Saudi Society for Clinical Chemistry

وزارة الصحة
Ministry of Health
King Abdul-Aziz Hospital

Laboratory International Day: Accreditation, Quality, and Diagnosis

الجمعية تحت إشراف
الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties

ABSTRACT BOOK

31st March2022

الجمعية السعودية لعلوم المختبرات الإكلينيكية
Saudi Society for Clinical Laboratory Sciences

Virtual Medical Academy

SSWGTOX
Saudi Scientific Working Group for Forensic Toxicology

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International Federation of Clinical Chemistry and Laboratory Medicine

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Introduction and Welcome

Dear Colleagues,

Saudi Society for Clinical Chemistry held the activity of " Laboratory International Day ": Accreditation, Quality and Diagnosis" on the 31st Mar 2022 at Intercontinental Hotel, Jeddah, Saudi Arabia. The seminar was organized by Saudi Society for Clinical Chemistry and King Abdulaziz Hospital in Jeddah and chaired by Dr Ahmed Al Asmari.

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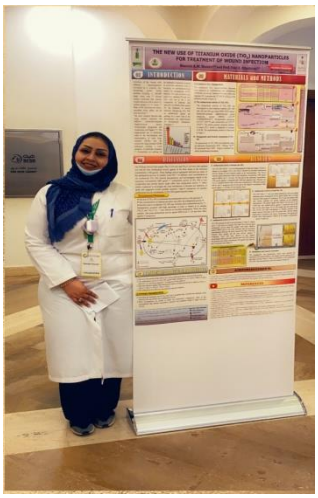
Thursday 31st March 2022

The scientific program features experts from International Federation of Clinical Chemistry and Laboratory Medicine from all the regions of Saudi Arabia, sharing recent advances and innovations. Scientific conference attendees will listen and network with experts in the field and engage with their peers for a unique learning experience. Furthermore, the scientific program will feature the latest updates of clinical testing including: 4 sessions with 15 different speakers. The sessions were about Clinical Chemistry, Toxicology, Clinical Pathology and Point-of-Care Testing, management, leadership, laboratory accreditation, laboratory automation and emerging markers, forensic and clinical toxicology.

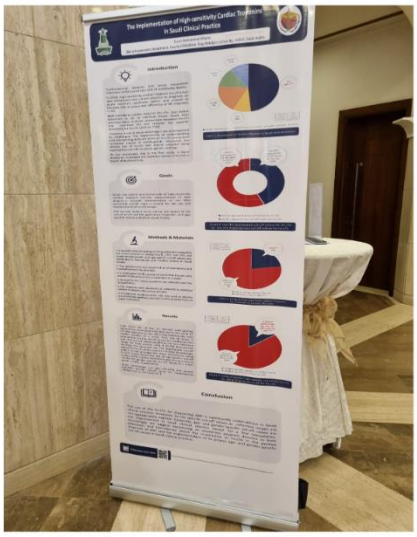


The meeting is a learning and sharing platform for all laboratory workers to advance professionally and develop solution for daily practice in the laboratory. We would like to take this opportunity to extend our gratitude to the Saudi Commission for Health Specialties, our speakers, and moderators for their support to Saudi Society for Clinical Chemistry. We also like to offer special thanks to our sponsors for their participation and support for the conference. On behalf of Saudi Society for Clinical Chemistry, we wish you a successful meeting and look forward seeing you again in near future.

Dr. Samia Sobki

SSCC President


nical Chemistry




Ministry


Hello Thursday
09:07 am


Overview


وزارة الصحة
Ministry of Health
Laboratory International Day:
Accreditation, Quality and Diagnostic
Thursday 31st March 2022

Organizing Committee

Dr Ahmed Al-Asmari	Mr. Hureia Mohammed Aldoubi	Ms. Maryam Abdullah Burollus	Ms. Maha Alayda
Chairman	Member	Member	Admin Assistan

Scientific Committee

Dr Ahmed Al-Asmari

Dr. Sherif Elsayed Elhelily

Dr. Hisham Abdelkader Othman Ahmed

Dr Heba Kary

Website Management Committee

Mr. Nawaf Al Otaibi
Member

Mr. Ali Al Hamad Member

Ms. Maha Alayda

Moderators

Dr. Ahmed Al-Asmari
Consultant Forensic Toxicology, King Abdul-Aziz Hospital –Jeddah, SA

Dr. Anwar Borai
Clinical Scientist, Clinical Chemistry, King Abdulaziz Medical City-Jeddah, SA

Dr Abdulhadi Bima
Facility of Medicine, King Abudl-Aziz University, Jeddah, SA

Dr Nashat Nafouri
Consultant to CEO, Public Health Authority, KSA
Chief Operating Officer, Futurelabs, Jeddah, SA

Dr. Sherif Elsayed Elhelily
King Abdul-Aziz Hospital-Jeddah, SA

Schedule:

	Time	TOPICS	Speaker
	8:00 am – 8:30 am	Registration and opening ceremony	Moderator
SESSION 1: Moderator: Dr. Ahmad ALAsmari Consultant Forensic Toxicologist King Abdul-Aziz Hospital, Jeddah, SA			
1	8:30 am – 8:50 am	Strategies to Improve Test Utilization in Clinical Laboratory	Dr. Anwar Borai Director Clinical Laboratory Sciences Program, College of Applied Medical Sciences King Saudi Bin Abdulaziz University for Health Sciences (KSAU-HS), Jeddah, SA
2	8:50 am – 9:10 am	Losing Laboratory Samples: Does it Matter?	Dr. Heba Kary Consultant, Chemical Pathology Canadian Board, Medical Biochemistry Active Fellow of Royal Collage of Physician and Surgeons of Canada Head of Clinical Biochemistry Division King Fahad Armed Forces Hospital, Jeddah, SA
3	9:10 am – 9:30 am	Challenges in Laboratory Diagnosis of Covid-19	Dr. Hatem Makhdoum Virology consultant Assistant Professor in Taibah University
4	9:30 am – 9:50 am	New Generation of Total Lab Automation	Mr. Ahmed Tamim Automation & Informatics Manager at Beckman Coulter Diagnostics-Saudi Arabia
	9:50 am – 10:00 am	Question & Answer	
5	10:00 am – 10:15 am	Break	
SESSION 2 Moderator: Dr. Anwar Borai Director Clinical Laboratory Sciences Program, College of Applied Medical Sciences King Saudi Bin Abdulaziz University for Health Sciences (KSAU-HS), Jeddah, SA			
6	10:15 am – 10:40 am	Excellence Journey in Health Care Services Toward 2030 Vision - Where to Start?	Dr. Nashat Nafouri Chair, Healthcare Interest Group Executive Officer, Saudi Quality Council, Jeddah, SA
7	10:40 am – 11:00 am	Stat-of-the-Art in Clinical Microbiology	Dr. Mohammad Qutub Senior Clinical Microbiology Scientist (2009-Present) Section Head, Molecular Infectious Diseases & Section Head, Clinical Microbiology Section Department of Pathology and Laboratory Medicine, King Faisal Specialist Hospital and Research Centre, Jeddah, SA
8	11:00 am – 11:20 am	The Pathway to Blood Safety	Dr. Mohammad H. ALMohammadi Pathology and Laboratory Medicine Department, King Abdul–Aziz Medical City, Jeddah, SA

9	11:20 am – 11:40 am	Cholesterol or Triglycerides Which one we should be concerned?	Dr. Abdulhadi Bima Consultant Chemical Pathologist Assistant Professor at the Faculty of Medicine at King Abdulaziz University
10	11:40 am – 12:00 pm	Leading Tests for the Emergency Laboratory - hsTnI and Procalcitonin	Mr. Ahmed Shehata Chemistry and Immunoassay Product Manager - Middle East and Africa at Beckman Coulter Diagnostics
	12:00 pm – 12:10 pm	Question & Answer	
	12.10 pm – 1:00 pm	Break & Lunch	
SESSION 3 Moderator: Dr. Sharif E. Elhalily Medical Director of pathology and Laboratory Department at King Abdul-Aziz Hospital, Jeddah, SA			
	12:00pm – 3:00pm	Poster presentation and Exhibition	
SESSION 4 Moderator: Dr. Nashat Nafouri Chair, Healthcare Interest Group Executive Officer, Saudi Quality Council, Jeddah, SA			
11	1:30 pm – 1:50 pm	Point of Care Testing (POCT) in Saudi Arabia	Ms. Najwa A. Adlan King Faisal Specialist Hospital and Research Center, Riyadh, SA
12	1:50 pm – 2:10 pm	Introduction for Histopathology: How to Process Histopathology Specimen	Dr. Salwa Bakhsh Staff Pathologist at King Abdul–Aziz University Hospital, Jeddah, SA
13	2:10 pm – 2:30 pm	Automation in Hematology	Dr. Hesham Abdul Kader Consultant of Hematology Department, King Abdul-Aziz Hospital, Jeddah, SA
14	2:30 pm – 2:50 pm	Leadership and People Management	Dr. Sharif E. Elhalily Medical Director of pathology and Laboratory Department at King Abdul–Aziz Hospital, Jeddah, SA
15	2:50 pm – 3:10 pm	Forensic and Clinical Toxicology: An Overview	Dr. Ahmad ALAsmari Consultant Forensic Toxicologist King Abdul–Aziz Hospital, Jeddah, SA
	3:10 pm – 3:20 pm	Question & Answer	
	3:20 pm – 3:30 pm	Closing Ceremony	Dr. Ahmad ALAsmari Consultant Forensic Toxicologist King Abdul–Aziz Hospital, Jeddah, SA

Oral presentations

Oral presentation 1:

Strategies to Improve Test Utilization in Clinical Laboratory

Dr. Anwar Borai

King Abdulaziz Medical City- Jeddah, King Khalid National Guard Hospital
King Saud bin Abdulaziz University for Health Sciences (KSAU-HS), Jeddah

Abstract:

When the clinical decision is made to define the patients that do and do not need a test, interventional strategies are available to both clinician and laboratorian to help guide appropriate utilization in general diagnostic laboratories and clinical chemistry. Experience has shown that some strategies are weak and others are strong but they become most effective when communicated with requesting clinicians. Available literatures indicate that implementing effective strategies of test utilization management are strong tools to improve health care and reduce waste of resources.

Learning objectives:

The lab attendees will learn about:

1. Different types of strategies to improve test utilization
2. Test utilization rules & suitable interventions
    a. Strategies implementation
    b. Genetic testing utilization

Oral presentation 2:

Losing Laboratory Samples: Does it Matter?

Dr. Heba Kary

King Fahad armed hospital, laboratory department, Jeddah, Saudi Arabia

Abstract:

Laboratory diagnostics, a pivotal part of clinical decision making, is no safer than other areas of healthcare, with most errors occurring in the manually intensive pre-analytical process. Patient misidentification errors are potentially associated with the worst clinical outcome due to the potential for misdiagnosis and inappropriate therapy. While it is misleadingly assumed that identification errors occur at a low frequency in clinical laboratories, misidentification of general laboratory specimens is around 1% and can produce serious harm to patients, when not promptly detected. This presentation focuses on the challenging issue of lost sample, providing an overview on the prevalence and leading causes, analyzing the potential adverse consequences, and providing tentative guidelines for detection and prevention of laboratory sample loss.

Learning objectives:

The attendees will be able to know the following:

1. Understanding the effect of laboratory process on the accuracy and reliability of testing and confidence in results.
2. Understanding the impact of sample management on patient care and outcome.

Oral presentation 3:

Virology Consultant- Assistant Professor

Dr. Hatim Makhdoum

, Clinical and Diagnostic Virology
Tabiah University, email: hmakhdoom@taibahu.edu.sa

Abstract:

Presenting state of the art in relating to Covid-19 laboratory diagnosis. Clinically, the laboratory diagnosis is critical for the clinical management of patients and the implementation of disease control strategies to contain SARS-CoV-2 at the clinical and population level. This presentation will discuss the main clinical and imaging findings of COVID-19 patients. The advantages and limitations of different laboratory methods used for SARS-CoV-2 diagnosis will be investigated in detail.

Learning objectives:

In this lecture, the attendees will be able to know the following:

1. Current update in laboratory diagnosis of covid-19
2. Understanding the impact of rapid testing of covid-19

Oral presentation 4:

New generation of Total Lab Automation

Mr. Ahmed Tamim

Beckman Coulter Diagnostics-Saudi Arabia

Abstract:

Spotting the light on the importance of both hsTni and PCT assays in managing the emergency cases and early prediction of AMI and Sepsis and their roles in saving patients' lives

Learning objectives:

Importance of providing sex-specific URLs to increase the MI detection in women

Provides Absolute delta values help physicians to manage their patients

How PCT assay provides high sensitivity and a low-end precision

The Value of PCT assay in monitoring the course and severity of a sepsis systemic inflammatory response

Oral presentation 5:

? Excellence Journey in Health care Service s Toward 2030 Vision -Where to Start

Dr Nashat Nafouri

Consultant to CEO, Public Health Authority, KSA

Chief Operating Officer, Futurelabs, KSA

Abstract:

The ambitious KSA 2030 vision focuses on human growth and development as the fundamental foundation of the country's prosperity. Supreme healthcare services are the cornerstone that ensure improvement in quality of life and therefore every health organization strives to advance its services based on global benchmarks including quality 4.0 and organizational excellence framework.

Learning objectives:

In this lecture, the attendees will be able to know the following:

1. The implementation of quality in healthcare services.
2. How to build healthcare based on excellence concept.

Oral presentation 6:

Stat-of-the-Art in Cli nical Microbiology

Dr. Mohammed Omer Abdulrahman Qutub

King Faisal Specialist Hospital & Research Center, Jeddh, Saudi Arabia

Abstract:

The diagnostic methods in Clinical Microbiology over the past years has been changed, to improve the healthcare on patient management. There are several tools has been introduced into the field and proved not only improved the identification but also improve the turnaround Time.

Learning objectives:

In this lecture, the attendees will be able to know the following:

1. Current update in laboratory diagnosis in Microbiology
2. Focuses on recent advancements in the state of interactions between microbes and host factors associated with various pathogeneses.

Oral presentation 7:

The Pathway to Blood Safety

Dr. Mohammed Almohammadi

King Abdulaziz Medical City, National Guard Health Affairs, KSA, Jeddah

Abstract:

Blood safety is a complex process requiring the contribution of several sectors and many teams. It starts from donor selection and end in the process of dispensing blood products and transfusing it to the recipient safely. Any defect of this long process can affect blood safety by various degrees.

Learning objectives:

In this lecture, the attendees will be able to know the following:

1– Provide a high standard of care for donors before, during and after donation.

2 - Estimating blood requirements.

3 -Explain the guidelines and Principles for Safe Blood Transfusion Practice.

Oral presentation 8:

Cholesterol or triglyceride which one we should be concerned?

Dr Abdulhadi Bima

Facility of Medicine, King Abudl-Aziz University, Jeddah, Saudi Arabia

Abstract:

The potential impact of testing and targeting different components of Dyslipidemia profile in populations with multiple cardiovascular risk factors is not completely understood. This lec aims to assess and compare between different components of the standard lipid profile in assessing cardiovascular -risk. It will discuss the utility of derived biochemical marker and it is role in enhancing the diagnostic value of routine lipid profile marker.

Learning objectives:

In this lecture, the attendees will be able to know the following:

1- understanding the need and the importance of Cholesterol and triglycerides
2- Classification of Lipoprotein particles
3- understanding the lipid profile. When to worry most?
4- The importance of derived biochemical marker from the lipid profile

Oral presentation 9:

Leading Tests for the Emergency Laboratory - hsTnI and Procalcitonin

Mr. Ahmed Shehata

Beckman Coulter Diagnostics-Saudi Arabia

Abstract:

Spotting the light on the importance of both hsTni and PCT assays in managing the emergency cases and early prediction of AMI and Sepsis and their roles in saving patients' lives.

Learning objectives:

1- Importance of providing sex-specific URLs to increase the MI detection in women
2- Provides Absolute delta values help physicians to manage their patients
3- How PCT assay provides high sensitivity and a low-end precision
4- The Value of PCT assay in monitoring the course and severity of a sepsis systemic inflammatory response

Oral presentation 10:

Point-of-care testing (POCT) in Saudi Arabia

MS. Najwa Adlan

Aldara Hospital& Medical Center

Abstract:

Awareness of Point of Care Testing in Sadia Arabia. Point-of-care testing (POCT) enables more rapid clinical decision making in the process of diagnosis, (rule-in or rule-out), treatment choice and monitoring, and prognosis, as well as operational decision making and resource utilization.

Learning objectives:

In this lecture, the attendees will be able to know the following:

1. POCT in Saudi in general
2. Awareness of best practices of POCT among Health care
3. Recommendations to be implemented.

Oral presentation 11:

Introduction for Histopathology: How to process Histopathology Specimen

Dr. Salwa Bakhsh

King Abdul Aziz University Hospital, Jeddah, Saudi Arabia

Abstract:

Histopathology it is a branch of pathology which deals with the study of disease in a tissue section. The tissue undergoes a series of steps before it reaches the examiners desk to be thoroughly examined microscopically to arrive at a particular diagnosis. To achieve this, it is important that the tissue must be prepared in such a manner that it is sufficiently thick or thin to be examined microscopically and all the structures in a tissue may be differentiated.

Learning objectives:

In this lecture, the attendees will be able to know the following:

1- How pathology specimen is processed
2- Dealing with a particular diagnosis and limitation of working in histopathology lab.

Oral presentation 12:

Automation in Hematology

Dr. Hisham Abdelkader Othman Ahmed

Laboratory department, King Abdul-Aziz Hospital, Jeddah, Saudi Arabia

Abstract:

Automation in Hematology: Automation in hematology now permits comprehensive and highly precise diagnosis, with hardly any human help. This will be illustrated by modern analysis systems. automation in the routine test performed in hematology has considerably improved the accuracy of results and also the efficiency of the laboratory. We will look into the role of automation in diagnosis some hematological disorders.

Learning objectives:

In this lecture, the attendees will be able to know the following:

1. How to use automation in prediction of hematological diseases.
2. Proper attention to flags created by automatic analysers.

Oral presentation 13:

Leadership and people management

Dr. Sherif Elsayed Elhelily

Laboratory department, King Abdul-Aziz Hospital, Jeddah, Saudi Arabia

Abstract:

Leadership is about inspiring confidence and building trust among people to achieve objectives. In an organization, leadership at all levels is required to lead the members towards organizational development. Leadership alone cannot obtain anything superior unless the entire team follows the leader and works together with the leader to achieve the goals. The two most important words for the success of any organization are leadership and teamwork. Poor leadership cannot lead a team to success and a group of unmotivated and incompetent team cannot help a leader to achieve great success. To achieve organizational goals, Team members must work together under the leadership of a leader and the leader must exhibit motivational skills. Today, there are several leadership theories that tries to define leadership as transactional, transformational, autocratic or charismatic. However, to achieve success as a team, the leader must exhibit participative leadership where each member of the team is valued and each member is offered the opportunity to participate in organizational development. We will look into the different theories of leadership and urges that participative leadership is the best style for leaders to build team and achieve teamwork capabilities.

Learning objectives:

In this lecture, the attendees will be able to know the following:

1. Knowledge about leader ship styles
2. People management and corrective action for human errors
3. Building teams
4. Team management.

Oral presentation 14: Forensic and Clinical Toxicology: An overview

Dr Ahmed Ibrahim Al-Asmari

Laboratory department, King Abdul-Aziz Hospital, Jeddah, Saudi Arabia

Abstract:

Toxicology is the study of chemicals or poisons which could potentially result in harmful effects or death after exposure in living subjects. Forensic toxicology is defined as the method of identification of the presence of these harmful substances for the purposes of law. The toxic effects of such poisons depend on their quantity present or concentration and differ between individuals. Tolerance amongst users varies and is dependent on the individual patient with factors including dose, age, gender, body mass and the length of time the person used or abused. Everything in nature can be a poison, such as water if it is taken in abnormal quantities. Illicit and licit drugs have been described as "chemical weapons" whose effect on society is that of a double-edged sword: they may relieve pain, and yet they may also kill. Drug testing is also important for identifying the cause and manner of deaths in post-mortem cases, keeping the workplace drug free and reducing accidents due to driving under the influence of drugs (DUID). Systematic toxicological analysis is a term describing the process of how each forensic analysis test should be performed when searching for unknown drug and toxic compounds. This standard approach consists of two steps in the laboratory: immunoassay has been employed as a preliminary method for the detection of abused drugs, especially in urine, serum and plasma, due to its ability to detect drugs even in very low concentrations as well as being able to process large numbers of samples without pre-treatment. The confirmation step is usually coming out using chromatographic techniques coupled with more specific methods of identification and detection, for example, the most commonly used confirmation procedure is gas chromatography coupled with mass spectrometry (GC-MS) or HPLC coupled with photo diode array (DAD) detection, LC-MS and LC-tandem MS. In this presentation we will try to discuss the role of modern forensic toxicology in Saudi Arabia and role of Poison control and Forensic Chemistry centre in Jeddah in the detection of the new drug of abuse such as synthetic cannabinoid (Spice) and designer drugs in order to fight agonist addiction.

Learning objectives:

In this lecture, the attendees will be able to know the following:

1. The common misuse of drugs and prohibited substances in the city of Jeddah, especially in emergency department.
2. The most common challenges facing forensic toxicologists in Saudi Arabia.

Poster's presentations

: Poster 1

The use of new of Titanium oxide nanopart icles for the treatment of wound infection

Raniyah AM. Shoudri[1,2] and Hani A. Alhadrami[1,3]

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[3] Faculty of Applied Medical Sciences, Department of Medical Laboratory Technology, King Abdulaziz University, P. O. Box 80402 Jeddah 21589, Saudi Arabia. Email: hanialhadrami@kau.edu.sa

Background: Wound infections accounted a significant mortality and morbidity rate worldwide. Around 11 million people worldwide require medical treatment for wound infections and 300,000 die every year due to untreated wound infection. The extensive use of antibiotics leads to emerging new microbial strains that are resistant to many antibiotics. Hence, the development of new antimicrobial compounds or the modification of those that already exist to improve antibacterial activity is a high priority area of research. Researchers are seeking out for alternative treatment scenarios to overcome the antibiotics resistance. During the past few decades, nanotechnology has arisen with new promising technology for synthesis of nanobiomaterials. Thus, metallic nanoparticles (NPs) are considered as a new alternative treatment that has antibacterial activity.

Objectives: In this work, a new formulation of (TiO_2) NPs with different sizes and their antibacterial activities against the causative agents of wound infection were studied was synthesise.

Method: The NPs were characterized using X-Ray Diffraction (XRD) and Energy Dispersive X-Ray Spectroscopy (EDS). Their genotoxicity and mutagenicity were achieved using an analytical Genotoxicity SOS - Chromo Test™ Kit. The antibacterial activity study was conducted using drop-plating method against three ATCC bacterial strains methicillin-resistant *S. aureus* (MRSA), *E. coli* and *P. aeruginosa*.

Results and discussions: Our study clearly illustrates a superior antibacterial activity of TiO2 NPs against MRSA and *E. coli* while the activity was quite restricted against *P. aeruginosa*. Most of our TiO_2 NPs showed non-genotoxic and non-mutagenic results at the maximum concentration. This is will enhance the future of the therapeutic strategies against the resistant pathogenic strains that cause wound infections.

Keywords: Titanium oxide, Wound infections, X-Ray

Poster 2:

Level of Agreement and correlation between the estimated haemoglobin AIC results derived by continuous or conventional glucose monitoring system compared with the point-of-care or laboratory-based measurements: an observation study

Ayman A. Al Hayek

Department of Endocrinology and Diabetes, Diabetes Treatment Center, Prince Sultan Military Medical City, Riyadh, Saudi Arabia; Email: ayman.alhayek@yahoo.com

Abstract:

Introduction: Hemoglobin A1C (HbA1c) is an important marker for diabetes care management. With the increasing use of new technologies as continuous glucose monitoring (CGM) and point-of-care testing (POCT), patients and their physicians were able to monitor and continuously check their blood glucose levels efficiently and timely manner. This study aimed to investigate the level of agreement between the standard laboratory test for HbA1c (Lab-HbA1c) with the point-of-care testing (POCT-HbA1c) and the glucose monitoring index (GMI) derived by intermittently scanned CGM (isCGM) or estimated Average Glucose (eAG) derived by conventional self-monitored blood glucose (SMBG) devices.

Methods: A cross-sectional study was conducted at the Diabetes Treatment Center, Prince Sultan Military Medical City, Saudi Arabia, between May and December 2020 on 81 patients with diabetes who used the isCGM system (n=30) or conventional finger-pricking SMBG system (n=51). At the same visit, venous and capillary blood samples were taken for routine HbA1c analysis by the standard laboratory and POCT methods, respectively. Also, for isCGM users, the GMI data for 28 days (GMI-28) and 90 days (GMI-90) were obtained. While for SMBG users, eAG data for 30 days (eAG -30) and 90 days (eAG -90) were calculated. The limits of agreement in different HbA1c measurements were evaluated using a Bland–Altman analysis. Pearson correlation and multivariate linear regression analyses were also performed.

Results: Based on the Bland-Altman analysis, HbA1c levels for 96.7% and 96.1% of the patients analyzed by the POCT and the standard laboratory methods were within the range of the 95% limit of agreement in both isCGM and conventional SMBG users, respectively. About 93.3% of the GMI measurements were within the 95% limit of agreement. Also, about 94.12% of the eAG -30 and 90.2% of the eAG -90 measurements were within the 95% limit of agreement. Moreover, the correlation analysis revealed a statistically significant positive correlation and linear regression between Lab-

HbA1c, POCT-HbA1c, GMI, and eAG in both conventional SMBG and isCGM users (all $p < 0.001$). These positive results persisted significantly after adjusting for different factors (all $p < 0.001$).

Conclusion: GMI derived by is CGM or eAG derived by conventional SMBG systems, as well as the POCT-HbA1c measurements, showed a high level of agreement; therefore, we recommend them as potential methods for diabetes monitoring, especially when a rapid result is needed or with patients with uncontrolled diabetes or on intensive insulin therapy.

Keywords: Hemoglobin, AIC, glucose, POCT.

Poster 3:

Process Improvements to Reduce Cardiac Troponin I Turnaround Time in the Emergency Department

Malik S Almuqati

Continuous Quality Improvement and Patient Safety department, King Fahad Armed Forces Hospital, Ministry of Defense, Jeddah, Saudi Arabia

Abstract:

Background: Laboratory turnaround time (TAT) is considered one of the most important indicators of work efficiency in hospitals, physicians always need timely results to take effective clinical decisions especially in the emergency department where these results can guide physicians whether to admit patients to the hospital, discharge them home or do further investigations.
Methods: The FOCUS PDCA method of quality improvement was applied to this project (figure 2). Brainstorming and fishbone analysis were initially carried out to find the different causes of long TAT of Troponin test. Baseline assessment included a review of the patient's TAT from receiving sample until release. The project was conducted from with ongoing performance measures monitoring weekly, followed by interventions and action plans accordingly: *First action*: Implement laboratory information system (LIS). This system includes the elimination of (logbook, entering order and labeling). *Second action*: The spinning time (centrifuge) is reduced by using rapid tube tests (from 10 to 3 minutes). *Third action*: Staff training and education for action plan. *Fourth action*: redesign the flow chart process. All data extract from oasis system by using business object program, after that all statistical analysis was performed by using software Microsoft Excel.
Results: This study shows very positive impact of having an Emergency Department laboratory. The goals were achieved by reduce time for troponin to be 32 minutes from 101 minute by 70%._this project has a significant impact on the length of patient stay in emergency department.
Conclusion:_With an interdisciplinary team of health care professionals, we successfully reduced troponin I TAT for patients in our Emergency Department by 70% in 2019, consistently achieving laboratory results in less than 35 minutes.

Keywords: Turnaround time, Troponin, Emergency Department,

Poster 4:

Prevalence of gestational diabetes mellitus attributable to obesity in Qassim region

Nafla Alomairini * and Arif Khan

Qassim University Medical City, email: nafla9@outlook.com

Abstract:

Introduction: The prevalence of GDM reflects major concern in health as it is steadily increasing at higher ratio in the Saudi Arabia comparison to other populations in the world. The risk factor for gestational diabetes includes both modifiable that are life style factors (overweight, obesity) and non-modifiable factor, which is a family history of diabetes. The aim of this study was to estimate the burden of Gestational diabetes mellitus (GDM) among Qassim female population and to explore the effect of obesity risk factor on the prevalence of GDM.

Methods: A Quantitative observational cross-sectional study was conducted among 615 (Survey A) women to estimate the status of awareness and risk factors associated with GDM. Survey (B) of 1070 women who had pregnancy belong to Qassim region was included to evaluate the prevalence of GDM with obesity. An online and paper questionnaire was designed in Arabic to facilitate the data collection. Statistical data entry and analysis of results performed using Microsoft Excel and analyzed by EpiInfo2007 (Free download-CDC website)

Results: The survey A demonstrates that 87% women were aware to GDM and 72% among them already had the knowledge of risk factors for GDM. The survey B shows that the prevalence of GDM 9% in Qassim that includes 19.2% overweight and 39.4% obese among them.

Conclusion: Women who are obese are at a significantly elevated risk of developing GDM, as it was shown 19.2% among 9% GDM women. Also, we can see that a large proportion of the GDM 9% was among age group of 31-40y(48.5%), 41-50y(35.5%)and it's positively related to other lifestyle factors (physical activity, sleeping duration, and routine life). Public health efforts to reduce pre-pregnancy BMI by promoting physical activity and healthy eating among women of reproductive age should be intensified.

Keywords: Gestational, diabetes mellitus, Obesity, Exercise, pregnancy, Qassim.

Poster 5:

Method Validation of Methamphetamine in Urine Using Solid Phase Extraction on Shimadzu LCMS/MS 8060 at PSMMC

Tariq Alahmari, Ali Almotiri, Alfydia Dalupang, Khaled Assiri

Division of Toxicology, Department of Central Military Laboratory and Blood Bank,
Prince Sultan Military Medical City, Riyadh, KSA.

Abstract:

Background: Methamphetamine ('meth') is a stimulant drug of abuse which increases levels of monoamines (particularly dopamine, but also noradrenaline and serotonin) in the central nervous system. The pharmacological effects of methamphetamine occur via a number of neurochemical processes, including disruption of vesicular and transporter functioning, through the inhibition of monoamine oxidase and the facilitation of tyrosine hydroxylase. Like other stimulants, such as cocaine and amphetamine, methamphetamine produces feelings of euphoria, alertness and increased energy. Unlike cocaine though, a single dose of methamphetamine sustains these effects for many hours. Methamphetamine can be smoked, snorted, injected or swallowed. The psychological effects of long-term use include hallucinations and delusions, depression, suicidality and aggression. Methamphetamine is also noted for its addictiveness, associated with criminality and social decline. It therefore represents a major public health, social and political dilemma.

Method: Methamphetamine method of extraction and analysis were validated using Biotage-Extrahera for SPE extraction with In-House prepared reagents and Standards and LC-MS/MS, respectively. Method validation was done according to the laboratory policy following Clinical & Laboratory Standards Institute (CLSI) approved guidelines. Method comparison study was done by comparing 20 patient samples using an LC-MS/MS 8060 (Shimadzu, Kyoto, Japan) at Prince Sultan Military Medical City, and an LC-MS/MS at King Abdullah International Medical Research Center. Precision study was done on multi-levels of reference materials and coefficients of variation (%CVs) were calculated for each level. Cut-off verification was done using a reference material with cut-off concentration verifying the analytical cut-off of the test.

Results: Method comparison, Accuracy, carrey over, matrix effect using a cut-off verification of 500 ng/mL and interference studies were investigated. All method parameters were acceptable with allowable errors of less ≤20%. Methamphetamine, slope was 0.970 which is within acceptable criteria and correlation coefficient (r) 1.000. Precision for 4-levels of reference materials with

different concentrations, for methamphetamine, %CV were 9.8%, 7.6 %, 7.8% and 10.9% respectively. Linearity/Calibration verification analyzed over a measured range points of 50 to 5000 ng/mL for methamphetamine were acceptable.

Conclusion: Overall performance of Methamphetamine test using Solid Phase Extraction on Shimadzu LC-MS/MS 8060 provides reliable results for diagnosis and detecting of methamphetamine and is suitable for testing in Toxicology division.

Keywords: Methamphetamine, Amphetamines, LC-MS/MS, SPE.

Poster 6:

Association between SIRT1 gene polymorphisms with type 2 diabetes mellitus with or without diabetic kidney disease in Saudi patients

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Abstract :

Background : Type 2 Diabetes Mellitus (T2D) is the major form of diabetes that is a complex disease associated with complications such as kidney disease and multiple genetic alterations raise the risk of T2D and DKD. The prevalence of Diabetic Kidney Disease (DKD), has been increasing significantly among T2D patients. Sirtuin 1 (SIRT1) is a gene that play role in glucose homeostasis and play a role in renal homeostasis, and a reduction in SIRT1 expression in both will lead to developing T2D and DKD. SIRT1 single-nucleotide polymorphism (SNPs) such as rs3758391and rs10823108 show a decrease in SIRT1 expression in other races, which affects its role in the regulation of hepatic glucose production, insulin production that leads to development of T2D, as well as reduce sirt1 protective effect in limiting kidney injury that leads to developing DKD. however, those SNPs have not yet have been studied in Saudi patients. Therefore, this study focuses on investigating if there is an association between SIRT1 SNPs and the development of T2D as well as if there is an association between SIRT1 SNPs and the development of DKD in Saudi patients.

Methods: This case control study involved 132 T2D patients, including 51 DKD patients and 77 healthy controls recruited from the endocrinology clinic at King Abdul-Aziz University Hospital .The sample of those participants was genotyped for 2 SIRT1 polymorphisms (rs3758391and rs10823108) through real-time PCR and TaqMan allelic discrimination methods. For validation used sanger sequencing method. The strength of the association between genotype and allele frequencies with risk of developing T2D and DKD was tested using Fisher Chi squared test.

Result: Fisher Chi-squared test was used to evaluate the association of 2 SNP (rs 3758391, rs10823108) and DKD. There was a significant difference amongst the distribution of genotypes in rs 3758391 polymorphism [$\chi 2(2, n=48) = 9.9, p < 0.01$] in DKD amongst diabetic subjects. No significant difference was observed in the same SNP when comparing T2D subjects with control subjects [$\chi 2(2, n=130) = 1.3$,

p=0.5]. Although there is no significant difference was observed in rs10823108 polymorphism [χ2(2, n=50) =2.03, p=0.34] in DKD amongst diabetic subjects. No significant difference was observed in the same SNP when comparing T2D subjects with control subjects [χ2(2, n=132) =.7, p=0.8]. Post hoc testing shows that T/T in rs 3758391 polymorphism is approximately significantly associated (0.056) with DKD.

Conclusions: *SIRT1* rs 3758391 is show an approximately significant association with DKD amongst diabetic Saudi patients, and T2D patients who were homozygous of the T allele were more likely to develop DKD.

Keywords: diabetes, SIRT1, genotyping, kidneys diseases

Poster 7:

Sex-hormone and chromosomal roles in host cells toward males and females' susceptibilities to SARS-COV-2

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Abstract:

Background: SARS-CoV-2 which named as COVID-19 has disseminated in China particularly in Wuhan then worldwide and classified by WHO as a pandemic as a result of fast contagious virus and causing severe respiratory illness followed by deaths in some cases. SARS-CoV-2 is transmitted between individuals through coughing, sneezing and contacting contaminated surfaces. Several studies indicate that males are more vulnerable to SARS-CoV-2 than females and they have high numbers of fatalities and serious health outcomes such as cardiovascular disease, Acute respiratory distress syndrome (ARDS) and cytokines storm. Meanwhile, females are more survived from COVID-19 than males. Biased males' susceptibilities to COVID-19 are attributed to hormonal and chromosomal roles in the host cells. The aim of this study is to determine the potential effects of androgen and oestrogen with SARS-CoV-2 as well as the role of X-linked genes in determining the COVID-19 susceptibilities.
Method: Twenty papers have been selected and critically analysed to study to what extent that sex-hormones and chromosomes influence host cells in terms of SARS-CoV-2 receptors (TMPRSS2 and ACE2) and the immune response between males and females. For illustration, TMPRSS2 and ACE2 have been measured in males and females as well as IL-6. Moreover, data from hospitalised patients were collected in some studies to see the variations between both genders in terms of the virus aggravation and outcomes. Lastly, one study showed disparities between males and females' mice who have been infected by SARS-CoV, including inflammatory response in airway and deaths.
Result: Males demonstrated higher susceptibilities to SARS-CoV-2 because androgen induce more TMPRSS2 receptors, which attach to SARS-CoV-2 then enter into the host cells. Based on RT-PCR examinations, it has revealed that females have superior SARS-CoV-2 clearance while the virus is persistent in males' host for longer. Moreover, high level of IL-6 was correlated frequently with men, which mostly result in cytokines storm. Taken together, prolonged inflammation of SARS-CoV-2 among males may explains high mortality rate among males. In contrast, oestrogen augment adaptive immune cells such as B cells and T cells while androgen do not show such a defensive mechanism toward SARS-CoV-2. As a result of low IgG and T cells in males, prolonged inflammatory

response including IL-6, monocyte and macrophage can aggravate the inflammation in the host and cause ARDS combined by deaths. In terms of chromosomal roles, two X chromosomes in females mediate greater expression of immune cells due to having more alleles on X-linked genes. In addition, two X chromosomes can lead to ACE2 inactivation due to heterozygous roles which might make females' host less exposed to SARS-CoV-2 receptors like ACE2.

Conclusion: Sex-hormones and XX chromosomes give benefits to females not males with SARS-CoV-2 in the host cells. Androgen act as immunosuppressive while oestrogen is immunomodulatory. X-Linked genes enhance immune cells and host protection from the SARS-CoV-2 in females. Therefore, further work is required to exploit these differences between males and females to tackle the SARS-CoV-2 infection.

Keywords: SARS-CoV-2, Sex-hormones, RT-PCR

Poster 8:

The implementation of high-sensitivity cardiac troponins in Saudi clinical practice

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Abstract:

Background: Cardiovascular diseases and acute myocardial infarction (AMI) constitute 32% of worldwide deaths. In 2010, high-sensitivity cardiac troponin (hs-cTn) test was introduced into clinical practice to diagnose an acute coronary syndrome earlier and proved to increase the accuracy and efficiency of MI diagnosis in ER. hs-cTn can detect troponins at 10- to 100-folds lower levels than previous tests. A direct comparison between hs-cTn and standard cTn test showed the superior sensitivity for hs-cTn (94% vs. 72%). However, most of these advantages are accompanied by challenges. The responsibility of understanding and interpreting deficient levels of hs-cTn comes with increased chance of misdiagnosis. Moreover, the clinical use of hs-cTn test should consider using appropriate cut-offs based on gender and age. To our knowledge, this is the first study in Saudi Arabia to investigate the implementation of hs-cTn in Saudi clinical practices. Here, we aim to survey the extent of the use of hs-cTn and the application of gender- and age-specific reference limits in Saudi Arabia.

Methods: A questionnaire investigating the clinical practice of testing hs-cTn, cTnT, and cTnI, and implementing gender- and age-specific cut-off values was distributed to 31 laboratories and medical centers in Saudi Arabia. Clinical laboratories data were obtained and subjected to statistical analysis to describe the current practice. Chi-Squared Goodness-of-Fit Test was used to identify any statistically significant deviation of the answers from an equal distribution.

Results: Only seven out of the 31 (22.5%) participating laboratories responded that they use hs-cTn while 24 (77.4%) laboratories are still using traditionally used cardiac markers ($P < 0.01$). Four out of these 7 laboratories use the cut-off values for traditional cTnI and cTnT but not values specific hs-cTn as a reference range for their results; only 3 (9.7%) laboratories amongst the surveyed use the appropriate cut-off values for hs-cTn when used ($P < 0.001$). Surprisingly, only 1 (3.2%) amongst the seven laboratories using hs-cTn implemented the use of age-specific cut-off values, while another laboratory was the only one to implement gender-specific cut-off values ($P < 0.001$ and $P < 0.001$, respectively). Overall, 6 (19.4%) out of all laboratories use age-specific cut-off value for cTnI and cTnT, while 5 (16.1%) out of all laboratories use gender-specific cut-off values for cTnI and cTnT ($P < 0.001$ and $P < 0.001$, respectively).

Conclusion: The use of the hs-cTn for diagnosing AMI is significantly underutilized in Saudi clinical practice. Moreover, hs-cTn specific cut-off values as reference ranges are not appropriately applied. Generally, age- and gender-specific cut-off values are not implemented in Saudi clinical practice except for a few laboratories. Accordingly, we suggest introducing an awareness program directed to both physicians and laboratories about the importance of hs-cTn in the prompt diagnosis of AMI and the implementation of its proper age- and gender-specific cut-off values in Saudi clinical practice.

Keywords: Troponins, Cardiovascular diseases, acute myocardial infarction

Poster 9:

Two-Tiered Approach to Control Multidrug Resistant Organisms Infections Using Centers Of Disease Control (CDC) Based Care Bundles in King Abdulaziz Hospital, Jeddah.

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Abstract:

Background: Multidrug-resistant organisms (MDROs) are a global threat that has severe impact on morbidity and mortality. Successful prevention requires administrative leadership and human resource commitment. This gave rise to the two-tiered approach for MDROs control. In the first tier are the baseline measures that define the problem. For uncontrolled problems, additional actions are selected from the second-tier interventions.

Purpose: To control MDROs incidence through implementation of a CDC based two-tiered MDROs control and antimicrobial stewardship programs.

Methods: The project was planned through PDCA four phases approach starting November 2017-February 2018 (figure1). MDROs incidence was calculated according to CDC MDRO & *Clostridium difficile* Infection Module, January 2017 as: number of hospital acquired infections (HAIs) by MDROs per thousand patient days. Phase1: Root Cause Analysis and surveillance was performed to identify the problem (figure2). Antimicrobial resistance was determined using Phoenix and MicroScan WalkAway systems. The methicillin-resistant *Staphylococcus aureus* DNA was detected by automated BDMax instrument using BDMax MRSA *XT*kit (Quebec, Canada). Phase2: Baseline measures such as on-job training regarding CDC based ventilator, central line, urinary catheter, surgical site and MDROs care bundles . Monitoring of hand hygiene compliance, surface disinfection, contact isolation precautions, HAI surveillance and antibiotic use. Phase3: Intensified measures were started in ICU as close auditing for link nurses participation in care bundles implementation and active surveillance. Phase4: Follow up measures and strict implementation of care bundles. Control measures were extended till December 2018.

Results: Overall MDROs incidence was reduced from 11.9 to 6.4/1000 pt days. ICU MDROs incidence was reduced from 64.4 to 12.9/1000 pt days (figure 3). Follow up monitoring showed overall and ICU MDROs incidence of 6.8 and 10.8 per 1000 pt days respectively.

Conclusions: Intensified measures in ICU revealed marked reduction of MDROs incidence compared to baseline measures implemented in all departments.

Keywords: Multidrug Resistant, MDROs, ICU

Poster 10:

Vitamin D deficiency and its relation to allergic diseases: A cross sectional study among allergic patients from Jeddah City, Saudi Arabia

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Abstract:

Background: There is an increasing body of evidence supporting that allergic disease prevalence is increasing in recent years. The most effective method in the prevention and treatment of allergic diseases is the assessment of allergen sensitization which allows characterization of the relevant allergens and therefore taking preventive measures to reduce exposure to environmental triggers . vitamin D modulate the immune response which triggered by various allergens during the allergic inflammatory pathways by acting on vitamin D receptor expressed on many target cells, including B cells, T-cells, DCs and macrophages. In this cross-sectional study, we aimed to estimate the prevalence and trend of sensitization to common aeroallergens and food allergens among allergic patients and investigate the relationship between their atopic profile and vitamin D level.

Methods: A total of 918 patients referred to King Fahd General Hospital Immunology Laboratory in Jeddah city; Kingdom of Saudi Arabia (KSA), with clinical manifestations or suspicion of respiratory and/or food allergies were included in the study. They underwent tests for total and allergen-specific serum IgE (sIgE). Vitamin D data was available for 222 sensitized patients.

Results: Out of 918 patients, 383 cases exhibited positive sIgE to either one or more allergens (41.7%). Indoor allergens were the most common type of aeroallergens followed by grass pollens, molds and tree pollens. The most frequent indoor allergen panel was House Dust Mites (HDM) and cockroach panel. It included *Dermatophagoides pteronyssinus* and *Dermatophagoides farina* with (31.2 %) and (30.9%) prevalence respectively, then cockroach German (14.2%), followed by cat dander (9.3%) and dog dander (9.2%). The most prevalent grass pollen allergen was Bermuda grass (7.7%), while the commonest mold allergen was *Candida albicans* (7.1 %). The top food allergens were shrimp (16%), cod fish (8.3%) and

peanut (6%) followed by milk (5.7%) and soybean (5.2%). The majority of the patients had vitamin D deficiency (74.7%) and (12.6 %) had vitamin D insufficiency. Patients with vitamin D deficiency are more liable to have allergic sensitization to different allergens, both food and aeroallergens among all grades than those with insufficient or sufficient levels, especially in high reactivity group (grade 6) in which 95% of patients had vitamin D deficiency.

Conclusion: Sensitization to HDM, cockroach German and cat dander showed an increased prevalence amongst studied patients. The most frequent food allergens were shrimp and codfish. Vitamin D deficiency is significantly noticeable among allergic patients.

Keywords: Vitamin D, allergen-specific serum, Allergic Diseases,

Poster 11:

Association between FOXO1 gene polymorphisms with type 2 diabetes mellitus with or without diabetic kidney disease in Saudi patients

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Abstract:

Background: Diabetes is a complex and chronic condition requiring ongoing treatment by multifactorial risk-reduction approaches over and beyond glycemic regulation. According to the International Diabetes Federation Diabetes Atlas 2019, Approximately 463 million adults were living with diabetes; by 2045, this will rise to 700 million. FOXO1 is a transcription factor that plays a significant role in controlling gluconeogenesis and insulin signaling glycogenolysis and is also essential to choosing a preadipocyte for adipogenesis. There is increasing evidence that metabolic disorders linked to insulin resistance and cancer may account for the deregulation of FOXO factors. FOXO-activating is a potential therapeutic solution in treating multiple human illnesses, including cancer, particularly when looking for compounds that may delay aging based on its tumor suppressor, particularly cell defense properties.

Methods: The rationale of our study is to find out the association between FOXO1 gene polymorphisms and the risk of (T2DM) in the population. This case-control study involved 132 cases and 77 controls samples. DNA extraction and genotyping were done by Taqman assay specific for

(rs17446614, rs2721068) to determine the genotype of the samples. For validation, we use the sanger sequencing method.
Results: We found that all the tested SNPs in FOXO1gene (rs17446614, rs2721068) were consistent with the Fisher Chi-squared test in both patients and controls. It shows the in-significant differences of FOXO1gene polymorphisms between T2DM, DKD patients, and healthy controls. There is no association between FOXO1 and T2DM. Amongst diabetic subjects, there was an extremely significant strong indirect correlation between the presence of FOXO1 rs17446614.
Conclusions: Our study confirms the lack of significant association of FOXO1gene (rs17446614, rs2721068) with T2D and DKD in Saudi patients.

Keywords: diabetes, FOXO1, genotyping, kidneys diseases.

Poster 12:

Molecular screening and detection of flaviviruses in blood samples collected from patients with undiagnosed acute viral febrile illnesses in Jeddah City

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ABSTRACT

The genus of *Flavivirus* belongs to the family Flaviviridae representing a severe global public health concern and a significant part of viral hemorrhagic fever (VHF) viruses. *Flavivirus* comprises at least 70 viruses, more than half of them considered significant human pathogens with nonspecific symptoms and febrile illness. There are five *Flaviviruses* in the western part of Saudi Arabia that scientists have circulated in the population, including Alkhumra hemorrhagic fever virus (AHFV) and Dengue virus DENV (1-4). These areas receive pilgrims worldwide during the annual Hajj and Umrah, and there is a genuine concern about the possible introduction of new species of *Flaviviruses* into Saudi Arabia. In addition, there is a high prevalence of the *Aedes* aegypti mosquito in Saudi Arabia, which can transmit the Zika virus (ZIKV) and DENV. However, whether scientists introduced new Flaviviruses species remains unknown due to limited research studies investigating the possible circulating or introducing of new *Flavivirus* to Saudi Arabia. Scientists carried out a retrospective study by screening 749 human serum samples collected from Jeddah Regional Laboratory (JRL) between 2017- 2018 from all patients with undiagnosed acute viral febrile illnesses using pan-*flavivirus* assay (single-step real-time RT- PCR). While there was no detection of unexpected *Flaviviruses* circulation in Saudi Arabia, our result confirmed that AHFV had been circulating and transmitted in Jeddah city for nine months in four patients, clinically suspected, for hemorrhagic fever. Therefore, continuous *Flaviviruses* screening and surveillance studies are necessary to detect and monitor the possible introduction or circulation of unexpected *Flaviviruses* species in Saudi

Arabia by using such assay and supporting the development of new policy for public health prevention and measures.

Keywords: flaviviruses, VHF, AHFV,

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Poster 13:

Long noncoding RNA NEAT1 expression and its target Mir-124 in diabetic ischemic stroke patients

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Abstract:

Background: Diabetes mellitus is an established risk factor for stroke and maybe associated with worse outcomes after stroke. However, the underlying molecular mechanisms remain to be fully identified. This study assessed the association of lncRNA NEAT1 expression and its target miRNA-124 with ischemic stroke in T2DM patients.

Methods and results: Four groups were included in the study; diabetic patients with stroke, non-diabetic patients with stroke, diabetic patients without stroke and healthy controls. The expression of NEAT1 and miR-124 in plasma samples of study participants were analysed by (RT-qPCR). ELISA assay was used for measurement of CRP and TNF-α. NEAT1 expression was significantly increased in DM and AIS group, in comparison with AIS group and with control group. miR-124 expression was significantly lower in DM and AIS compared to AIS group, DM group and control group. ROC curve analysis revealed that NEAT1 had a good predictive value for AIS risk in diabetics. NEAT1 level was positively correlated with NIHSS score in DM &AIS group and in AIS group. Also, significant positive correlation was observed between NEAT1 expression and inflammatory markers CRP and TNF-α and significant negative association with miRNA-124 in patient groups.

Conclusion: NEAT1 expression could be used a as diagnostic marker of stroke in diabetic patients. lncRNA NEAT1 might affect the occurrence, severity, inflammation, and prognosis of AIS in diabetic patients.

Keywords: Nuclear enriched abundant transcript 1 (NEAT1); Acute ischemic stroke; MiR-124; Type 2 diabetes mellitus.

Poster 14:

Genetic diversityof dengue viruses circulating in Saudi Arabia, Jeddah: An overview

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Abstract:

Dengue fever is the most important endemic arboviral infection that is transmitted by osquito vector. Globally, 50 million cases of dengue fever estimated and 40% at risk to Dengue virus infection. Dengue viruses (DENV) belong to the family *Flaviviridae* genus *Flavivirus*, which have a single-stranded, positive-oriented RNA genome (~11.0kb). The transmission of infection needs to a vector (mosquito) usually *Aedes*. *Aegypti* that is included into *Aedes* spp. Genetically, DENV variation can be determined by knowing of specific order of various regions in the genome among each serotype. So, from the epidemiological study view, the characterization of viral genome is useful to monitoring DENV genotypes in endemic areas. Although the outbreaks of dengue disease reported for centuries, DENV1 and DENV2 were first isolated from Japan and Hawaii in 1943 and 1945 respectively. After that, the epidemic activity of disease increased with expansion of dengue virus and its mosquito vector in different counters in the past few decades. In Saudi Arabia, the first isolate of DENV was DENV-1 and DENV-2 in 1994 from Jeddah then DENV-3 was observed in 1997. Subsequently, the first outbreak of DENV reported in the holy city of Makkah in 2004 caused by DENV-2 and DENV-3 followed by several other outbreaks happened again in Jeddah in 2005 and 2006, then in Al-Medina in 2008 by DENV-1 and DENV-2. Furthermore, reports on detection of DENV-4 in both cities(Makkah and Al-Medina). In Saudi Arabia, pilgrims from different counties including dengue endemic countries came every year to perform the Haj and Umar by passing through Jeddah to Makah and Medina which makes Saudi Arabia a target for the introduction of different dengue virus strains from different endemic countries. In addition, presence of foreign workers from endemic countries may be a source of dengue infection. The presence of the mosquito vectors responsible for dengue virus transmission in the city increase the chance of virus spread. This has encouraged us to propose this research project to investigate the genetic diversity of dengue viruses in Jeddah, Saudi Arabia to establish DENV sentinel surveillance programs targeting clinical cases and the mosquito

vector in the country to implement effective control measures and to minimize the burden of the disease in Saudi Arabia. Here, we based on the analysis of the envelope gene of DENV of 45 positive PCR dengue samples, Phylogenetic trees will be performed after full E gene sequencing of different DENV serotypes and compared with other Gene bank sequences deposited from different parts of the world. The result showed up DENV-2 genotype has been circulating in Saudi Arabia at least till 2014 in Saudi Arabia since its introduction was since 1994 (Cosmopolitan genotype). Nevertheless DENV-1 isolates in 2013 was related to the same isolate in 2011 Djibouty 1998 with presence of Angola-2013 as dominant serotype isolated in this year. These data suggest that African genotype might have been introduced into Saudi Arabia probably through African pilgrims during the Umrah and Hajj seasons.

Keywords: dengue viruses, Genetic, Saudi Arabia

Poster 15:

The impact of age, gender, and fasting blood glucose on serum lipid profile at tertiary care hospital: a retrospective study

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Abstract:

Objectives: This relatively large retrospective study explores the impact of age, gender and fasting blood glucose level on lipid profile. It has been known that many factors could influence the lipid profile. It is crucial to investigate these relationships as dyslipidemia has been linked to many critical diseases such as cardiovascular disease.

Methods: Data of 3115 individuals were collected include the age, gender, total serum cholesterol, high-density lipoprotein (HDL), low-density lipoproteins (LDL), triglyceride (TGL) and fasting glucose levels at King Fahad Military Medical Complex's Clinical Chemistry Laboratory, Dhahran, from January 2019 to July 2019.

Result: The results shows that people who were 65 years or older had significant association with total cholesterol ($p<0.001$), LDL (p-value= 0.001) and triglycerides (p-value= 0.001). Regarding gender, women, in general, are 1.2 times more likely to have hypercholesterolemia than men. Diabetes was significantly associated with all lipid profile parameters.

Conclusion: There is a variable association between lipid profile with age, gender, and fasting glucose.

Keywords: glucose, cholesterol, high-density lipoprotein, low-density lipoproteins, triglyceride

Poster 16:

The Implementation and the Role of Triglyceride/High-Density Lipoprotein Cholesterol Ratio in Diagnosing Dyslipidemia in Saudi Clinical Practice

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Abstract

Background: Cardiovascular diseases (CVD) are the leading cause of mortality accounting for 17.7 million (30%) deaths. The most common causes of cardiac diseases are ischemic and rheumatic heart diseases. In fact, four out of five cerebrovascular diseases are due to cardiac ischemic attacks and strokes. Among these, 32% of female patients and 27% of males patients end with fatality to CVD. Triglyceride-to-HDL-Cholesterol ratio (TG/HDL) is a good predictive marker for the early assessment of CVD. In some studies, a TG/HDL ratio of less than 0.87 is considered ideal. A value >1.74 is considered too high and is a high risk for coronary artery disease. In another study, TG/HDL ratio was suggested as a predictable self-governing factor for coronary artery disease. It is known that there is an increased risk of cardiovascular diseases with dyslipidemia. Therefore, this study aims to investigate the implementation of the TG/HDL ratio and other lipid profile tests in Saudi clinical laboratories. More specifically, here we present the extent of the use of the TG/HDL ratio in Saudi clinical practice to diagnose dyslipidemia.

Methods: A questionnaire investigating clinical practice in implementing and reporting TG/HDL ratio was submitted to 31 biochemical laboratories in hospitals and medical centers in Saudi Arabia. Clinical laboratory data was obtained and subjected to statistical analysis to describe the current practice. Deviation of the answers from an equal distribution was evaluated using Chi-Squared Goodness-of-Fit Test for statistical significance.

Results: Three (9.6%) of the laboratories participating in the questionnaire responded that they use TGL/HDL ratio, while 28 do not use it. Also, 3 (9.6%) of the laboratories participating in the questionnaire responded that they measure apoprotein particles, namely ApoA and ApoB. Four (12.9) of the laboratories answered that they measure Oxidized LDL (OxLDL). Five (16.1%) of the laboratories responded that they measure small dense LDL (sdLDL). Seven (22.6%) of the laboratories answered that they use sex-specific cut-off values for HDL. All answeres were significantly lower than an equal distribution ($P < 0.001$). Concerning the use of calculated or direct LDL measurement, 14 (45.1%) laboratories use calculated measurement, 11 (35.4%) laboratories used direct LDL measurement, and 6 (19.3%) laboratories used both ($P > 0.05$).

Conclusion: Despite the proven diagnostic value of TGL/HDL ratio, ApoA, ApoB, OxLDL, and sdLDL for the assessment of dyslipidemia and the associated risk of cardiovascular diseases, the implementation of these parameters in the Saudi clinical practice is still not widely used. We suggest introducing an awareness program directed to physicians and laboratories about the importance and the implementation of these necessary biomarkers in clinical practice.

Keywords: Triglyceride, Cardiovascular diseases, Cholesterol

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