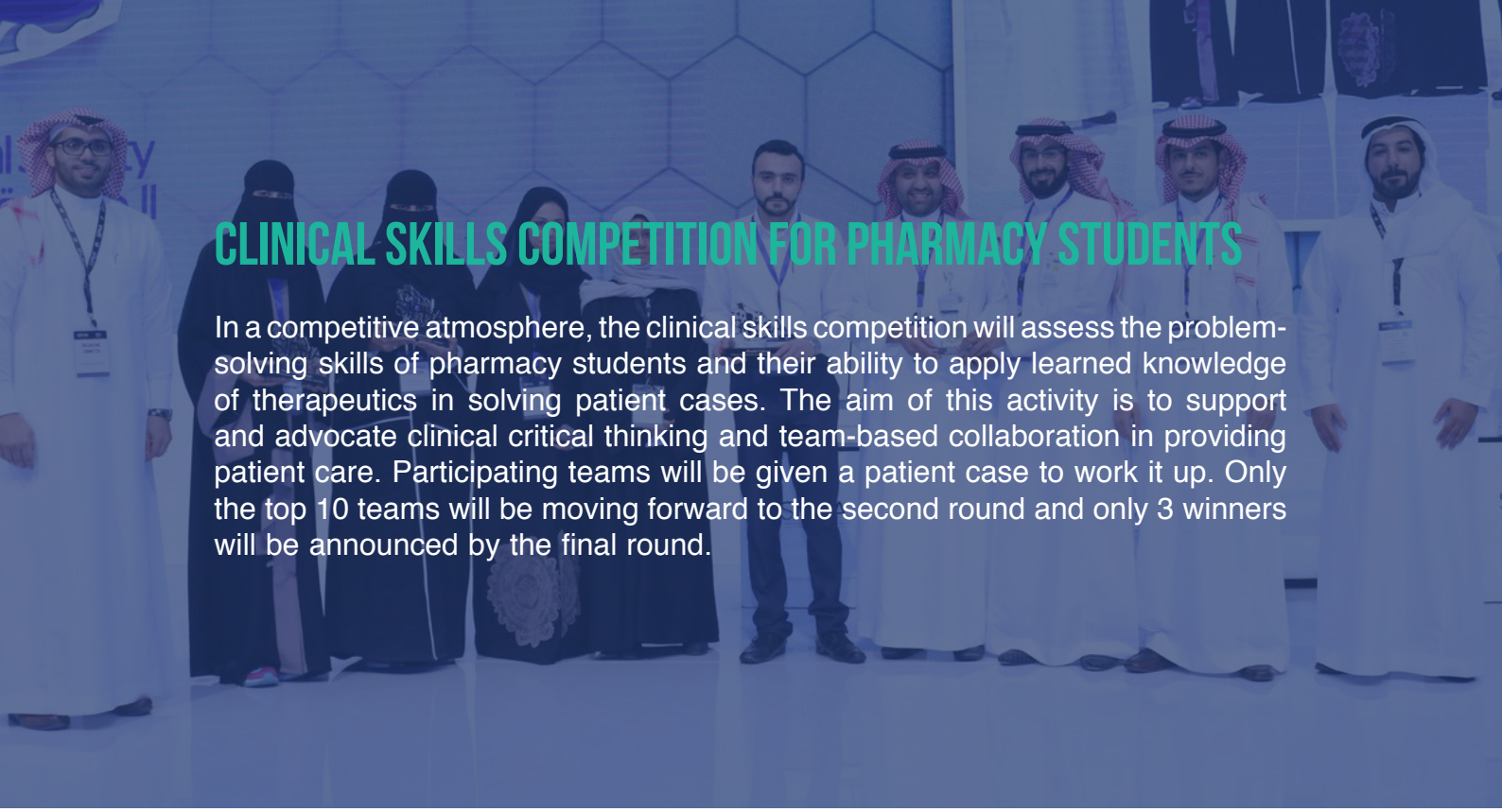

CLINICAL SKILLS COMPETITION FOR PHARMACY STUDENTS

In a competitive atmosphere, the clinical skills competition will assess the problem-solving skills of pharmacy students and their ability to apply learned knowledge of therapeutics in solving patient cases. The aim of this activity is to support and advocate clinical critical thinking and team-based collaboration in providing patient care. Participating teams will be given a patient case to work it up. Only the top 10 teams will be moving forward to the second round and only 3 winners will be announced by the final round.

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