ABSTRACT BOOK

The Third Clinical Congress of the Gulf Chapter of the American Association of Clinical Endocrinologists, October, 29th-31st 2015, Dubai, UAE

Guest Editors: Salem A Beshyah[1], Nasreen Alsyed[2], Ebaa Al-Ozairi[3], Jumaa Al Kaabi[4], Mohamed Lamki[5], Ali Al Zahrani[6], Aly B Khalil[7], Ahmed Hassoun[8], Mahmoud Zirie[9].

1. Center for Diabetes and Endocrinology, Sheikh Khalifa Medical City, Abu Dhabi, UAE
2. Gulf Diabetes Center, Manama, Bahrain.
3. Faculty of Medicine, University of Kuwait, Kuwait.
4. Faculty of Medicine and Health Sciences, United Arab Emirates University, Al Ain, UAE.
5. The Royal Hospital, Muscat, Oman.
6. King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia.
7. Imperial College London Diabetes Center, Abu Dhabi, UAE.
8. Dubai Diabetes Center, Dubai, UAE.
9. Hamad Medical Corporation, Doha, Qatar.

Corresponding author: Dr. Salem A Beshyah Email: beshyah@yahoo.com
Published: 27 October 2015
Ibnosina J Med BS 2015;7(5):184-210.
Received: 21 October 2015
Accepted: 24 October 2015
This article is available from: http://www.ijmbs.org

Abstract
These are the advance abstracts of the third clinical congress of the Gulf Chapter of the American Association of Clinical Endocrinologists to be held on 29-31 of October 2015. The educational objective of the congress is to give a "state of the art in endocrine practice". International and regional key opinion leaders were invited to address topical issues relating to the practice of diabetes care and clinical endocrinology. We present the abstracts of the congress as submitted by the authors after minimal restyling and editing to suit the publication requirements of the journal. Several major issues and topical themes with wide interests in the profession were addressed in 9 plenary lectures. Six clinical practice symposia were developed to target the specific educational needs of the target audience subgroups. In addition to, 16 practical issues will addressed in "Meet the Expert"- type of interactive workshops. Free communications from abstracts submitted by delegates, reflecting mostly the regional epidemiology and clinical practice in diabetes care and endocrinology, were selected for presentations as either oral (10) or poster presentations (30).

By publishing the proceedings of our third annual congress in this open access journal, we hope to extend the benefit to those who could not make it to the live presentations and give a safe home for all the abstracts for future reference. Making them permanently available may facilitate regional and international networking and collaboration between clinicians and academics of shared interests.

Introduction

The American Association of Clinical Endocrinologists (AACE) considers "the involvement at the state and local level the foundation for a strong national organization and will ensure continued interest and organizational growth for the future". The view that "Strong international and state chapter programs will continue to solidify AACE as the premiere association of clinical endocrinologists worldwide" is clearly stated by the Association. Further more, AACE state, regional and international chapters provide AACE members with professional networking opportunities, CME programming, and a vehicle for launching advocacy activities etc.".

In 2012, AACE members and fellows practicing in the Arabian Gulf Cooperation Council Countries formed an "international chapter" of the *Association*. The mission of this *chapter* is to promote better endocrine care through the support of education, research and patient advocacy. The bylaws, membership and activities of the chapter may be consulted on the chapter's website: www.aacegulf.com. The Gulf Chapter is the only trans-national chapter where members from several neighboring countries get have formed a single chapter.

Two of chapter's essential activities include 1) holding an annual chapter's meeting to review its business and elect its officers and members of its board of directors and to 2) holding an annual clinical congress to meet its academic obligations and The inaugural and second

clinical congresses of the Gulf chapter were held in October 2013 and October 2014 in Abu Dhabi, UAE. They were both recognized as the largest single chapters activities with registered delegates exceeding 700 and 800 respectively. Registrations for the third congress has already exceeded one thousand.

These are the advance abstracts of the third clinical congress of the Gulf Chapter of the American Association of Clinical Endocrinologists due to be held on 29-31 of October 2015. The educational objective of the congress is to give a "state of the art in endocrine practice". To this end, the organizing committee invited international and regional key opinion leaders to meet the objectives of the congress. We present the abstracts of the congress as submitted by the authors after minimal restyling and editing to suit the publication requirements of the *journal*. Many major issues and topical themes with wide interests in the profession were addressed in 9 plenary lectures. More focused issues were included in 12 clinical practice symposia to suite the specific educational needs of the target audience subgroups. Practical issues were addressed in "Meet the Expert"-type of interactive workshops. A selection of free communications from abstracts submitted by delegates, reflecting mostly the regional epidemiology and clinical practice in diabetes care and clinical endocrinology, were selected for presentation as either oral or poster presentations.

This year's congress themes are wide to cover topical interests including bone health, women's health, male hypogonadism, thyroid disease, molecular endocrinology, pituitary and adrenal disease, recent advances and select topical issues in addition to many other day to day concerns in diabetes care and clinical endocrinology.

We hope that by publishing them in this open access journal we extend the benefit to those who could not make it to the live presentations, give a safe home for all the submitted and otherwise unpublished abstracts for future reference, facilitate net-working between those who may have shared clinical and research interests and encourage future collaboration in clinical practice, education and research.

Abstracts of Presentations
I. Plenary Lectures
L1. Key Note Address: Male Hypogonadism: Where are We in 2015?
Margaret E. Wierman, University of Colorado School of Medicine, Denver, Colorado, USA.

Recent epidemiologic studies have raised concerns about the potential cardiovascular risks of testosterone therapy. This lecture will use a case based approach to review the current literature about the differential diagnosis, screening tests and treatment options available for men with hypogonadism. Risks and benefits of testosterone therapy will be discussed.

L2. State of the Art Lecture I: New Diabetes Treatment Paradigm: Achieve and Maintain Success Rather than go from Failure to Failure
George Grunberger, Grunberger Diabetes Institute, Wayne State University School of Medicine, Detroit, Michigan, USA

We are facing worldwide epidemic of diabetes due to superimposition of the 21st Century lifestyle on our "thrifty gene" genotype. In spite of the long-recognized ability to prevent type 2 diabetes mellitus by lifestyle modifications as well as by some medications (thiazolidinediones, metformin, acarbose) in high-risk individuals, we are not implementing those policies. Instead, the patients are being diagnosed too late and than inadequately treated. The traditional "treat-to-fail" approach needs to be changed. The current guidelines and algorithms mostly advise waiting until HbA1c reaches some elevated value and only then are medications added, gradually, one by one, always awaiting the next failure. Type 2 diabetes is a progressive disease and our current knowledge of its complexity and many pathophysiological defects should allow us to treat patients more promptly and address as many pathophysiological features as possible, assuring early achievement and then maintenance of the individualized glycemic targets. This theory is being put into practice by researchers in San Antonio, TX (Abdul-Ghani et al., Diabetes Obes Metab 2015;17:268-75). Initial published results of the study testing the traditional ADA approach vs. starting combination therapy in newly diagnosed patients with type 2 diabetes will be reviewed.

L3. Plenary Lecture I:
The Changing Therapeutic Landscape of Cushing Syndrome.
James Findling, Froedtert & Medical College of Wisconsin, Wisconsin, USA.

No abstract.

L4. State of the Art Lecture II: Advances in Diagnosis and Management of the "Diabetic Triopathies"
Rayaz Malik, Weill Cornell Medical College, Doha, Qatar

Diabetic neuropathy, nephropathy and retinopathy constitute the diabetic triopathy. They contribute directly to the chronic morbidity of diabetes and together are the most costly aspect of diabetes to both the patient and society through amputation, renal failure and blindness.

Corneal confocal microscopy has now been established as a surrogate end point for diagnosis and as an end point for clinical trials in diabetic neuropathy. With regard to the management of painful neuropathy the 2015 NeuPSIG guidance provides the most comprehensive and up to date management algorithm, and a number of novel therapies including the ATII2 receptor antagonists and anti-NGF therapy (Tanezumab and Fulnreumab) are in Phase III clinical trials and vitamin D shows promise. Disease modifying therapies including VEGF and C-peptide have recently failed in phase III clinical trials. Despite being the most commonly used biomarkers of diabetic nephropathy, serum creatinine, estimated glomerular filtration rate and proteinuria or albuminuria are all relatively insensitive. Therefore the prognostic value and benefits of novel risk markers has recently focused on tubular

biomarkers (neutrophil-gelatinase associated lipocalin, kidney injury molecule 1, liver-fatty acid-binding protein, N-acetyl-beta-d-glucosaminidase), markers of inflammation (pro-inflammatory cytokines, TNF-α and TNF-α receptors, adhesion molecules, chemokines) and markers of oxidative stress. With regard to management spironolactone could be added to preexisting renoprotective/antihypertensive therapy to prevent or slow DN progression. Lipid lowering therapy, in particular fenofibrate, PDE5 inhibitors and vitamin D may further reduce microalbuminuria.

Ophthalmoscopy, fundus photography, and fluorescein angiography are standard but crude tools to diagnose DR and diabetic macular edema. Systematic retinal screening is a must for any health care system, which wishes to prevent blindness. Ultrawidefield Fundus imaging increases the identification of DR by ~17%. Optical coherence tomography provides detailed 2D/3D information on retinal histology and has revolutionized imaging and management of patients with diabetic macular oedema. Adaptive Optics identifies retinal microvascular and perfusion alterations, whilst the retinal functional imager enables in vivo, assessment of retinal blood flow and metabolic imaging using flavoprotein autofloresence can detect metabolic stress and cellular tissue damage. These techniques have the potential to change the way we classify early stages of diabetic retinopathy. The introduction of intra-vitreal therapy using anti-vascular endothelial growth factor (VEGF) agents and steroids has revolutionized the treatment of DME and limited the indication for laser therapy. However, the response to anti-VEGF drugs in DME is not as robust as in proliferative diabetic retinopathy, and many patients with DME do not show complete resolution of fluid despite multiple intravitreal injections.

L5. State of the Art Lecture III: Osteoporosis Therapies: An Update

Ghada El-Hajj Fuleihan, American University of Beirut, Beirut, Lebanon

Osteoporosis is one of the most prevalent non-communicable diseases worldwide and in the Middle East, incurring high morbidity and mortality. Therefore, prevention at the population level and treatment of high risk individuals, are key to improving disease outcomes. The cornerstone of preventive strategies for all patients includes lifestyle modifications, balance and muscle strengthening exercises, adequate intake of calcium and vitamin D, and fall-prevention in the elderly. Pharmacologic therapies are indicated for high-risk individuals, defined as those with fragility fractures, those who exceed country specific 10 year FRAX based thresholds, or those with low T-score, depending on the guidelines.

Several recent reviews detailed the anti-fracture efficacy of approved osteoporosis therapies given with calcium and vitamin D. Hormone replacement therapy remains the first option in younger women with menopausal symptoms and no contra-indications to its use, and Tibolone a second next. Raloxifene provides a good therapeutic option in late postmenopausal women, at high risk for vertebral but not hip fractures, and at high risk for breast cancer. Bisphosphonates represent the cornerstone therapeutic modality for many older high risk subjects and reduce the risk of vertebral, hip and non-vertebral fractures. Denosumab (RANK ligand antibody) is a very potent alternative, with significant protection against vertebral, non-vertebral and hip fractures. Strontium Ranelate is effective in reducing the risk of vertebral fractures, to a lesser extent non-vertebral fractures, and hip fractures in high risk patients (post-hoc analyses). New warnings re-cardiovascular adverse events limit its use to patients in whom alternative drugs are not desirable. Teriparatide (TPTD) is the only approved anabolic agent that is indicated in subjects with severe osteoporosis, and/or multiple vertebral fractures, but has not been shown to reduce hip fracture risk. Combination therapies, with TPTD with Denosumab, or TPTD followed by potent antiresorptive agents, are a consideration for treating subjects with severe osteoporosis and fractures.

New therapies on the horizon include a new anabolic drug, Abaloparatide (PTHrP analogue), and Odanacatib (Cathepsin K inhibitor); both have been shown to reduce fracture risk. The humanized sclerostin inhibitor transiently increases bone formation and reduces bone resorption, with substantial increments in bone mass, phase III fracture trials are ongoing.

The selection of a specific drug therapy should take into account the patient's individual risk profile including the risk for specific fractures (spine versus hip), contra-indications, compliance, and subject's preferences. Long term safety remains a lingering concern with long term therapy with some osteoporosis drugs. Finally, cost and cost-effectiveness considerations, insurance plans, and national health policies, will undoubtedly modulate the ultimate choice of therapeutic options.

L6. Plenary Lecture II: Medical Management of Severe Obesity and the Role of New Drugs

John Wilding, University of Liverpool, UK

Obesity poses a major threat to health, increasing the risk of degenerative diseases and the burden of health costs. Those with severe & complicated obesity (often with a BMI > 40 kg/m^2) have the greatest burden of co-morbidity and reduced life expectancy are now 2% of the UK population, and may be a greater proportion in the USA and some countries in the Middle East where the prevalence of obesity is higher. These patients comprise the majority of referrals to clinicians treating obesity in primary and secondary care. Bariatric surgery is recognised as an effective intervention for appropriate patients, but most are not offered surgery in current practice the majority will require medical management, especially as this is also a prerequisite for surgery. Medical management requires assessment of causes and co-morbidities and offer of comprehensive support through a multidisciplinary team including doctors, dietitians, experts in physical activity and psychological support. In some situations meal replacements or very low energy diets can be considered with appropriate monitoring and follow up. At present pharmacotherapy is limited to the use of orlistat which can be of value to some; newer diabetes treatments such as GLP1 analogues and SGLT2 inhibitors may provide additional benefit to those with type 2 diabetes, but should not be used outside of this context. There are however a number of new pharmacological developments, including higher dose GLP-1 analogies (liraglutide 3mg), combination therapies with bupropion and naltrexone approved in the EU and US, as well as lorcaserin, and phentermine & topiramate recently approved in the USA; the

efficacy and safety of these new treatments will be described and their place in therapy discussed.

L7. The Third Annual AACE-Gulf Chapter Lecture 2015: Pediatric Endocrinology at the Cross Roads
Asma Deeb, Mafraq Hospital, Abu Dhabi, UAE.

Paediatric Endocrinology is a highly specialized area of Medicine. Majority of paediatric endocrinology disorders requires multidisciplinary approach and utilizes the link between various aspects of subspecialties and expertise. There is a heavy base to science in the field and a large impact of molecular medicine in disease diagnosis and management. There has been a revolution in the applied molecular genetic which advanced the uncovering of various diseases and facilitated provision of modern therapies.
Research is a cornerstone in the subspecialty which reflects science, epidemiology and molecular advances to clinical service. It is of utmost important that clinical practice in a given region allocates time and effort to study areas of relevance to its practice as this will provide targeted knowledge and basis for the services to be provided.
In this talk, I shall present synopsis of our paediatric endocrinology clinical service provision, quality improvement reports and various research projects conducted by our team members at the Paediatric Endocrinology Department, Mafraq hospital.

L8. State of the Art Lecture IV: Familial Pituitary Adenomas.
Marta Korbonits, Queen Mary College, University of London, UK

The spectrum of diseases with predisposition to pituitary adenomas has significantly expanded in the last few years. In addition to now classical MEN1 and Carney complex syndromes, SDH, DICER1 and AIP mutations as well as GPR101 microduplications can also cause a syndrome which involves pituitary adenomas. In addition, in the majority of isolated pituitary adenoma families no disease-causing mutations have been identified to date. The fascinating clinical characteristic of these patients are now emerging and this talk will introduce many of the relevant clinical features. As the molecular characterisation of the novel pathways is emerging, these might lead to new therapeutic agents. It also brings a new aspect to clinical endocrinology as families undergo cascade genetic screening and mutation carriers referred for regular endocrine follow-up. Studies involving specific patient-related molecular abnormalities can facilitate translational research ultimately supporting high quality and large preventative clinical care.

L9. Plenary Lecture III: The Future of Diabetes is Bright: The Future is Psychiatry!
Khalida Ismail, King's College London, UK.

There have been many advances in understanding the pathophysiology of type 1 and type 2 diabetes, a strong evidence base for effective pharmacological treatments and increasing use of technology to support self-management. Despite these, and despite the best endeavours of health professionals, between 30-50% of people with diabetes struggle to achieve optimal glycaemic control. The reasons for this are complex and multifactorial but psychological barriers to self management are common and disabling. I propose that the future research and clinical strategies should aim to identify and integrate the most effective and cost effective psychological treatments to support and maintain effective self- management.

II. Clinical Practice Symposia

Clinical Practice Symposium A: Pituitary

CS1.1. Cushing Disease: Diagnosis and Management
James Findling, Froedtert & Medical College of Wisconsin, Wisconsin, USA.

The diagnosis of endogenous hypercortisolism—Cushing syndrome (CS)—is the most challenging problem in clinical endocrinology. The phenotype of CS is common since it overlaps the metabolic syndrome. The diagnosis of CS should be considered in patients with signs and symptoms of hypercortisolism as well as unexplained osteoporosis, incidental pituitary and adrenal lesions, and decreased growth velocity in children. The most reliable screening tests are late-night salivary cortisol (LNSC) which yields nearly 100% sensitivity in ACTH dependent CS and the overnight 1 mg dexamethasone suppression test which has approximately 100% sensitivity in adrenal dependent (ACTH independent) CS. However, both of these tests have specificities of only 85-90% due to numerous causes. Although 24 hour urine free cortisol (UFC) has been used for many years and was considered the gold standard, it provides very poor sensitivity in CS—particularly in states of mild cortisol excess—and its specificity (unless 3-4 times greater the upper limits of normal) is suboptimal. Distinguishing pathologic CS from conditions that cause physiologic hypercortisolism (eg CKD 5, alcoholism, severe depression) may be very difficult: the DDAVP stimulation test and the dexamethasone-CRH test have both been employed with varying degrees of success in making this distinction.
The differential diagnosis of Cushing syndrome relies on the initial measurement of plasma ACTH: subnormal basal morning ACTH (< 10 pg/mL or 2.2 pmol/L) suggest adrenal dependent CS and adrenal imaging is recommended. If plasma ACTH exceeds 20 pg/mL or 4.4 pmol/L, a pituitary MRI should be performed. If the pituitary MRI is negative, the patient should have bilateral simultaneous inferior petrosal sinus sampling with CRH stimulation to confirm the presence or absence of a corticotroph microadenoma. If the patient has ectopic ACTH, widespread imaging (CT, MRI, octreotide acetate scintigraphy, PET scan) should be considered.
The treatment of CS should initially be directed at removing the ACTH secreting neoplasm or the adrenal tumor. Recurrence of pituitary ACTH CS—ie, Cushing disease (CD)—is heralded initially by elevations of LNSC. Treatment of recurrent or persistent CS must be individualized and is always dependent on the availability of pharmacotherapies. Pituitary re-operation or pituitary radiotherapy may be indicated in some CD patients. Pituitary-directed therapy with cabergoline and pasireotide are potential drug treatments in CD. Adrenostatic/lytic therapy (ketoconazole, metyrapone, etomidate, and mitotane) may also be helpful. The

glucocorticoid receptor antagonist, mifepristone, may resolve the metabolic and physical signs and symptoms of all forms of CS. Bilateral adrenalectomy always provides a definitive therapeutic solution in CS.
Finally, if you have never missed the diagnosis of Cushing syndrome or been humbled by trying to establish its cause, you should refer all your patients with suspected hypercortisolism to someone who has.

CS1.2. Acromegaly: A Personalized Approach
Margaret E. Wierman, University of Colorado School of Medicine, Denver, Colorado, USA

This presentation will review the current approach to the diagnosis of acromegaly due to a pituitary tumor secreting growth hormone, the signs and symptoms and best screening tests to order.
The personalized approaches to appropriate treatment options will be discussed including surgery, medications and radiation therapy. Finally, assessment for and treatment of complications of excess growth hormone will be discussed.

CS1.3. Difficult Hyperprolactinemia
Amir H. Hamrahian, Cleveland Clinic, Abu Dhabi, UAE

Dopamine agonist (DA) therapy has allowed prolactinomas to become a unique primary brain tumor for which medical management is the primary treatment modality. Doses of cabergoline beyond 3.5 mg/week are rarely required in controlling prolactin (PRL) secretion and reducing tumor size in prolactinomas. Most patients require an average dose of 1 mg per week. Although many patients with prolactinomas are successfully treated with DA, less than 10% of patients have resistant prolactinoma with some of these cases remaining a therapeutic challenge.
Resistant prolactinoma is usually defined as a failure to normalize PRL levels and/or reduction in tumor mass by at least 50% with DA therapy. Resistance is usually associated with macroadenomas, invasive tumors, altered dopamine receptor expression, higher prevalence of genetic background such as MEN1 and familial isolated pituitary adenomas, malignant transformation of the tumor, and in some rare cases multiple pituitary adenomas. An unusually high proportion of patients are males and this gender imbalance increases with age. The use of a more potent DA and a stepwise dose increase of DA, as long as each step improves PRL secretion, can improve the rate of prolactin normalization. Periodic echocardiography seems to be reasonable in patients taking cabergoline beyond 2 mg per week. Excessive estrogen exposure even via testosterone replacement therapy in men should be avoided, and benefits of anti-estrogens or aromatase inhibitors have been occasionally reported. Resistant prolactinomas may be tolerated in some patient populations as long as there is no tumor growth. Surgery is usually necessary in prolactinomas resistant to the maximal tolerated dose of DA, although postoperative PRL normalization is achieved only in a minority of cases. However, most patients experience a decrease in prolactin levels while they are able to reduce their weekly cabergoline dose. Radiotherapy is recommended in patients who are uncontrolled by DA and surgery with the main goal of controlling tumor growth.

CS1.4. Growth Hormone Deficiency in Adults 2015
Abdul Salam Al-Kassab, Crittenton Hospital, Rochester, Minnesota, USA

hormone (GH) production continues to occur in adult life although some decline occurs as we age.
In the past, it was thought that GH had no specific metabolic role in adult life once final adult height is achieved. However, observations from treating patients with established pan hypopituitarism showed that they continue to have residual symptoms as well as metabolic abnormalities which affect their quality of life. This sparked interest in replacing growth hormone in adults. Since 1995, the FDA approved several agents to replace growth hormone in adults.
Growth hormone deficiency in adults commonly occurs with deficiency of other pituitary hormones in the context of organic pituitary disease. It can also persist in children who were diagnosed with growth hormone deficiency in childhood which persist into adult hood . Controversy still exists whether there is a clinical condition of isolated growth hormone deficiency in adults.
The endocrine society and AACE have both issued guidelines and position statements on diagnosing and replacing growth hormone deficiency in adults. These will be reviewed in the presentation. Model case studies will also be reviewed.
Multiple branded as well as generic growth hormone preparations exist. The long term safety data were established by multinational studies for most of those preparations.

Clinical Practice Symposium B: Hot Topics in Diabetes

CS2.1. Sedentary Behavior as a New Target of Treatment and Prevention of T2DM
Melanie Davies, University of Leicester, Leicester, UK

No abstract

CS2.2. Diabetes and Heart Failure: a Deadly Duet
Seán Dinneen, Galway University Hospitals, Galway, Ireland

Diabetes and heart failure commonly co-exist in the same patient. Each condition can have a deleterious effect on the prognosis associated with the other. Because patients with heart failure are usually excluded from diabetes clinical trials much of the evidence-base in this area of clinical practice is derived from sub-group analyses of large cardiovascular trials or from expert opinion. Treatment options need to be personalised and a knowledge of the potential side-effects of glucose lowering therapy on heart failure as well as the effects of drugs used to treat heart failure on glycaemic control is important for the practicing clinician. In this talk, I will review recent clinical trial data relating to the management of heart failure and diabetes as well as guidelines from European and North American expert groups.

CS2.3. Sleep and Diabetes: A Two-way Relationship
Andrew P. Hall, University Hospitals of Leicester, UK.

Sleep has become a much greater concern to physicians with an interest in cardiovascular and metabolic medicine and it has become apparent that sleep quality and quantity can have an impact on a number of conditions including diabetes.
This lecture will first set out to give a brief overview of the physiology of normal sleep and address the question of how much sleep is needed.
Evidence will be presented for a 'U'-shaped relationship between daily sleep duration and all-cause mortality and in fact, a similar relationship between sleep duration and the incidence of obesity, cardiovascular disease, hypertension and type-2 diabetes. The potential causes of this phenomenon will be explored along with evidence of metabolic consequences from short-term sleep restriction studies. The relationship between sleep duration and both Metabolic Syndrome and Type-2 Diabetes will be presented.
The effect of circadian rhythm and 'chronotype' upon the incidence of Type-2 Diabetes and diabetes control will be explored.
Finally, recent evident of an improvement in glycaemic control among CPAP-treated subjects with both OSA and Type-2 Diabetes will be discussed.

CS2.4. Risks of Antidiabetic Drugs: Separating Facts from Fiction
George Grunberger, Grunberger Diabetes Institute, Wayne State University School of Medicine, Detroit, Michigan, USA.

Patients with type 2 diabetes have serious incurable condition. If left uncontrolled it will lead to acute and/or chronic complications, both microvascular (retinopathy, nephropathy, neuropathy) and macrovascular (myocardial infarction, stroke, heart failure, peripheral vascular disease). This simple fact gets often lost when physicians trying to prescribe medications to alleviate the patients' suffering face skeptical patients, publicity seekers and unscrupulous attorneys. It is incumbent upon us to separate reality from perception by discovering facts and then publicizing them widely. Every medication on the market can potentially lead to adverse events in some individuals. Even the best designed double-blind randomized, controlled trials can test a specific drug only in a limited number of research subjects for short time. In contrast, the patients presenting in the clinical setting come at different stages of the disease, some already with complications and virtually all on several drugs for a variety of conditions and can expect to live for many additional years. Since we have no tests to predict an individual's response a priori, we have to exercise our best judgment and do our best to minimize adverse events. It is essential that the patients are given the absolute risk estimate, not a headline-catching relative increase over placebo. Latest findings with several classes of anti-diabetic agents (sulfonylureas, metformin, insulin, thiazolidinediones, GLP-1 receptor agnostic, DPP-4 inhibitors and SGLT-2 inhibitors) will be discussed.

Clinical Practice Symposium C: Select Endocrine Aspects of Women's Health

CS3.1. PCOS 2015
Margaret E. Wierman, University of Colorado School of Medicine, Denver, Colorado, USA.

Polycystic ovarian syndrome is one of the most common endocrine disorders. The lecture will review controversies in the diagnostic criteria and implications to predict future reproductive and metabolic disorders. The appropriate treatment of women with PCOS across the lifespan will be reviewed using a case based approach. Discussion of disorders that are not PCOS will be outlined.

CS3.2. Contemporary Management of the Menopause
Dima Abdelmannan, Dubai Medical College, Dubai Diabetes Center, Dubai, UAE.

Vasomotor symptoms and vaginal dryness are most consistently associated with menopause; sleep disturbance, somatic complaints, urinary complaints, sexual dysfunction, mood, and quality of life are inconsistently associated. In this presentation we aim to discuss the available evidence and guidelines for endocrinologists and health care providers on the management of menopause in healthy women as well as in women presenting with vasomotor or urogenital symptoms and on considerations related to cardiovascular disease, breast cancer, and urogynaecology. A review of Lifestyle interventions, prescription medications, and complementary and alternative therapies according to their efficacy in the treatment of menopausal symptoms will be carried . Also , a detailed discussion of the pros and cons of hormone replacement therapy and the evidence behind it will be discussed.

CS3.3. Thyroid Disease in Pregnancy: An Update
Roberto Negro, Vito Fazzi Hospital, Lecce, Italy

Thyroid diseases are common in women of childbearing age and it is well known that untreated thyroid disturbances result in an increased rate of adverse events, particularly miscarriage, preterm birth and gestational hypertension. Furthermore, thyroid autoimmunity per se seems to be associated with complications such as miscarriage and preterm delivery. While strong evidence clearly demonstrates that overt dysfunctions (hyper- or hypothyroidism) have deleterious effects on pregnancy, subclinical disease, namely subclinical hypothyroidism, has still to be conclusively defined as a risk factor for adverse outcomes. Additionally, other conditions, such as isolated hypothyroxinemia and thyroid autoimmunity in euthyroidism, are still clouded with uncertainty regarding the need for substitutive treatment. Although in absence of clear evidence, either guidelines sponsored by the American Thyroid Association or the Endocrine Society recommend to treat with Levothyroxine subclinical hypothyroidism. While no treatment is necessary for subclinical hyperthyroidism, overt hyperthyroidism deserves to be treated with anti-thyroid drugs; either the use MMI or PTU are associated with birth defects, but adverse obstetrical events associated with untreated hyperthyroidism looks like to be more serious and frequent than neonatal malformations.

Clinical Practice Symposium D: Newer Agents for Diabetes: Efficacy and Safety.

CS4.1. DDP-4 Inhibitors: Similarities and Differences

Melanie Davies, University of Leicester, UK.

No Abstract Received

CS4.2. GLP-1 Agonists Update

Simon Heller, School of Medicine and Biomedical Sciences, Sheffield, UK.

Glucagon-like peptide-1 (GLP-1) receptor agonists are now firmly established agents in the management of type 2 diabetes. They offer worthwhile reductions in blood glucose reflected in clinically relevant falls in HbA1c and are one of the few medications which cause significant reductions in weight. This reflects pharmacological incretin effects of satiety, reduced gastric emptying, glucose dependent release of insulin and suppression of glucagon secretion. These benefits are offset by common gastrointestinal side effects of nausea and occasional vomiting although symptoms tend to subside over time and are minimised by gradual increases in dose.

Nevertheless, their effectiveness in relation to important outcomes such as cardiovascular disease and mortality is uncertain in the absence of long-term cardiovascular outcome trials. One large trial, involving lixisenatide reported earlier in the year and showed a neutral cardiovascular effect in individuals recovering from acute coronary syndrome. Trials involving individuals with diabetes at high CV risk treated with other GLP-1 analogues will report in the coming years. However whether the duration of these trials is long enough to establish cardiovascular benefit is uncertain. This is important as GLP-1 analogues have specific effects on the cardiovascular system including modest falls in BP and slight but consistent increases in heart rate.

Long term safety has also been an issue in relation to thyroid cell carcinoma, pancreatic carcinoma and pancreatitis. The current CV outcome trials are insufficiently powered and of too short a duration to address these concerns conclusively. However the absence of any signal regarding cancer is reassuring and reinforced by emerging data from extensive post-marketing surveillance. The evidence from both trials and post-marketing studies does indicate a modest increase in the risk of pancreatitis. However more longterm data are needed to establish safety definitively. Five agents are now on the market, exenatide, liraglutide, albiglutide, lixisenatide and dulaglutide. Some have suggested that the shorter acting agents may be more suitable for patients with higher post prandial glucose values but this hypothesis is not yet supported by robust evidence. Head to head trials suggest that once weekly medication may cause less side effects while once daily medication produces the greatest falls in weight and HbA1c.

The variety of injection devices and the ability to give medication, once or twice daily or weekly offers the patient and clinician the potential to individualise therapy although considerations of cost may limit choice to one or two preparations.

CS4.3. SGLT2 Inhibitors in Trials: Efficacy and Safety

John Wilding, University of Liverpool, UK.

Sodium-glucose co-transporter 2 (SGLT2) inhibitors are the latest new class of glucose lowering medicines, they partly block the reabsorption of glucose in the proximal renal tubule, resulting in glycosuria in the range of 70-115g /day. This removes some excess glucose from the body, and results in energy loss of about 320kcal /day. They are approved for use across the spectrum of disease in type 2 diabetes, from monotherapy, through to dual and triple combinations with other oral glucose lowering agents, and in combination with insulin.

Clinical trials of approved SGLT2 inhibitors in type 2 diabetes consistently show reductions in HbA1c of between 0.7 and 1.0%, irrespective of background therapy, together with weight loss of 2-3kg. Head to head trials have shown at least equivalence, and in some cases, superiority compared with both sulfonylureas and DPP-IV inhibitors in terms of glucose lowering, but with weight loss and a low risk of hypoglycaemia. In insulin treated patients with type 2 diabetes, they have been also shown to improve control, with lower insulin doses, and without weight gain or an increase in hypoglycaemia.

Modest reductions in blood pressure (2-3 mmHg) are seen with all SGLT2 inhibitors. The main side-effects include an increased risk of genital fungal infections (5-8% of subjects), however recurrent infections are rare. Bacterial urinary tract infections are slightly more common, but there is no increase in pyelonephritis. Rarely patients (particularly if on loop diuretics) may experience postural hypotension. Rarely ketoacidosis has been reported, particularly in patients with type 1 diabetes (which is not a current approved indication for SGLT2 inhibitors). Efficacy is reduced in the presence of renal impairment, so these agents are not appropriate for patients with significantly impaired renal function (do not initiate if eGFR < 60 ml/min). Meta-analysis of cardiovascular (CV) safety data for the licensed drugs, dapagliflozin, canagliflozin and empagliflozin suggest no increase in CV risk (with point estimates of relative risk below unity). The recently reported Empa-Reg outcome study showed that in addition to standard care in patients with a previous cardiovascular event, empagliflozin significantly reduced CV events by 14 % and mortality by 32%; other CV outcome studies are ongoing. In summary, SLGT2 inhibitors are an important addition to the choice of treatment for type 2 diabetes, as well as lowering glucose they help with weight loss, and reduce blood pressure; they also reduce cardiovascular events and mortality in high risk patients.

Clinical Practice Symposium E: Adolescent Endocrinology.

CS5.1. Type 1 Diabetes Transition of Care

John Gregory, Cardiff University School of Medicine, Cardiff, Wales, UK.

Skillful transition of care for teenagers with diabetes from paediatric to adult services is critical to ensure the young person's continued engagement with clinical follow-up and to reduce the risks of devastating

complications in the longer term. Transition is an area of clinical practice that has been neglected from both the paediatric and adult clinical perspectives, reflecting the challenge that it usually arises at the interface between clinical services. However, there are increasing demands now from many statutory bodies that significant resources be devoted to ensuring better transitional care than has occurred historically. This presentation will review why transition is important to improve longer term outcomes. The key continuities that need to be considered when planning transition services will be discussed. Finally, suggestions will be made for the main principles including clinic structure and communication skills that underpin skillful transition.

CS5.2. Growth Hormone Deficiency
Walid Kaplan, Tawam Hospital, Al Ain, UAE.

Growth hormone (GH) is one of the multi-hormonal products of the anterior pituitary gland. Like other hormones, GH is maintained within normal range through the balance of stimulatory and inhibitory factors. Due to its pulsatile secretion and the timing of its peak, random measurement of GH is non-conclusive and should not be done. The definite diagnosis of growth hormone deficiency is very challenging, especially in the mild cases, nonetheless, there are clinical, biochemical and radiological findings that can be very helpful in the diagnostic approach.

This lecture will cover the following points:

- Physiology of GH secretions
- Etiologies of GH deficiency
- Clinical presentation and diagnostic work up
- Treatment and monitoring
- Complications of GH treatment

CS5.3. Polycystic Ovary Syndrome in Adolescents
Hala Tfayli, American University of Beirut Medical Center, Beirut, Lebanon.

Polycystic ovary syndrome (PCOS), a heterogeneous disorder characterized by androgen excess, irregular menses and/or cystic ovarian morphology, has peri-pubertal onset. The overlap between some of the features of PCOS and some of the physiologic pubertal changes makes the diagnosis of this condition in adolescents particularly challenging. In addition to androgen excess and reproductive disturbances, some adolescents with PCOS are at higher risk of metabolic derangements with long-term health sequelae. Obesity, impaired glucose tolerance, diabetes and the metabolic syndrome are highly prevalent among these youth. Insulin resistance and the consequent hyperinsulinemia are believed to play a pivotal role in the development of the PCOS associated metabolic disturbances and in promoting an ongoing state of androgen excess.

Given that PCOS is not only a reproductive but also a metabolic disorder starting early in adolescence necessitates that therapeutic options target the hormonal as well as the metabolic disturbances. The conventional treatment of PCOS has been oral contraceptives (OCPs) and anti-androgenic agents. While OCPs are effective in attenuating hyperandrogenemia and the associated clinical manifestations, they have been reported to worsen lipid profile, increase inflammatory markers and decrease insulin sensitivity in some studies, but not in others. Insulin sensitizers such as metformin have emerged as potential alternatives with promising results on both the reproductive and the metabolic aspects. The thiazolidinediones (TZDs) have also been studied but to a more limited extent among adolescents with PCOS. While insulin sensitizers seem to have a more favorable outcome on the metabolic profile, their effect in attenuating hyperandrogenemia, especially hirsutism, may be less marked. Combination treatments, metformin with OCPs or with anti-androgens have also been studied with some promising results. The choice of treatment modality in this age group is limited by the paucity of randomized controlled trials, and by the lack of data on the longterm effects of therapeutic interventions initiated in adolescent years on the reproductive and cardiometabolic profile in adulthood. Moreover clinical decision making has to address the individual priorities of each patient. Considerations include treatment for hirsutism and acne, reproduction or contraception, weight gain and metabolic disturbances, within the context of genetic and familial risk for cardio-metabolic disorders. In this session we will review the recently published guidelines for PCOS diagnosis in adolescents and some of the data regarding different treatment modalities.

CS5.4. Congenital Adrenal Hyperplasia in Adolescents
Elham Al Amiri, Al Qassimi Hospital, Sharjah, UAE.

Aim of the current glucocorticoid treatment strategies in patients with classic types of CAH due to 21 hydroxylase deficiency is to replace the lack of cortisol (substitution) and, secondly, to suppress excess adrenal androgen production by restoring the negative feedback on ACTH release (suppression).
In adolescence, besides adequate substitution, achieving normal puberty and menstrual cycle, preventing hyperandrogenism (hirsutism) and prevention of the development of testicular adrenal rest tumors in male patients are considered relevant medical treatment goals. All these aims require individualized treatment strategies. Mostly supraphysiological dosages of glucocorticoids are necessary to suppress the ACTH release. Glucocorticoid overtreatment could lead to iatrogenic Cushing's syndrome and increased cardiovascular risk. In adolescence, there is a decreased conversion of cortisone to cortisol and an increase in renal clearance of cortisol contributing to a relative lower cortisol concentration. Therefore, it is often necessary to increase dosages of hydrocortisone. However, current studies show that at this age glucocorticoids may have a deleterious effect on pubertal growth. Therefore, it is a difficult task to find the right balance between under- and overtreatment especially in adolescence thereby avoiding important long-term complications.

In adolescence issues of sexual activity and contraception have to be discussed and genetic counseling has to be given to the patients. General information about CAH (including the need for wearing medical identification) should be given together with a crisis prevention training performed by an experienced

nurse. In female patients with virilising CAH consultation of an experienced gynecologist should be arranged before or during puberty to decide whether additional surgery is needed.
A good preferably gradual transition to the adult endocrinologist has to be planned carefully at the end of adolescence.

Clinical Practice Symposium F: Adrenals and Multiple Endocrine Neoplasia (MEN)

CS6.1. The 10 Rules in Adrenal Insufficiency: A Case-Based Approach
James Findling, Froedtert & Medical College of Wisconsin, Wisconsin, USA.

Ten Rules of Adrenal Insufficiency (AI):
1) There is no adrenal fatigue
2) All corticosteroid therapy regardless of dose or route of administration may be accompanied by serious side effects
3) All patients with hyponatremia should have AI excluded
4) Opioids and some psychotropic medications suppress the HPA axis
5) Hydrocortisone is the preferred steroid replacement in AI
6) All exogenous glucocorticoids may cause Cushing syndrome and suppress the HPA axis
7) AI has many protean clinical presentations
8) There is no evidence for "relative" AI during critical illness
9) Recovery of the HPA axis may cause steroid withdrawal and usually has an elevation of ACTH
10) AI is a serious disorder with increased morbidity and mortality and stress dose teaching should be reviewed at every patient visit.

CS6.2. Endocrine Changes with Aging.
Abdul Salam Al-Kassab, Crittenton Hospital, Rochester, Minnesota, USA.

Over the past few years, improvement of health care and lifestyle has led to an explosion in the number of people living longer. With this expansion in the aging population, certain medical conditions became more prevalent. The hormone system, like all other physiologic processes in the body, undergo changes with aging.
The presentation will focus on reviewing changes that will take place in the Endocrine system with aging, focusing on the thyroid, parathyroid, gonadal system, bones and the calcium metabolism.
Thyroid dysfunction in particular is quite common as the population ages, which involves both a higher prevalence of underactivity as well as over activity. There is debate on the appropriate cut off points of when to treat these disorders.
The gonadal system also undergoes physiologic changes of aging and will be briefly discussed.
Calcium disorders are also quite common with aging as well as Osteoporosis and Vitamin D deficiency. A brief discussion will be provided.

CS6.3. Phaeochromocytomas & Paraganglionomas
Ali S. Alzahrani, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia

Pheochromcytomas (Pheo) and paragangliomas (PGL) are neuroendocrine tumors arising from the derivatives of the autonomic nervous system. The most common sites are adrenal medulla and head and neck sympathetic and parasympathetic ganglia but they also occur anywhere along the paravertebral autonomic nervous chain including the posterior mediastinum, the abdominal and pelvic retropertonium or sometimes in other organs. Although arising from the same type of cells, Pheo and PGL have distinctive biochemical and histopathological features and genetic differences enough to separate them in two groups. This distinction is important as it has implications on the tumor locations, types of catecholamines secreted, risk of malignancy and underlying genetic defects. It was a common understanding that only about 10% of cases of Pheo/PGL are hereditary. However, since the year 2000, it has become clear that about 40-50% of cases of Pheo/PGL have underlying genetic defects in any of more than a dozen of susceptibility genes.

The field is evolving and many novel genes have been described in the recent years. More importantly, studies of the genotype/phenotype of large series defined certain patterns that have implications on the clinical presentation, genetic testing, risk of malignancy and prognosis. These genetic aspects of Pheo/PGL and their clinical implications will be discussed in some details during the presentation.

CS6.4. MEN Syndromes: Screening and Management.
Marta Korbonits, Queen Mary College, University of London, UK.

MEN1 syndrome is usually caused by a loss of function mutation in the MEN1 gene. Children starting from the age of 5 years need to undergo regular screening with blood tests and imaging. The spectrum of MEN1-related tumours is emerging as more recently phaechromocytomas were also proved to arise due to MEN1 disease. In a small proportion of MEN1-like patients mutations in other cell cycle inhibitors such as p27 can be identified. While in MEN1 cancer cannot be prevented, careful management can significantly reduce disease burden and complications. The emergence of cinacalcet provides considerable help managing the often challanging hyperparathyroidism.
The management of MEN2 is driven by the strict genotype-phenotype correlation in this syndrome. Early intervention with thyroid surgery, in newborns in case of MEN2b, significantly improved disease-freee survival. The new thyroid kinase inhibitors applied in germline or somatic RET-mutation positive medullary thyroid cancer tumours provide hopefully significant imporvement in the medical management of this disease.

III. Meet the Expert Sessions

MTE1. The Incidental Adrenal Nodule
James Findling, Froedtert & Medical College of Wisconsin, Wisconsin, USA.

Adrenal nodules are commonly seen on CT imaging of the abdomen and are often described as "incidental" by the radiologist especially if they are <4 cm in size and have a low attenuation value. However, many of these

nodules (20-30%) are associated with mildly dysregulated autonomous cortisol secretion and the patients may often have the metabolic syndrome (diabetes, hypertension, obesity) and low bone density. In addition, three recent studies have all shown that patients with adrenal nodules associated with an abnormal overnight 1 mg dexamethasone suppression test—post dex cortisol >1.8 μg/dL (50 nmol/L)—have a significant increase in cardiovascular events and mortality. Surgical intervention has been shown to decrease some of the metabolic derangements in these patients, but there is no data on long term cardiovascular outcomes after surgery.

Adrenal nodules with indeterminate unenhanced attenuation values (Hounsfield units >15) should have pheochromocytoma excluded. Malignancy needs to be considered in patients with large (>4 cm) indeterminate nodules. However, adrenal nodules are almost never the initial presenting feature of metastatic disease from an unknown primary lesion.

Recent evidence has demonstrated that many functioning adrenal nodules are associated with somatic alterations in the protein kinase gene and some patients with bilateral adrenal nodular disease have both a somatic and germline mutation in the armadillo repeat containing 5 (ARMC5) gene.

All patients with adrenal nodules should have an endocrine evaluation and none of them should ever be considered as "incidental".

MTE2. Management Challenges in Thyroid Practice.

Hossein Gharib, Mayo Clinic College of Medicine, Rochester, Minnesota, USA.

Withdrawn

MTE3. Advances in Management of Diabetic Foot Ulceration

Seán Dinneen, Galway University Hospitals, Galway, Ireland

The 7th International Symposium on the Diabetic Foot (ISDF 2015) was held in The Hague, Netherlands in May 2015. This coming together of experts in diabetic foot syndromes from around the world takes place once every 4 years and amounts to the "Olympic Games" of the diabetic foot! In his presentation Dr Dinneen will highlight some of the learning from ISDF 2015 relevant to clinicians involved in managing patients with DFU. These highlights and advances include a new synthesis of evidence relating to prevention and management of DFU launched at the meeting by an International Working Group on the Diabetic Foot (IWGDF), the presentation of national audit data on diabetic foot care and screening from the Sci-DC group in Scotland, new technologies developed to help with off-loading of the high risk and ulcerated foot and the importance (and challenge) of delivering an inter-disciplinary approach to diabetic foot care between the community and the hospital.

MTE4. Female Infertility: Investigations and Management

Frances J. Hayes, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, USA.

Infertility is typically defined as failure of a couple to conceive after 12 months of regular unprotected intercourse. However, a shorter duration of 6 months is used to define infertility in women 35 years and older given the adverse effect of age on reproductive function. Approximately 15% of couples experience difficulty conceiving. The underlying problem may lie with either partner and sometimes factors on both sides contribute. This presentation will focus on female infertility, causes of which include ovulatory disorders , tubal disease, endometriosis, uterine abnormalities and cervical factors.

When to initiate an evaluation depends upon the age of the female partner, as well as the presence of established risk factors for infertility. Work-up should include an assessment of ovulation (menstrual history, urinary ovulation predictor kits, mid-luteal phase serum progesterone level), ovarian reserve (day 3 FSH, estradiol, anti-Mullerian hormone, antral follicle count), tubal patency (hysterosalpingogram, laparoscopy, Chlamydia antibodies), and the endometrial cavity (hysterosalpingogram, ultrasound, hysteroscopy).

Treatment should be directed at the underlying cause if identified and optimizing timing of intercourse. For women with anovulatory infertility medications to induce ovulation include clomiphene, aromatase inhibitors, gonadotropins and in the case of hyperprolactinemia, dopamine agonists. In patients with significant tubal disease assisted reproduction with in vitro fertilization (IVF) is the most effective option. However, surgical reconstruction may be considered for young patients with bilateral tubal obstruction and limited access to IVF. Treatment of infertile women with endometriosis depends on their age and extent of disease and may include surgery, ovulation induction and IVF. In women found to have a uterine abnormality such as a submucous fibroid, endometrial polyp or septate uterus, surgical correction should be considered. In couples whose fertility remains unexplained after a comprehensive work-up, treatment is empiric and typically involves a step-wise strategy with clomiphene with intra-uterine insemination (IUI), gonadotropin injections with IUI and finally IVF.

MTE5. Endocrine Management of the Bariatric Patient: Before and After

Ebaa Al-Ozairi, Faculty of Medicine, University of Kuwait, Kuwait.

Bariatric surgery remains the most clinically effective treatment for morbid obesity. Improvement in co-morbidities associated with type 2 diabetes, hypertension, sleep apneoa have been well documented. However bariatric surgery is not a guarantee of weight maintenance and some patients regain weight. Many nutritional deficiencies exist in these patients pre-operative. Management of potential nutritional deficiencies and specific endocrine and diabetes complications will be discussed. The aim of the workshop is to enhance the transition of life after bariatric surgery and provide a fully comprehensive program of pre and post op. Ongoing coordinated care maximizes the benefits and health outcomes for patients though ongoing monitoring of nutritional deficiencies, diabetes status, bones and maximizing weight loss.

MTE6. Use of Technology in Managing Patients with Type 1 Diabetes
George Grunberger, Grunberger Diabetes Institute, Wayne State University School of Medicine, Detroit, Michigan, USA

Introduction of continuous glucose monitoring (CGM) technology into our practices has revolutionized intensive insulin therapy of our patients. Real-world CGM data from several patients in my practice will be presented and benefits as well as limitations of the current technology will be discussed.

MTE7. Trouble Shooting in the MDI- Insulin-Treated Patient
Seán Dinneen, Galway University Hospitals, Galway, Ireland

Since the discovery of insulin in 1922 many advances have occurred in the way that insulin is manufactured, formulated and administered. New devices for delivering insulin and monitoring glucose concentrations have revolutionised the approach to management of insulin-treated diabetes. In some countries a majority of children and adults now use continuous subcutaneous insulin infusion (or pump) therapy as their way of managing type diabetes. However, in most countries multiple daily injection (or MDI) therapy is still the mainstay for managing type 1 diabetes. The MDI approach is also used in some patients with type 2 diabetes. Interpretation of patterns in blood glucose monitoring data and adaptation of daily doses of either basal or bolus insulin is not always a straightforward exercise for the patient or the healthcare professional. In this talk, Dr Dinneen will (using case scenarios) look at some common situations in which patients on MDI regimens run into trouble with variable blood sugar readings. A key message from the talk will be the importance of good self-management education (delivered through programmes such as the Dose Adjustment for Normal Eating or DAFNE) to help patients understand and better manage their condition.

MTE8. Pitfalls in the Interpretation of Thyroid Function Tests
Roberto Negro, Vito Fazzi Hospital, Lecce, Italy

Thyroid function tests (TFTs) are amongst the most commonly requested laboratory investigations in both primary and secondary care. Fortunately, most TFTs are straightforward to interpret and confirm the clinical impression of euthyroidism, hypothyroidism or hyperthyroidism. However, in an important subgroup of patients the results of TFTs can seem confusing, either by virtue of being discordant with the clinical picture or because they appear incongruent with each other [e.g. raised thyroid hormones (TH), but with non-suppressed thyrotropin (TSH); raised TSH, but with normal TH]. In such cases, it is important first to revisit the clinical context, and to consider potential confounding factors, including alterations in normal physiology (e.g. pregnancy), intercurrent (non-thyroidal) illness, and medication usage (e.g. thyroxine, amiodarone, heparin). Once these have been excluded, laboratory artefacts in commonly used TSH or TH immunoassays should be screened for, thus avoiding unnecessary further investigation and/or treatment in cases where there is assay interference. In the remainder, consideration should be given to screening for rare genetic and acquired disorders of the hypothalamic-pituitary-thyroid (HPT) axis [e.g. resistance to thyroid hormone (RTH), thyrotropinoma (TSHoma)]. Here, we discuss the main pitfalls in the measurement and interpretation of TFTs, and propose a structured algorithm for the investigation and management of patients with anomalous/discordant TFTs.

MTE9. Diabetic Hyperlipidemia: From Guidelines into Clinical Practice
Ibrahim Salti, American University of Beirut Medical Center, Beirut, Lebanon

Background: Diabetic dyslipidemia is common in type 2 diabetes and in the metabolic syndrome. It is considered to be a major contributor to the well known increase in cardiovascular and cerebrovascular disease, the two most common causes of death in diabetes. Optimization of the lipid profile is an important target in the efforts to reduce the cardiovascular burden in a diabetic. It is as important if not more important than good glycemic control in preventing CV events.
Features of Diabetic Dyslipidemia: The typical diabetic dyslipidemia consists of the triad of elevated triglycerides, low HDL-c and small dense LDL-C. It is an outcome of insulin resistance and thus can precede the onset of diabetes. It may in a diabetic persist even with good glycemic control.
Life style changes: With the aim being to optimize the levels of triglycerides and HDL-C and to improve the quality of LDL-C, the following life-style measures are recommended even if pharmacological therapy is going to be subsequently introduced.
Diet: Reduction of saturated fat, trans fat and cholesterol and increased omega-3 fatty acids, fiber and plant sterols/stanols. Weight loss (if indicated) and Increased physical activity
Phamrmacological Therapy: The initial monotherapy, preference is for statins because they reduce TG & small dense LDL-C & increase HDL-C. The indications and efficacy of other lipid lowering agents will be discussed separately. This includes combination therapy of statins with fibrates , ezetimibe and the novel therapy of PCKS9 inhibitors.

MTE10. Strategies to Reduce Problematic Hypoglycemia
Simon Heller, School of Medicine and Biomedical Sciences, Sheffield, UK

Hypoglycaemia continues to be a major limiting factor in the management of people with diabetes treated with insulin, preventing the attainment of glucose targets and causing morbidity and mortality. As treatment duration increases, protective counter regulatory mechanisms, which can largely prevent severe hypoglycaemia, become impaired, particularly in those who pursue near normal glucose targets. This may lead to frequent low blood glucose values followed by a tendency to develop sudden severe episodes, in which individuals become incapable of self-treatment with oral carbohydrate. Those most severely affected can exhibit profound hypoglycaemia unawareness and are particularly prone to sudden severe episodes. People with long duration type 1 diabetes are at greatest risk but many insulin treated individuals with type 2 diabetes can also

develop troublesome hypoglycaemia, particularly after many years of insulin treatment.
The use of insulin analogues, insulin pumps and continuous glucose monitoring help to reduce the risk of severe hypoglycaemia but probably the most important single step is to ensure that those treated with insulin have had the necessary training to use insulin safely. This is probably best achieved through structured training programmes incorporating all aspects of flexible intensive insulin therapy. This training should not be regarded as an optional extra but a fundamental component of treatment. Indeed it is probably negligent to encourage individuals to pursue near normal glucose targets without such training.
Some individuals are prone to severe episodes even after education and training and there is preliminary evidence that approaches which include specific psychological techniques delivered by diabetes professionals may be particularly effective.
For a few people and where available, the only successful treatment is pancreatic or islet transplantation, which by restoring the physiology of the β cell, and counter regulatory protection, results in near normal glucose levels without accompanying hypoglycaemia.

MTE11. FRAX-based Guidelines for Osteoporosis Management: A Case-Based Approach
Ghada El-Hajj Fuleihan, American University of Beirut, Beirut, Lebanon

Launched in 2008, FRAX® (www.shef.ac.uk/FRAX) is an on-line calculator of the 10-year risk for a major fracture (hip, clinical spine, humerus or wrist fracture), and hip fracture, based on clinical risk factors, with or without bone mineral density (BMD). The risk estimates are based on country specific, age and gender dependant hip fracture rates. However, the model assumes the same fracture risk relationship for the FRAX risk factors (personal history of fractures, parental history of hip fractures, smoking, alcohol, glucocorticoid use, rheumatoid arthritis), and uses the same non-hip/hip fracture ratio across countries based on data from Malmo Sweden, with the exception of several countries. To-date there are over 56 FRAX-based calculators worldwide, and for countries without a FRAX calculator the ISCD-IOF FRAX Initiative recommends to use a surrogate country with comparable hip fracture and mortality rates.
FRAX Lebanon was launched in 2009; it relies on robust fracture rates from national hip fracture registry. Other countries in the region with a FRAX calculator are Jordan, Palestine, and Tunisia.
The cases summarized below will be presented for an interactive case discussion. They will be used to illustrate the similarities and differences between FRAX-based treatment thresholds used in US, UK, Canada, and Lebanon, and provide insight on how to incorporate this valuable tool to hands on clinic practice.
Case 1. A 52 year old post-menopausal Lebanese woman presents for advice regarding osteoporosis prevention. She is otherwise healthy, but is concerned that her mother had a hip fracture. She smokes, has no other risk factors, and denies any height loss. Her physical exam is negative and her BMI is 22kg/m^2.
Should she have a BMD?
She sought another opinion and brings BMD with her. You review the scan images and the software had used a "Middle East database for T-score derivation. Is this the correct T-score to be entered in FRAX online?
Should she be treated with pharmacologic agents?
Case 2. A 76 yr old lady is coming for advice regarding osteoporosis. She is concerned because her mother fractured her hip at this age and had a BMD recently showing a T-score of -2.5. She has no risk factors and her BMI is 27 kg/m^2. Should she be treated with pharmacologic agents?
Case 3. A 58 year old post-menopausal Kuweiti woman presents for advice regarding osteoporosis prevention. She is otherwise healthy, but is concerned that her mother had a hip fracture. She is healthy, exercises regularly smokes, has no other risk factors, and denies any height loss. Her physical exam is negative and her BMI is 22kg/m^2. Her T-score is -2.3. She was told she needs to be treated in light of maternal history of hip fracture regardless of BMD T-score is this correct?

MTE12. Intractable Painful Diabetic Neuropathy; Osteomyelitis, Charcot's: A Case Based Discussion
Rayaz Malik, Weill Cornell Medical College in Qatar, Doha, Qatar

Diabetic painful neuropathy can be a terrible complication of diabetes, and there are particular subtypes, which are very difficult to manage. I will discuss the management of patients with severe presentations of painful diabetic neuropathy in the context of defining the correct underlying cause and appropriate management. Diabetic patients with wounds can develop underlying osteomyelitis and chronic non-healing. I will discuss the diagnostic pathway and current optimal management of a patient with osteomyelitis. Charcot foot is often misdiagnosed and mismanaged. I will discuss a case of a patient with a Charcot foot progressing to severe deformity and the subsequent management. Not all patients with diabetes and neuropathic symptoms have 'diabetic neuropathy'. I will discuss a medico-legal case of a lady who has clear evidence of post surgical radiculopathy and disability, which was incorrectly attributed to diabetic neuropathy.

MTE13. The Turner Syndrome
Jamal Al Jubeh, Institute of Pediatrics, Shiekh Khalifa Medical City, Abu Dhabi, UAE.

Turner syndrome (TS), which affects approximately 1 in 2,500 live-born females is characterized by loss or structural anomalies of an X chromosome. Clinical features vary among patients; multiple organ systems can be affected. Endocrinologists are involved in the management of short stature, delayed puberty, and infertility. Endocrine therapies can include growth hormone, estrogen, and progestogen to promote linear growth and pubertal development.
Involvement of cardiologists is important because approximately 50% of patients with TS have congenital structural cardiac anomalies linked to an increased risk for aortic dissection and rupture. Oocyte donation offers the chance to carry a pregnancy, but accumulating information has highlighted the potential dangers associated with pregnancy.

In 2007, the international consensus guidelines regarding the care of girls and women with TS were published.
Untreated individuals with TS achieve an average adult stature of 20 cm shorter than that of their peers. Treatment with hGH for patients with TS was approved by the FDA in 1996 and has since been the standard of care. Very low doses of estrogen started between the ages of 5-12 years have been shown to improve height compared to placebo both, with or without GH therapy. Oxandrolone have been consistently shown to result in added height of 2-4 cm. Ovarian failure is a common manifestation of girls with TS. Individuals with 45, X karyotype usually have prenatal degeneration of ovarian follicles that lead to streak gonads. It is important to monitor and manage the common systemic comorbidities which include gastrointestinal and hepatic disease, renal disorders, autoimmune thyroid disorders, hypertension, psychological and educational issues and osteopenia.
Advances in the care of infants, girls, and women with TS have been achieved; management involves coordinated care from a multidisciplinary team including endocrinologists, cardiologists, geneticists, otolaryngologists, behavioral health experts, nurse educators, and social workers.

MTE14. Subclinical Hyperthyroidism
Aly B. Khalil, Imperial College London Diabetes Center, Abu Dhabi, UAE.

Subclinical hyperthyroidism is defined as a low-serum TSH and normal serum T4 and T3 concentrations, in the absence of hypothalamic or pituitary disease, non-thyroidal illness or ingestion of drugs that inhibit TSH secretion, glucocorticoids or dopamine.
In our approach to the patient with subclinical hyperthyroidism, it is helpful to follow a systematic stepwise mode of thinking which might facilitates the decision-making.
First of all, it is essential to rule out transitory causes of hyperthyroidism and to plan for a repeat serum TSH in few months period. If suppressed TSH is confirmed, one should look at the clinical impact of subclinical hyperthyroidism on end organ targets essentially the heart and the bones. This latter step would help risk stratification of the patient and to plan for either treatment or simple observation.

MTE15. The Poorly Controlled Young Type 1 Diabetes
John Gregory, Cardiff University School of Medicine, Cardiff, Wales, UK.

Children and young people with poorly controlled Type 1 diabetes represent a major challenge to clinicians providing paediatric diabetes services. These individuals are at very high risk of adverse longer term outcomes, including microvascular complications, hospital admissions and premature death producing significant demands on health services. Poor glycaemic control often reflects poor adherence to insulin therapy and self-monitoring of blood glucose control. Improving blood glucose control usually requires increased motivation in the young person to adhere better to the principles of effective self-care. This presentation will review clinical techniques, particularly those related to effective communication skills which need to be considered when attempting to support young people who are encountering challenges to optimising their blood glucose control. The relevance of recent advances in technologies to support young people who are encountering challenges in self-management will also be considered.

MTE16. Endocrine Genetics for The Clinician
Marta Korbonits, Queen Mary College, University of London, London, UK.

As significantly more diseases can be explained by mutations in germline or somatic DNA or even with epigenetic mutations, the understanding of the relevant terms and the interpretation of genetic result becomes a significant part of the work of the clinical endocrinologist. While the clinical genetics team should work alongside of the endocrinologist, the increasing role in diagnosing and testing patients for genetic diseases is inevitable. Understanding terms such as SNP, LOH, CNV, MAF, CGH-array, compound heterozygous, and imprinting brings the molecular genetics and clinical endocrinologists closer.

More genetic tests will become panel/exome/genome based, such as for hereditary phaeochromocytoma/ paraganglioma syndrome, with the increasing demand for understanding and interpreting these results and explaining them to the patient. Panel based approach has the advantage of testing a number of different genes at the same time with reduced cost/gene and more rapid turnaround of results. Often these complex methods may reveal genetic variants of uncertain clinical significance. Trying to make sense of variants of uncertain clinical significance is a significant challenge. Reliable phenotyping of patients by Endocrinologists would continue to be of great importance. Important point to remember about pre-symptomatic genetic testing, especially for disorders which may not manifest until adulthood, is the possible implications for obtaining insurance. The rules regarding this could vary from country to country and could also change over time and may have significant effect on patient economic situation.
Molecular Genetics is advancing at a very rapid pace and new concepts, methods and analytic methods present a challenge to the practicing physician.

IV. Free Communications
A. Oral Communications

OC1.1. Primary Hyperparathyroidism in Oman and Saudi Arabia.
Nicholas Woodhouse, Omayma Elshafie, Najat Alharthi, Mohamed Alalawi, Ali Saif Al-Mamari, Samir Hussein, Sultan Qaboos University Hospital, Royal Hospital, Muscat, Oman

The details of 60 patients with primary hyperparathyroid studied between 2007-2013 are reviewed . The mean age was 48 years (range 16-72) with a female: male 3:1 . Pain was the commonest presenting feature followed by renal colic The mean serum calcium was 2.98 (2.5-5.2) , 2 patients were normocalcaemic at presentation. Parathyroid scanning was positive in 86%, bilateral adenoma occurs in 6 patients and 1 patient had an ectopic parathyroid. In the 8 patients with negative scan the MRI was positive in

one patient , and in another the tumour was found during surgery , 2 patients had family history of hypocalcurichypercalcaemia and 4 patients were lost to follow up . The adenoma was localized by US in only 50% patients. Surprisingly four of them (6%) had parathyroid carcinomas. From March 2013 to October 2014 serum 25OHD and PTH levels were measured in 16 patients before and during treatment with Vitamin D. 24OHD levels were <30 ng/ml in 10 patients. During preoperative treatment with 2000 IU D3 given for 2 weeks to 3 months.PTH levels increased in 3 patients were unchanged in 3 and fell from between 15-80% in 10 patients. **Conclusions:** 1) In the majority patients with primary hyperparathyroidism frequently have associated secondary hyperparathyroidism due to vitamin D deficiency. 2) Patients should be given vitamin D before surgery to prevent hungary bone disease if there is a substantial fall in the PTH level after 2 weeks. 3) These data almost identical to those reported from King Faisal Specialist Hospital in Saudi Arabia. 4). We found a surprisingly high incidence of parathyroid carcinoma in Oman.

OC1.2. Glycaemic and Non-Glycaemic Effects of Glucagon-like Peptide-1 (GLP1) Agonists Among UAE Patients with Diabetes

Raya Abdulla, Fatima Mohammed Alkaabi, Nader Lessan, Maha Barkat. Imperial College of London-Al Ain and Imperial College of London-Abu Dhabi, UAE.

Background and Aim: GLP1-agonists have been available in UAE since 2008 and are widely used. There are few outcome data on GLP1-agonist therapy in this population. We have investigated the effects of two commonly used GLP1-agonists on glycaemic and non-glycaemic parameters among UAE patients with diabetes. **Materials and Methods:** Data was retrieved from a computerised database of patients attending large diabetes center in UAE. Patients on exenatide2mg weekly (n=1222) or liraglutide0.6-1.8mg daily (n=2495) for at least 12months were included in the study. Data on HbA1c, weight, blood pressure, pulse, lipids, microalbuminuria and eGFR were collected at four time points of treatment; visit1 (within 3months prior to treatment), visit2(2-4months), visit3(5-7months) and visit4(10-14months). Paired t-test, two-sample t-test and linear mixed effects model with random intercept and slope were performed as appropriate (Stata13, Stata corp LP, Texas). **Results:** Maximum mean reduction from baseline (for weekly exenatide and daily liraglutide respectively) in HbA1c (0.93v0.91%; p<0.0001), systolic BP (4.3 v 3.3 mmHg; p<0.0001) and total cholesterol (0.22v0.20mmole; p<0.0001) was observed at visit2. Maximum mean weight reduction was at visit 3 (2.3 v 2.5 kg; p<0.0001) for both drugs. Sustained significant mean reduction in log-transformed triglyceride was observed from visit 2 with liraglutide (p<0.0001) and visit 3 for exenatide (p<0.007). Significant sustained diastolic BP reduction of 1 to1.5mmHg was observed with weekly exenatide (p<0.001). There was nonsustained reduction in microalbuminuria and eGFR in both drugs with variable significance. There was no significant difference in weight, HbA1c, pulse, diastolic BP, microalbuminuria, eGFR and lipid reduction between the two drugs at different time points. Linear mixed effects model showed no significant difference in slopes between both drugs on all parameters over the duration of the study. **Conclusions:** Modest reduction in glycaemic and non-glycaemic parameters were observed with both GLP1-agonists with no significant difference between the two drugs. Further studies to identify factors associated with better response are warranted to investigate specific effects of GLP1-agonists amongst the study population.

OC1.3. Our Experience with Thyroid Cancer: A Review from National Diabetes and Endocrine Center, Royal Hospital Oman.

Fathima B P Kunjumohamed, Noor Bader Al Busaidi, Mohamed Al Lamki, Hilal Nasser Al Musalhi, National Diabetes and Endocrine Center, Royal Hospital, Muscat, Oman

Background: Thyroid cancer is the most common endocrine malignancy worldwide. Over the past few decades the incidence of thyroid cancer has increased exponentially across the globe. There are no comprehensive epidemiological data forincidence of thyroid cancer from Oman. **Objective:** To explore the nature of thyroid cancer among Omani populations, who are followed up at National diabetes and Endocrine Center, Royal hospital and to compare with global trend. **Methods:** A retrospective analysis of the data of all thyroid cancer patients who are followed at Royal hospital over the past 9 years, prior to July 1st 2015. Data of the cohort group was collected from the hospital cancer registry using ICD 10 c73. Trends and pattern of all well-known prognostic factors were stratified based on age, sex and tumour stage. Inclusion Criteria: All patients 14 years and above with a diagnosis of thyroid cancer were included. Exclusion Criteria: Expatriate patients with a diagnosis of thyroid cancer were excluded from the study. **Results:** A total of 346 thyroid cancer patients were identified over thestudy period .Fourteen expatriate patients with thyroid cancer were excluded. Final sample size was 332. We figured out that, as in other GCC countries thyroid cancer remains the second most female cancer below 40 years of age after breast cancer in Oman whereas in the USA it is the 5th most type. The median age at diagnosis was 39.97 years and the highest incidence rate was in the 30-40 year age group .Papillary carcinoma was the major histology type ,accounting 91.5% of the total cases, followed by follicular thyroid cancer (4.8%), hurthle cell (1.8%) medullary (1.2%) and anaplastic (0.15%). There was significant increase in the incidence rate of papillary thyroid cancer (three fold) from 2006 to 2015 which is similar to the global trend .The increase was mainly with regards to papillary micro cancer (<1 cm), although large tumours have also increased. The majority of patients had intra thyroidal disease (68.09%) which is also comparable to global status. While 53 male patients were identified with thyroid cancer, the number of female patients affected with thyroid cancer was 273, with a female to male ratio of 5.1:1 as in international cases. **Conclusions:** There was a significant increase in the incidence thyroid cancer from 2006 to 2015.The increase was mainly due to increase in papillary thyroid cancer with no significant change for follicular, medullary and anaplastic types. Importantly the increase in incidence was correlated with the increase in the detection of micro cancer due

toadvancement in diagnostic tools. Finally young females were the most affected population.

OC1.4. Unusual Presentation of A Rare Case of Adult Nesidioblastosis

Ibrahim Alkadhim, Abdulaziz Alwosaibei, Jamal Alsaeed, Mohammed Alqambar, King Fahad Specialist Hospital, Dammam, Saudi Arabia

Introduction: Nesidioblastosis was first described in neonates, it is widely recognized to be the primary cause of persistent hyperinsulinemic hypoglycemia in infants. In adults, insulinoma or exogenous insulin administration accounts for the vast majority of cases of hyperinsulinemic hypoglycemia. Adult-onset nesidioblastosis associated with hyperinsulinemic hypoglycemia is a very rare entity, representing 0.5-5% of cases of organic hyperinsulinemia and usually diagnosed in patients with hypoglycemic attacks post-bariatric surgery.

Case Report: A 29 year-old married Saudi female nurse referred for recurrent, intermittent episodes of sweating, palpitation and hunger over four years, which had started during her first pregnancy and got worse during the second pregnancy. These symptoms occurred mainly at night and were getting worse during fasting. The patient went through a supervised 72 hour fasting test and the results were consistent with endogenous hyperinsulinemic hypoglycemia. Abdominal MRI and endoscopic ultrasound were performed but failed to detect a pancreatic mass. Therefore, selective arterial calcium stimulation (SACST) with hepatic venous sampling was done and revealed a 2-fold increase from the gastroduodenal artery injection compared with a less than 2-fold increase from the splenic and superior mesenteric arteries. The patient underwent exploratory laparotomy and intraoperative ultrasound, both failed to localize any lesion. Therefore, Whipple's procedure had been performed. Histopathology examination of the excised pancreatic tissue showed diffuse proliferation of pancreatic islet cells with budding from ductal epithelium, Islet cell pleomorphism and ductal insular complex, consistent with nesidioblastosis. After discharge of uncomplicated surgery patient has not reported any hypoglycemic episodes for 18 months of follow up, during which she conceived without any dysglycemic episodes. **Conclusion:** Adult-onset nesidioblastosis is a very rare cause of hypoglycemia in adults which can be difficult to diagnose pre-operatively. This case demonstrates the overlapping clinical presentation as well as the limitations of diagnostic imaging modalities in the diagnosis of adult-onset nesidioblastosis. Selective arterial calcium stimulation test can be useful in diagnosis and goal-directed surgical intervention especially if surgery is considered as an option of treatment.

OC1.5. Brown Cell Tumor From Parathyroid Carcinoma

Jerome Barrera, Alex Pang Jr, Zamboanga City Medical Center, Manila, Philippines

Background: Parathyroid carcinoma is a rare cause of hyperparathyroidism. In most cases, it is caused by a single benign adenoma. The vast majority of the remaining cases are caused by parathyroid hyperplasia or multiple adenomas. We present here a case of a young Filipina who presented with multiple fractures on all extremities and bilateral parathyroid adenoma. **Case Study:** A 19 year-old Filipina presented with bone pains for 7 months associated with fatigue, anorexia, weight loss and muscle weakness. Subsequently, she had multiple fractures on all extremities and fixed hard masses on the left humerus and tibia. Her past medical and family histories were unremarkable. Corrected calcium was elevated at 15.4mg/dL and Phosporus was decreased at 0.81 mmoL/L. Intact PTH (iPTH) was extremely high at 2001 pg/ml (8.5-72.5). X-ray of the extremities showed osteopenia, endosteal resorptive changes and multiple pathologic fractures. Bone biopsy revealed brown cell tumor/multifocal polyostotic giant cell tumor and negative for malignancy.). Ultrasonography of the neck revealed parathyroid adenoma inferiorl of left thyroid gland measuring 2.3 x1.1x1.0cm. Ultrasound-guided FNAB revealed findings consistent with parathyroid carcinoma. She was hydrated and was given diuretic to control the severe hypercalcemia. She underwent 3 ½ gland parathyroidectomy with en-bloc left thyroid lobectomy. Intraoperative findings showed a 2.5 x 1.7 cm left mass with non well-circumscribed borders invading the capsule and local tissues and a 2.7 x 2cm right mass . Serum Calcium and iPTH immediately after OR decreased to 12.8 mg/dL and 211.8 pg/ml respectively. Further reduction was noted after 24 hr of surgery (iPTH, 48 pg/ml; Corrected Calcium: and 9.2 mg/dL). **Conclusions:** Parathyroid carcinoma is a rare malignancy of the parathyroid glands. These tumors usually secrete parathyroid hormone, thereby producing hyperparathyroidism, which is usually severe. Surgery with en-bloc resection is the initial therapy, but when the tumor is no longer amenable to surgical intervention with intent to cure, treatment becomes focused on the control of hypercalcemia.

OC2.1. Diabetic Gastroparesis-A Review of Rea-Life Clinical Practice at a District General Hospital in England.

Ali Aldibbiat, Emma Nash, Catriona Sinclair, Praveen Partha, Paul Peter, Anjan Dhar. Royal Victoria Infirmary & Darlington Memorial Hospital, UK.

Introduction: The burden of diabetic gastroparesis is significant on patients, their families and health care systems1. Treatment guidelines are limited2 and evidence-base for effectiveness of current therapies is lacking. Our aim was to evaluate patients with diabetic gastroparesis at County Durham and Darlington Hospitals Trust, concentrating on disease burden and response to different therapies. **Methods:** Patients were identified from hospital diabetes database (39). Informed consent was sought from all patients. Patients who didn't consent (1), or left the region (4) were excluded. Patients were asked to complete questionnaires for quality of life index (QoLi)3 and Gastroparesis Cardinal Symptom Index (GCSi)4. Results were presented as median (range), and correlations were evaluated with Pearson's method.

Results: 34 patients (61% females) were included. 73% had type 1 diabetes mellitus. Median age was 48years (21-81) and median duration of diabetes before gastroparesis diagnosis was 11.5years (0-43). Nausea and vomiting (97%) and bloating (61%) were the most reported symptoms. Patients had 1 (0-15) hospital admission and 8 (0-46) outpatient visits in the preceding

year. Response to different treatment interventions was variable and often transient requiring trials of additional therapies (table 1). QoLi and GCSi scores showed no correlation with glycaemic control or diabetes stability. **Conclusion:** Current care offered to patients with diabetic gastroparesis is not optimal. A multidisciplinary clinical service approach could offer more rounded care and is likely to impact positively on patients' quality of life. There is an urgent need for further research and development in the field of diabetic gastroparesis.

OC2.2. Incidence of Hypoglycemia in Type1 Diabetes Patients Who Fast Ramadan: Insulin Pump Compared to Multi-Dose injection

Reem Alamoudi, Maram Al Subaiee, Ali AlQarni, Yousef Saleh, Saleh Al Jaser, Abdulsalam, Waleed Al Tamimi, National Guard Health Affairs, Imam Abdulrahman Bin Faisal Hospital, King Abdulaziz Hospital, King Fahad Hospital, King Abdullah International Medical Research Center, Saudi Arabia

Background: Fasting Ramadan is fundamental to Muslims worldwide. Though exempted from fasting many type1 diabetes (T1DM) patients choose to fast which exposes them to hypoglycemia and other acute complications. Large gaps remain in understanding the best treatment choices needed to help Muslim patients fast Ramadan successfully and safely. **Aim:** To determine if Continuous subcutaneous insulin infusion (CSII) users have less rates of hypoglycemia during fasting Ramadan compared to multi-dose insulin injection (MDI) users. Secondary Objectives: To estimate the difference between the two groups in glucose variability, glycemic control, number of days needed to break fasting, weight changes, and rate of acute DM complications. **Method:** Prospective cohort of T1DM patients above 14-years fasting Ramadan on either CSII or MDI recruited from diabetes clinics in three Saudi Arabian cities between May–September 2014. Demographic data and data on glycemic control were collected before, during, and after Ramadan using questionnaires, glucometers (SMBG) and continuous glucose monitoring (CGM). ClinicalTrials.gov NCT01941238 **Results:** 156 patients studied (61 CSII and 95 MDI). Mean age 23.4± 6.1 in CSII and 21.3±6.3 in MDI, mean diabetes duration 10 years in both groups. SMBG mean mild hypoglycemia rate(<80mg/dl) 9.2±6.5 in CSII vs 13.6±12.3 in MDI p=0.12, mean severe hypoglycemia rate(<50mg/dl) 0.99±1.7 in CSII vs 3.0 ±6.2 in MDI p=0.96, and mean hyperglycemia rate(>250 mg/dl) 55.4±24.9 in CSII vs 44.9±24.8 in MDI p=0.028. Glucose variability measured by SD of SMBG and CGM was significantly better in CSII compared to MDI (68.2±16.6 vs 80.8 ±34.8,p=0.02), and (68.1 ±19.6 vs. 78.7 ±24.9,p=0.04) respectively. CGM measured lowest glucose excursions and duration < 70mg/dl was not significantly different between the two groups. 31.2% of CSII managed to fast the whole month without requiring breaking a day of fasting compared to 22.1% of MDI patients. The average number of days fasting broken was 4.1±5.3 in CSII vs 5.7±5.8 in MDI, p=0.23. Both groups lost an average of 2kg. HbA1c was significantly better in CSII prior to Ramadan but deteriorated slightly in both groups (8±1.1 CSII vs. 8.8±1.7 MDI, p=0.045) vs (8.4±1.3 CSII vs. 9.3±2.1 MDI, p=0.02). No DKA admissions during Ramadan in either group. **Discussion:** Fasting Ramadan is well tolerated in patients with type1 diabetes on both MDI and CSII therapy with no major complications when done under monitoring and with proper patient education, more research is needed in this area.

Receipt of grants/research support: *Grant from King Abdullah International Medical Research Center, ROCHE Company provided the glucometers and strips used. Receipt of honoraria or consultations fees: ClinicalTrials.gov, Identifier: NCT01941238 Participation in advisory/editorial board: Pharmaceutical advisory boards and received educational meeting support*

OC2.3. Efficacy and Safety of Liraglutide Versus Sulfonylurea Both in Combination with Metformin During Ramadan in Subjects with Type 2 Diabetes (Lira-Ramadan): A Randomized Trial

Salah Abusnana, Sami T Azar, Akram Echtay, Wan Mohamad Wan Bebakar, Sumayya Alaraj, Abdelkrim Berrah, Mahommed Omar, Abhay Mutha, Naim Shehadeh, Karen Tornøe, Margit Kaltoft. Rashid Centre for Diabetes and Research, American University of Beirut Medical Centre, Lebanese University Medical School, Rafik Hariri University Hospital, Universiti Sains Malaysia, University Hospital Bab El Oued, University of Kwazulu-Natal, Diabetes Care & Research Centre, Meyer Children's Hospital of Haifa at Rambam Medical Center, Algeria, India, Israel, Denmark, South Africa, UAE.

Background and Objectives: Although consensus guidelines recommend insulin progression among patients with type 2 diabetes (T2DM) who fail to meet glycemic targets, many fewer patients are progressed than may benefit. The Multinational Observational Study Assessing Insulin use (MOSAIc) study is a 2-year, 18-country, observational cohort study designed to identify and examine factors associated with insulin intensification and long-term clinical outcomes. This analysis' objective was to describe baseline characteristics and select clinical and psychosocial status of patients with T2DM taking initial insulin therapy for ≥3 months in the Middle East cohort of MOSAIc. **Design and Methods:** Data were retrospectively collected at baseline, and prospectively collected every 6 months up to 2 years, and at progression. We present data on 619 patients' (283 Turkey, 226 Saudi Arabia, and 110 UAE) baseline insulin use and select patient reported outcomes. **Results:** Baseline insulin regimen varied by country: 27% of patients in Turkey used basal insulin alone, compared with 60% of patients in Saudi Arabia. There were also significant differences between countries in patients' willingness to add additional injections (range, 22% Turkey – 45% UAE), mean diabetes distress scale item score (range, 2.96 UAE, Saudi – 3.22, where ≥3 is clinically significant), and average correct score on the 9-item diabetes knowledge test (range 3.67 Saudi – 5.42 UAE). **Conclusions:** We observed variation between countries in baseline insulin use, willingness to add injections, and patient reported experiences with insulin

therapy, factors that may be associated with the ability to intensify insulin over time.

OC2.4. Prevalence of Sarcopenic Obesity Using Bioelectric Impedence Analysis
Suneetha Epuru, Rafia Bano, Bushra Syeda Fatima, Eyad Alshammari, Shahida Banu, University of Hail, Hail, Saudi Arabia

Objectives: We planned to study the prevalence of sarcopenic obesity using bioelectric impedence analysis and its association with blood pressure and heart rate among female college students and employees in University of Hail, Northern part of Saudi Arabia. **Methodology:** Sample of 525 female college students and employees were enrolled and body composition was measured by using bioelectrical impendence technique. We used the cutoffs from the output of Inbody 720 classification of muscle strength and divided the subjects into four groups. The four groups included normal body fat and skeletal muscle mass, high body fat only (and normal muscle mass), low muscle mass only (and normal body fat), and high body fat in combination with low muscle mass (sarcopenic obesity). Blood pressure (BP) and pulse were measured using automatic BP reader in a resting sitting position. **Results:** Around 12 % had sarcopenia only, while sarcopenic obesity was prevalent in in around 41 % of the study population. The mean SBP and DBP was highest among sarcopenic obese and obese groups. SMM, BMC and AMC were significantly lowest in sarcopenia only group followed by sarcopenic obesity group as compared to obese or normal groups. SBP is significantly associated by sarcopenic obesity and BMI while DBP is associated only with sarcopenic obesity. Pulse rate was shown to have associations only with WHR. The study results suggest that presence of sarcopenic obesity increases the risk for future hypertension. **Conclusion:** Our results emphasize that abdominal obesity and sarcopenia may potentiate each other to induce hypertension. Further studies are needed to better understand the pathophysiological pathways linking sarcopenic obesity to hypertension, as well as to develop effective ways to promote recognition, prevention, and treatment of sarcopenic obesity in clinical practice.

OC2.5. Impact of Short-Term Professional Continuous Glucose Monitoring on Glycemic Control and Hypoglycemia Among Saudi Patients with Type 1 Diabetes: A Prospective Study
Rania Ahmed, Prince Sultan Military Medical City, Saudi Arabia

Introduction: The aim of this study was to find out the evolving role of professional continuous glucose monitoring (PCGM) on hemoglobin A1c (HbA1c) and the frequency of hypoglycemia. **Methods:** This was a 3-month, prospective study conducted among patients (aged 15–24 years) with type 1 diabetes mellitus who attended a diabetes clinic [Diabetes Treatment Center, Prince Sultan Military Medical City (PSMMC), Riyadh, Saudi Arabia] due to recurrent unexplained hypoglycemia unawareness episodes between July 2014 and December 2014. The respondents were purposively and conveniently selected and they were asked to wear the PCGM device (iPro®2; Medtronic MiniMed, Inc., Northridge, CA, USA) for 5 days. The PCGM results were collected by the diabetic educator and reviewed by the treating physician on the same day as removal of the device. Clinical and demographic data were also collected. **Results:** Overall, 56 patients were included in the study. The mean (±SD) age of the study cohort was 18.1 ± 1.82 years and 27 (48.2%) patients were male. Compared with baseline, non-significant but positive differences were observed in HbA1c levels in both male and female patients and in those who were older (aged 20–24 years). Similar results were observed in the frequency of hypoglycemia and a significant change was observed for female patients ($P < 0.05$). Compared with baseline, a significant positive difference was observed in patients' overall frequency of hypoglycemia by the end of the study ($P < 0.001$). **Conclusions:** Professional continuous glucose monitoring is a valuable tool for detecting episodes of hypoglycemia and may help to decrease HbA1c levels and reduce the frequency of hypoglycemia.

B. Poster Communications

P1. Paget's Disease in an Omani: Long Term Improvement Following A Single injection of Zolindronic Acid
Omayma Elshafie, Nooralddin Alsaffi, Samir Hussein, Nicholas Woodhouse, Sultan Qaboos University Hospital, Muscat, Oman

A 66 year old Omani male presented to the endocrine clinic in Sultan Qaboos University hospital with 6 years history of progressive skull enlargement, bone pains and left sided deafness, tinnitus and unsteadiness of gait. He had undergone coronary artery bypass surgery successfully 7 months earlier. He was taking simvastatin, aspirin and valsartan. An MRI brain scan had been obtained 3 months earlier to exclude a space occupying lesion. His physical examination revealed enlargement of the skull and sensory neural deafness in the left ear.

The clinical, biochemical and radiological findings were diagnostic of active Paget's disease. The patient was unaware of any similarly affected family member.

Initially we started him on subcutaneous calcitonin daily for 6months during which time his bone pains improved and there is a small fall of the ALP. This was followed by a single 5mg IV injection of zolindronic which resulted in gradual reduction of serum alkaline phosphatase (Fig:2), and markers of bone formation and resorption (table:1), and bone scan (Fig 3a) over an 18 months period with considerable improvement of his clinical symptoms. There was reduction in the size of his hat.

P2. Surrogate Markers for Diagnosis of Vitamin D Deficiency.
Laila Mahmoud Ali Hendawy, Raef Malak Botros, Rania Sayed Abd Elbaki, Dina Ahmed Marawan, Faculty of Medicine, Ain Shams University, Egypt

Background and Objectives: Vitamin D deficiency is becoming a pandemic problem. Hypovitaminosis-D is diagnosed by measuring 25-hydroxyvitamin D in blood. In Egypt this costs 500 EGP (50 Euros). On the other hand, one ampoule containing 200,000 units of vitamin D costs 5 EGP. So, we need to identify markers of Vitamin D deficiency which are cost saving. **Design and Methodology:** We conducted a cross-sectional

study on 90 healthy subjects aged 20 to 60 years, living in Cairo [latitude 30.0500 Nº, 31.2333 Eº], during spring and summer from April to August 2014. Participants undertook detailed history, thorough clinical examination and Laboratory measurements of Hemoglobin, serum creatinine, serum Calcium (total& ionized), phosphorus, magnesium, intact PTH and 25 hydroxy vitamin D. **Results:** The prevalence of vitamin D deficiency (< 20 ng/ml) was 73.33% , insufficiency (21-30 ng/ml) was 25.56% while only 1.11% of the samples had sufficient levels (>30 ng/ml). Vitamin D deficiency in males was 37.78% and in females was 62.22% with no significant difference between both groups (P>0.05). (PTH) had a significant inverse correlation to vitamin D level (r=-0.2) while serum Calcium (total and ionized) and Phosphorus had a positive correlation. By ROC curve the predictive accuracy of PTH was 70% while of total calcium was 38%, ionized calcium was 43%, phosphorous was 60.7%. **Conclusion:** The combined measurement of Intact PTH, serum Calcium and Phosphorus can be used as marker for vitamin D deficiency, costing together less than 200 EGP, resulting in almost 60% saving in the cost of diagnosis widely prevalent clinical condition.

P3. An 8 year old Saudi Boy with Polyostotic Fibrous Dysplasia and Hypophosphatemic Rickets

Najlaa Jassas, Suha Ghamdi, Sahar Mohammed, Rihab Osman, King Fahad Specialist Hospital, Dammam, Saudi Arabia

Background: Fibrous dysplasia (FD) consists of rare and benign osseous lesions of unknown etiology. They represent 2.5% of all bone tumors and 7% of benign bone tumors in young, predominantly male patients. Treatment with bisphophosphonate in this debilitating disorder is promising. Hypophosphatemic rickets in polyostotic fibrous dysplasia is a rare association
Methods: We report a Saudi boy with polyostotic fibrous dysplasia and hypophosphatemic rickets. Clinical, biochemical, radiological data and response to treatment were described. **Results:** The subject of this case is an 8 year old Saudi boy, who presented with right thigh pain and limping for 1 year ,was found to have lytic lesion in the right femur and radiological and biochemical signs of active rickets. On examination, no skin hyper pigmentation and no signs of endocrine hyper function. Wide wrists and ankles, and antalgic gait. Skeletal survey showed signs of polyostotic fibrous dysplasia and active rickets. Bone biopsy confirmed the diagnosis. Bone mineral density Z score -3.6 SD below the mean. He has hypophosphatemia, normal calcium and high alkaline phosphatase. Normal PTH and Phosphaturia. No mutations were detected in GNAS gene. He was treated with phosphate, alfacalcidol and zoledronic acid infusion. During follow up, bone pain subsided and skeletal survey after 3rd dose of zoledronic acid revealed, sclerosing of right femur lesion, healing of rickets and no new lesion. **Conclusion:** Our case is addition to the other reported few cases. Zoledronic acid infusion is promising in alleviation of pain and held the progression in fibrous dysplasia. Larger studies are needed to demonstrate long term efficacy and safety.

P4. Type 1 Diabetes Patients Attitudes and Habits During Fasting Ramadan

Reem Alamoudi, Maram AlSubaiee, Ali AlQarni, Yousef Saleh, Saleh AlJaser, Abdulsalam, Waleed AlTamimi, National Guard Health Affairs, Imam Abdulrahman Bin Faisal Hospital, King Abdulaziz Hospital, King Fahad Hospital, King Abdullah International Medical Research Center, King Abdulaziz National Guard Hospital, Saudi Arabia

Introduction: Fasting the month of Ramadan is a fundamental religious practice performed by millions of Muslims every year. Fasting has been associated with increased risk of hypoglycemia and glycemic deterioration. During this month many changes happen that can affect eating habits, physical activity and sleep patterns . Food intake becomes exclusively nocturnal and is characterized by a large fast breaking meal with huge portions of sweetened food **Objectives:** To determine the attitude and daily habits of patients with T1DM who fast Ramadan. **Method:** A cohort of patients with T1DM above the age of 14-years on either insulin pump or multiple daily injections (MDI), and who fast Ramadan were recruited from three diabetes clinics in three different cities in Saudi Arabia. Demographic data and data on eating habits, physical activity, and sleep patterns were collected before and after Ramadan using questionnaires, and baseline lab. values were collected. **Results:** A total of 156 patients were studied, 61 patients on insulin pump vs. 95 patients on MDI. In both groups the mean age was 21.3 – 23.4 (± 6.1) years, majority female, and mean duration of diabetes 9 -10 years. Pre-Ramadan 25% of pump vs 20 % of MDI patients reported being physically active, and 36.1% vs. 26.1% respectively were following a specific diet. 57.4% of pump patients reported doing SMBG ≥4 times per day compared to 24.5 % in MDI group, and 27.65% of pump compared to 57.6% of MDI group admitted to forgetting taking their insulin doses. The majority of patients in both groups thought there diabetes is well controlled, however by lab [HbA1c pre Ramadan: 8.0 (±1.1) in the pump vs 8.8 (±1.7) in MDI]. In pump 54.1% of patients vs 36.8% on MDI had plans to change insulin doses in Ramadan. During fasting Ramadan 74.5% of pump vs 77.3% of MDI reported making adjustments to their insulin doses, the majority in both groups reported sleeping for 8-9 hours/day all of which was during the day time , and only being active after Ishaa. 49% of pump patients vs 59.7% of MDI patients had their main breakfast meal at time of Maghrib athan, while 68% vs 53% took their breakfast insulin dose at time of Maghrib athan. 63.3% of pump vs 68% of MDI report having a midnight meal, but 93.3% of pump vs 62.7% of MDI reported taking an insulin dose with that meal. In both groups the majority has Sahoor near fajr time and most will take an insulin dose with this meal. During Ramadan > 90% in both groups reported doing SMBG, mainly for the pre-breakfast and pre-sahoor time. 62.7% of pump compared to 71.6% of MDI reported having to break their fast, average number of days 5.7 (±5.8) in MDI vs 4.1 (± 5.3) in pump, the main cause in both groups was hypoglycemia, the majority of which occurred in both groups at morning or early afternoon hours. No Diabetic Ketoacidosis documented during Ramadan in either group. Two hospitalizations documented in MDI group , one due to severe

hyperglycemia and the other due to severe hypoglycemia. **Conclusion:** Fasting the month of Ramadan is associated with major changes in patient attitude and behaviors that can affect glycemic control. Advances in insulin regimens have made fasting possible with no major complications. However, these patients need continuous multidisciplinary support with a well-structured educational program for optimal outcome.

Disclosures: *RA, AQ, SJ, YS, have served in many pharmaceutical advisory boards and received educational meeting support. Sources of Research Support: Grant from King Abdullah International Medical*

P5. Outcomes of Diet Plus Insulin Compared to Diet Alone in the Management of Gestational Diabetes Mellitus

Bachar Afandi, Al Mutaz Mohamed Abdalla, Tawam Hospital, Abu Dhabi, United Arab Emirates

Introduction: Maternal hyperglycemia is the main cause of maternal as well as fetal and neonatal complications. While there is strong evidence to support that treatment of gestational diabetes mellitus "GDM" reduces these complications, however the effectiveness of diet plus insulin versus diet alone on the incidence of maternal and neonatal outcomes has not been evaluated in our population yet. Objective: To assess the maternal and neonatal outcomes of gestational diabetes patients treated with diet plus insulin versus diet alone. Method: 169 patients diagnosed with GDM and their 170 neonates were randomly selected to evaluate the effectiveness of a multidisciplinary team approach on their outcomes. Data was sub-analyzed based of the mode of treatment. A total of 38 patients were treated with diet plus insulin and 131 patients were in the diet alone group. **Results:** Management of GDM with diet plus insulin or with diet alone did not affect the maternal complications or C-section rates in both groups. The incidence of fetal/neonatal complications was significantly less in the group where mothers were treated with insulin plus diet versus the diet only group (16 VS 26%). Neonates born to mothers with GDM treated with diet plus insulin had significantly less macrosomia (5.2 vs. 8.2%) and less neonatal hypoglycemia (2.6 vs. 12.7), P value < 0.05. Neonatal ICU admission rates were not different in both groups. **Conclusions:** Glucose lowering by adding insulin to diet in women with GDM is superior to diet alone in our population. Stringent blood glucose monitoring and early insulin initiation are indicated to improve outcomes.

P6. Type 1 Diabetes-Associated Cognitive Decline: Observations and Conclusions From A Meta-analysis

Nadia Hussain, UAE University, Al Ain, UAE.

Introduction: Type 1 diabetes can have a significant impact on the function and structure of the brain. This eventually affects cognition and is termed as T1D-associated cognitive decline (T1DACD). Factors that contribute to T1DACD include the duration of diabetes, age of onset and the presence of other diabetic complications. Although it affects both adults and children suffering from Type 1 diabetes, the condition has not been compared between the two age groups. **Aim:** The purpose is to investigate the differences between children and adults, pinpoint the issues with cognition, the aspects of brain function affected and to analyse the factors that contribute to T1DACD. The meta-analysis will give a clearer understanding about the rate of occurrence and effects of T1DACD in adults and children. Material & **Methods:** The databases PubMed and ISI Web of Knowledge were utilized. Literature published up until July 2014 was included in the analysis. The standardized differences between the affected and control groups were calculated. **Results:** There was a significant decrease in cognitive performance in T1D patients compared to the non-diabetic controls. Type 1 diabetic children performed poorly, in comparison, in tests of intelligence quotient, motor speed and executive function. However adults performed poorly, in comparisons, in tests for verbal and performance IQ, spatial memory and motor speed. Factors such as age of onset of diabetes, bouts of severe hypoglycaemia, chronic hyperglycaemia can all be important in the observed decline of cognitive function. **Conclusion:** The findings suggest that, comparing adults to children, T1DACD affects adults much more. However the phenomenon affects children of a school going age which adversely affects academic performance and has long lasting implications. Since adults are more affected, it appears that age and duration of diabetes contributes significantly to T1DACD.

P7. Diabetes Score - A New behaviorally-Oriented Questionnaire for Assessing and Improving Patient Adherence

Muhammad Jawad Hashim, UAE University, Al Ain, UAE.

Background and Objectives: Motivating patients for self-management is critical in chronic disease management. The goal of this study was to develop a behaviorally-oriented scoring system that may be used to motivate patients to strive towards their diabetes goals. **Design and Methods:** Research ethics approval was obtained from the Al Ain Medical District Human Research Ethics Committee (Ref. DT/bb/15-21) prior to start of the research study. A qualitative, iterative methodology was used to develop a new patient questionnaire. Diabetes research was reviewed to delineate evidence-based goals for self-care.1,2 These goals were adapted into behaviorally-directed targets while avoiding items that disempower patients such as laboratory tests (HbA1c) or non-behavioral measures such as blood pressure levels. **Results:** A new questionnaire was developed with 10 questions, each with 3 answers options. Each answer option was weighted as either 0, 5 or 10 points, thus yielding an intuitive score range from 0 to 100 points. The questions were behaviorally phrased to address the following: (1) vigorous exercise, (2) activity level, (3) carbohydrate control, (4) portion control, (5) fruits and raw vegetable intake, (6) health education, (7) foot inspection, (8) annual eye examination, (9) regular follow-up with a clinician, and (10) self-reported compliance with medications. Specific targets can be adapted for an individual patient such as for exercise. **Conclusions:** A new, behaviorally-oriented patient questionnaire, the Diabetes Score, was developed to assess and improve patient adherence to diabetes self-

care guidelines. The Diabetes Score has the potential to improve diabetes care by enabling patients and clinicians to motivate behavior change.

P8. Safety and Efficacy of Liraglutide As an Add-on therapy to Pre-Existing anti-Diabetic Regimens During Ramadan, A Prospective Observational Trial.

Azza AK Bin Hussain, Ali O El Rashid, Alaaeldin MK Bashier, Dubai Hospital, Dubai, UAE.

Background: During Ramadan, Muslims fast for prolonged periods, which might predispose patients with diabetes to an increased risk of hypoglycemia. Liraglutide is an incretin that has been associated with reduced risk of hypoglycemia. **Objective:** We aimed to assess the safety and efficacy of liraglutide as an add-on therapy to existing anti-diabetic agents during Ramadan. **Patients and Methods:** Arab patients prescribed liraglutide within the 6 weeks before Ramadan 2014 were recruited to the study. Demographic information and HbA1c levels were recorded at baseline and again within 4 weeks after Ramadan. A telephone call was made to check the frequencies of hypoglycemia during Ramadan. **Results:** Of the total of 111 participants, 76 (68.5%) of the participants were female. The mean age was 52.6 ± 10.1. Seventy-seven percent of the patients were aged between 40-60 years. Eighteen patients (16.2%) developed hypoglycemia during Ramadan. None of them required assistance by medical personnel or were admitted to the accident and emergency department. One hundred and five (94.6%) of the participants were on insulin, sulfonylurea or both. Patients who had had diabetes for a longer time had significantly higher frequencies of hypoglycemia during Ramadan (p= 0.05). **Conclusion:** Adding liraglutide to ongoing anti-diabetic agents did not increase the risk of hypoglycemia. Furthermore, hypoglycemic events were directly related to the duration of diabetes; the longer the duration of diabetes, the more hypoglycemic events the patient had.

P9. Clinical and Socio-Economic Correlates of Well-being and Treatment Satisfaction in Patient with Type 2 Diabeties

Buthina K. Abu-Sheikh, Diana H. Arabiat, Yousef S. Khader, Dana Hiyasat. Jordan University Hospital, Faculty of Medicine Jordan University of Science & Technology, National Center for Diabetes, Endocrinology and Genetics, Amman, Jordan

Objective: The aims of this study was to measure patient's self-reported well-being and treatment satisfaction among patients with type 2 diabetes mellitus, and to identify factors that are correlated with better well-being and higher treatment satisfaction among patients with 2 diabetes mellitus. Method: A cross sectional study was conductedwith type 2 diabeticpatients at the National Center for Diabetes, Endocrinology and Genetics in Amman, Jordan. Patients completed the Well-Being Questionnaire-12 (W-BQ12) and the Diabetes Treatment Satisfaction Questionnaire (DTSQ) in addition to a socio-demographic form. Result: A total of 1002 patients participated in this study of whom 54% were males and 46% were females. The mean age of the patients was 57.3 years (SD= 9.6), and the mean duration of diabetes was 9.3 years (SD= 6.7). Mean score for the total treatment satisfaction was 25.7 (SD= 6.5), and mean score for general well-being was 23.5 (SD= 6.2). A multivariate linear regression model was constructed to identify factors independently associated with patients' well-being and treatment satisfaction. There was significant association between treatment satisfaction and the variables of gender, marital status, income, insulin treatment, diet, diabetes comorbidity and diabetes complication ($P<0.05$). Moreover, type of medication and HbA1c was clinically significant associated with treatment satisfaction. In the other hand, better well-being was significantly associated with gender, age, smoking, diabetes complication and diet. Finally, our results showed a significant correlation between treatment satisfaction and the well-being. **Conclusion:** Diabetes is a debilitating chronic condition that can impact the life of patients and negatively influence their well-being. Addressing the significant impact of diabetes complications such as neuropathy on patients' well-being and their treatment satisfaction suggested that further research and resources should be directed towards those patients in order to provide better quality of life and a better quality treatment to them.

P10. Pitfalls in the Recent Diabetes and Pregnancy Guidelines - Need for Regional Guidelines and Protocols.

Deepa Manoharan, Noor Al Busaidi, Prakash Shanmugam, National Diabetes and Endocrine Centre, Muscat, Oman

Background: Obsession with guidelines among the medical professionals, have not only made perceive guidelines as protocols but occasionally are also looked at as a rule of thumb. **Methods:** Pitfalls of two important and recent guideline on diabetes and pregnancy have been reviewed. **Results:** A) Endocrine society Guidelines 2013: In the first trimester either Fasting (FG) or random plasma glucose or a Glycosylated hemoglobin measurement is recommended. An Oral glucose tolerance test which would pick post glucose (PG) hyperglycemia is not recommended. At 24-28 weeks even if the initial testing was normal, it is still recommended to diagnose overt diabetes after a considerable period of exposure to the placental hormones which are diabetogenic. B) American Diabetes Association 2015: In spite of the ongoing epidemic of obesity and diabetes, a universal screening is still not recommended in the first trimester. Hyperglycemia in this period of organogenesis exposes the foetus to risk of congenital anomalies. ADA has emphasized on screening for undiagnosed type 2 diabetes at the first visit (only in those with risk factors) using the standard criteria. But it's not mentioned what to do if the FG is between 5.1-6.9 mmol/L, or if the 2 hr PG value is between 8.5-11mmol/L. Such range of glucose level can harm the growing foetus. **Conclusions:** Practically a guideline cannot be completely applied, as the real life scenario may be different. In writing guidelines for diagnosis and management, the capacity, economic burden on the government and medical infrastructure need to be considered. Therefore there is a need for regional guidelines.

P11. Effect of Parents Educational Level and Occupational Status on Children Glycemic Control
Wedyan Majdi Aboznadah, Abdulmoein Eid Al-agha, King Abdulaziz University, Jeddah, Saudi Arabia

Background: Type 1 diabetes (T1DM) is a chronic metabolic disorder. Factors affecting glycemic control including parental higher education and occupation are important aspects in management of the disease.
Objective: To investigate the relationship between glycemic control measured as glycosylated hemoglobin (HbA1c) with parental higher education and occupational status in children and adolescents with T1DM in Saudi Arabia at king Abdulaziz university hospital, Jeddah. **Methods:** 243 T1DM children and adolescents visiting pediatric diabetes clinic at King Abdul-Aziz University Hospital (KAUH), Jeddah, Saudi Arabia. Clinical and laboratory characteristics of the patients were all recorded. Parents of diabetic children were interviewed. Data about their higher educational levels and occupational status was assessed. Metabolic control was assed by measuring mean of Glycosylated hemoglobin (HbA1c). **Results:** Significant difference was noticed between fathers' educational level and HbA1c (P=0.01) higher educated fathers were associated with HbA1c < 7%, while poor glycemic control was recorded in low educated fathers. There is no such difference between HbA1c and mother educational level (p=0.756). Regarding parental occupation and child HbA1c, more professional fathers have better diabetic control on their sibling (p=0.007), while no difference on mothers' occupation (P=0.46). **Conclusions:** Fathers' educational level and employment status had positive relation with children metabolic control more than mothers' education and employment status.

P12. Factors Associated with Diabetes Mellitus Prediction Among Pregnant Arab Subjects with Gestational Diabetes.
Naji Jameel Aljohani, Amal Alserehi, Mussa Almalki, Badraldeen Buhary, King Fahad Medical City, Saudi Arabia

There is scarcity of available information on the possible significant risk factors related to diabetes mellitus (DM) prediction among expectant Saudi mothers with gestational diabetes mellitus (GDM). The present study is the first to identify such risk factors in the Arab cohort. A total of 300 pregnant subjects (mean age 33.45 ± 6.5 years) were randomly selected from all the deliveries registered at the Obstetrics Department of King Fahad Medical City, Riyadh Saudi Arabia from April 2011 to March 2013. Demographic and baseline glycemic information were collected. A total of 7 highly significant and independent risk factors were identified: age, obesity, and family history of DM, GDM < 20 weeks, macrosomia, insulin therapy and recurrent GDM. Among these factors, subjects who had insulin therapy use are 5 times more likely to develop DMT2 (p-value $3.94 \times 10(-14)$) followed by recurrent GDM [odds-ratio 4.69 (Confidence Interval 2.34-4.84); $P = 1.24 \times 10(-13)$). The identification of the risk factors mentioned with their respective predictive powers in the detection of DMT2 needs to be taken seriously in the post-partum assessment of Saudi pregnant patients at highest risk.

P13. A Comparison on the Prevalence and Outcomes of Gestational Versus Type 2 Diabetes Mellitusin 1718 Saudi Pregnancies
Amal Al Serehi, Naji Al Johani, Badr Aldin M Buhari, King Fahad Medical City, Saudi Arabia

The presence of either diabetes mellitus type 2 (DMT2) or GDM constitute a high-risk pregnancy. Given the high rate of DMT2 and GDM in the kingdom of Saudi Arabia (KSA), no study has ever compared whether GDM outcomes are comparable to those with DMT2. The present study aims to compare for the first time, maternal and neonatal outcomes among Saudi patients with GDM, DMT2 and non-DM groups. This is a retrospective study covering data from 1718 pregnant patients admitted at King Fahad Medical City, Riyadh, KSA from April 2011 to March 2013. The prevalence of GDM was 13.8%, DMT2 was 0.9%. DMT2 group had the highest mean parity and shortest mean gestational age as compared to other groups. Half of all the subjects in the DMT2 group also experienced preterm labor, as opposed to only 10% in GDM and 14% in the non-DM group, respectively. Finally, neonates delivered by DMT2 mothers had the highest percentage of admissions to NICU (33%) as compared to 10% in the non-DM group and only 5% in the GDM group. Outcomes of the GDM group are almost comparable with the non-DM group. While the results of the present study reflect the efficient management of GDM cases in Saudi patients, DMT2 complicated pregnancies, which are considered to be at a much higher risk for maternal and neonatal complications, should be given equally special attention.

P14. An Update About Management of Common Endocrine Disorders in Pregnancy
Bayar Ahmed Qasim, Department of Medicine, Faculty of Medical Sciences, Duhok University, Iraq

Pregnancy induces considerable endocrine changes, which can be explained in part by the development of a new endocrine organ, the fetoplacental unit. Both the pregnant woman and the fetus adapt to this development with unique mechanisms, including alterations in maternal endocrine metabolism and hormonal feedback. As a result, the manifestation of endocrine diseases during pregnancy can be masked by this hypermetabolic state of pregnancy. Additional challenges arise when therapeutic needs of mother and fetus differ. Major endocrine disorders that women encounter during pregnancy include gestational diabetes, pre-existing type 1 and type 2 diabetes mellitus, maternal obesity, thyroid , pituitary and adrenal disorders. Of these conditions, common topics will be addressed, such as gestational diabetes and thyroid disorders. The treatment and current controversies concerning optimal management approaches for these disorders will be discussed. Gestational diabetes accounts for 90% of cases of DM in pregnancy. The disease poses important health implications for mother and child. This review discusses current evidence for the importance of gestational diabetes mellitus, opportunities to reduce risk to mother and child and recommendations for clinical care. Pregnancy has a considerable effect on

maternal thyroid function. In this Review, best-practice guidance for thyroid function testing and treatment of hypothyroidism and hyperthyroidism during pregnancy are provided. Given the gravity of the current obesity epidemic, this review will also address concerns about the effects of maternal obesity on pregnancy outcomes and infant obesity predisposition.

P15. Restless Legs Syndrome Among Adults with Type 2 Diabetes Mellitus in Specialized Diabetic Center in Jordan: Prevalence and Risk Factors
Suleiman Khader Abu-Shiekh, Nidal Younes, Ziad Nuseir, Anwar Batieha, Mousa A Abujbara, Buthina Abu-Sheikh, Albasier Hospital, University of Jordan, Jordan University of Science and Technology and National Center for Diabetes, Endocrinology and Genetics, Amman, Jordan

Background: Restless leg syndrome is a sleep disorder which has a direct impact on quality of life and diabetic management with negative effect on health outcome in patients with Type 2 diabetes. **Objective:** To assess the prevalence and severity of restless leg syndrome (RLS) among patients with type 2 diabetes mellitus, and to determine associated risk factors with restless leg syndrome. **Method:** A cross sectional study was conducted on patients with type 2 diabetic at the National Center for Diabetes, Endocrinology and Genetics (NCDEG) in Amman, Jordan, during the period from November 2014 to February 2015. Data was collected through a face- to- face structured interview questionnaire about socio-demographic data and patients' medical file was used to abstract anthropometric measurements, clinical and lab investigations. The International Restless Legs Syndrome Study Group (IRLSSG) criteria was used to diagnosis RLS. In addition, the IRLSSG severity scale was used to assess the severity of RLS. **Result:** A total of 1000 patients participated in this study, 52% were males and 48% were females. The mean age of the patients was 57.6 years (SD= 9.8), and the mean duration of diabetes was 9.4 years (SD= 7.6). The overall prevalence of RLS was 21.7% among Adults with Type 2 diabetes, and the mean score of severity on RLS scale was (20.1± (6.6)). Multivariate binary logistic regression analysis revealed that; illiteracy, neuropathy, and using hypoglycemic agents plus insulin were identified as independent risk factors for RLS among Adults with T2DM. **Conclusions:** Restless leg syndrome is common among Jordanian patients with type 2 diabetes mellitus that has an impact on health outcome, quality of life, sleep, daytime activity, cognitive function and mental state. Therefore, awareness of RLS at primary care facilities is required, further research and resources should be directed towards those patients in order to provide them with better quality of life and effective treatment.

P16. Use of A Real Time Continuous Glucose Monitoring System As an Educational tool for Patients with Gestational Diabetes
Eman Mohammed Alfadhli, Eman Osman, Taghreed Basri, Taibah University, Maternity and Children Hospital, Medina, Saudi Arabia

Background: Experience with the use of real-time continuous glucose monitoring systems (RT-CGMS) in patients with gestational diabetes mellitus (GDM) is limited. The purpose of this study is to determine whether a single application of a RT-CGMS to pregnant women shortly after GDM diagnosis is useful. **Methoddology:** Design and setting: Prospective, open label randomized controlled study conducted at Maternity and Children Hospital, Medina, Saudi Arabia. **Participants:** 128 pregnant women with GDM were allocated to either the routine care with self monitoring of blood glucose (SMBG) alone group (n = 62), or the use of RT-CGMS in addition to the routine care (n = 70). **Intervention:** A single application of 3-7 days RT-CGMS within 2 weeks of GDM diagnosis in the RT-CGMS group. **Main Outcome Measures:** The primary outcome was the parameters of glucose variability included mean sensor readings, the standard deviation (SD) of blood glucose, and the area under the curve for hyper and hypoglycaemia at the end of the RT- CGMS. Secondary outcomes were maternal glycemic control and pregnancy outcomes. **Results:** There was significant improvement in the parameters of glucose variability on the last day of sensor application, both mean glucose and SD of mean glycaemia were reduced significantly; P=.016 and P=.034 respectively. Although, the area under the curve for both hyper and hypoglycaemia were improved, the results did not reach statistical significance. **Conclusion:** At the end of the pregnancy; HbA1c, mean fasting and postprandial glucose levels, and frequency of hypo- and hyperglycemia were similar in both groups; except for lower glucose levels post lunch in the RT-CGMS group. Maternal and neonatal outcome were also comparable.

P17. Association of Sleep Debt on Adiposity Markers and Blood Glucose Levels in Young Saudi Females
Suneetha Epuru, Rafia Bano, Shahida Banu, Syeda Fatima, Eyad Alshammarin. University of Hail, Hail, Saudi Arabia.

Objective: To cross-sectionally assess potential associations between weekday sleep debt and select adiposity markers associated with diabetes risk, as well as blood glucose levels in a sample of young Saudi females. **Methods:** Participants (n=450, females , age 19 to 25 yrs) were studied for sleep patterns for one week with the help of sleep diaries and week day sleep debt was calculated along with weekend sleep coping practices. Participants were grouped into one of three groups (normal sleep for week days and weekends (7- 9 hrs) (NS); sleep debt week days (< 7 hrs] and sleep coping on weekends (> 9 hrs) (SDW with coping weekend); and sleep debt week days and weekends (< 7 hrs] (SD). Information obtained was crosschecked for their usual sleep behaviours and only those who confirmed routine similar behaviours were included into analysis (n=422). Adiposity markers were measured using Bioelectric impedance analysis (BioSpace, Inbody 720). Blood samples were drawn to determine random glucose levels using standardized technique. **Results:** Around 16 % of study population were into SD group and another 36 % were into SDW with coping weekend group. As compared to normal sleep group both i.e., SDW with coping weekend and SD groups were having significantly higher means and higher odds for all studied adiposity markers which are connected with diabetes risk (BMI, Neck

Circumference, Visceral Fat, Waist circumference, waist hip ratio, percent body fat) and blood glucose levels. **Conclusion:** Young females with abnormal sleep timings and sleep patterns may be at high risk for future diabetes. Sleep debt during week days with coping strategy on weekend may not be protective over long term effects of sleep debt on metabolic disruption.

P18. Cross-National Variation in Initial Insulin Use Among Patients with Diabetes Taking Insulin in Turkey, Saudi Arabia, and United Arab Emirates: Baseline Evidence From the Mosaic Study.

Saud Alsifri, Ahmed AK Hassoun, Kubilay Ukinc, Salem A Beshyah, Feryal Cabuk, Dingfeng Jiang, Alexandru Rosca, Sherif Zaghloul, Steven Babineaux.

Al Hada Armed Forces Hospitals, KSA, Dubai Diabetes Center, Dubai UAE, Çanakkale Onsekiz Mart University, Turkey, Sheikh Khalifa Medical City, Abu Dhabi, UAE, Eli Lilly (Istanbul, Indianapolis, Suisse, KSA, Turkey).

Background/Objectives: Although consensus guidelines recommend insulin progression among patients with type 2 diabetes (T2DM) who fail to meet glycemic targets, many fewer patients are progressed than may benefit. The Multinational Observational Study Assessing Insulin use (MOSAIc) study is a 2-year, 18-country, observational cohort study designed to identify and examine factors associated with insulin intensification and long-term clinical outcomes. This analysis' objective was to describe baseline characteristics and select clinical and psychosocial status of patients with T2DM taking initial insulin therapy for ≥3 months in the Middle East cohort of MOSAIc. **Design and Methods:** Data were retrospectively collected at baseline, and prospectively collected every 6 months up to 2 years, and at progression. We present data on 619 patients' (283 Turkey, 226 Saudi Arabia, and 110 UAE) baseline insulin use and select patient reported outcomes. **Results:** Baseline insulin regimen varied by country: 27% of patients in Turkey used basal insulin alone, compared with 60% of patients in Saudi Arabia. There were also significant differences between countries in patients' willingness to add additional injections (range, 22% Turkey – 45% UAE), mean diabetes distress scale item score (range, 2.96 UAE, Saudi – 3.22, where ≥ 3 is clinically significant), and average correct score on the 9-item diabetes knowledge test (range 3.67 Saudi – 5.42 UAE). **Conclusions:** We observed variation between countries in baseline insulin use, willingness to add injections, and patient reported experiences with insulin therapy, factors that may be associated with the ability to intensify insulin over time.

P19. Initial Combinations of Empagliflozin and Metformin in Patients with Type 2 Diabetes

Samy Hadjadj, Ante Jelaska, Thomas Meinicke, Hans J Woerle, Uli C Broedl. Centre Hospitalier Universitaire Poitiers, Boehringer Ingelheim Pharmaceuticals, Inc. (USA and Germany).

Background and Objectives: Metformin is the recommended first-line therapy for patients with T2DM, but initial combination therapy may provide more robust glucose-lowering efficacy. **Design and methods:** In a phase III study, 1364 drug-naïve patients with type 2 diabetes were randomized to empagliflozin 12.5 mg bid+metformin 1000 mg bid (n=170), empagliflozin 12.5 mg bid+metformin 500 mg bid (n=170), empagliflozin 5 mg bid+metformin 1000 mg bid (n=172), empagliflozin 5 mg bid+metformin 500 mg bid (n=170), empagliflozin 25 mg qd (n=168), empagliflozin 10 mg qd (n=172), metformin 1000 mg bid (n=171) or metformin 500 mg bid (n=171). The primary endpoint was change from baseline in HbA1c at week 24. Key secondary endpoints were changes from baseline in fasting plasma glucose and weight. **Results:** Empagliflozin+metformin BID led to statistically superior and clinically meaningful reductions in HbA1c vs empagliflozin qd and metformin bid doses. Empagliflozin+metformin bid led to significant reductions in fasting plasma glucose vs empagliflozin qd and metformin bid and in weight vs metformin bid. Adverse events were reported in 56.7–66.3% of patients across groups. Percentage of patients with confirmed hypoglycemic adverse events (glucose ≤70mg/dL and/or requiring assistance) was low in all groups (0–1.8%); none required assistance. **Conclusions:** Empagliflozin+metformin BID significantly reduced HbA1c vs empagliflozin QD and metformin bid and was well tolerated.

P20. Contrasting influences of Renal Function on Blood Pressure and HbA1c Reductions with Empagliflozin: Pooled analysis of Phase Iii Trials

David Cherney, Mark E. Cooper, Uli C Broedl, Susanne Crowe, Odd E Johansen, Søren S Lund, Hans J Woerle. Toronto General Research Institute, Baker IDI Heart and Diabetes Institute, Boehringer Ingelheim Pharma (Germany & Norway).

Background and Objectives: While glucose lowering with empagliflozin is dependent on renal function, it is less well understood how chronic kidney disease influences blood pressure modulation with empagliflozin. **Design and Methods:** In five randomized Phase III trials, 2286 patients with type 2 diabetes received empagliflozin 25 mg or placebo for 24 weeks as monotherapy or add-on therapy. Using pooled data from these trials, we assessed changes from baseline in systolic blood pressure and HbA1c with empagliflozin 25 mg vs placebo in subgroups by baseline estimated glomerular filtration rate (Modification of Diet in Renal Disease equation), adjusting for differences in baseline systolic blood pressure (systolic blood pressure analyses only), HbA1c, region, treatment, study, estimated glomerular filtration rate and treatment by estimated glomerular filtration rate interaction between groups. **Results:** In patients with normal renal function, or stage 2 or 3 chronic kidney disease, empagliflozin significantly reduced HbA1c and systolic blood pressure vs placebo. As expected, placebo-corrected HbA1c reductions with empagliflozin decreased with decreasing estimated glomerular filtration rate. In contrast, placebo-corrected reductions in systolic blood pressure with empagliflozin appeared to be maintained with decreasing estimated glomerular filtration rate. **Conclusions:** Unlike HbA1c, reductions in systolic blood pressure with empagliflozin in patients with type 2 diabetes appeared to be maintained in patients with lower estimated glomerular filtration rate, indicating that systolic blood pressure modulation with empagliflozin may involve pathways other than urinary glucose excretion such as diuretic

effects, weight loss, reduced arterial stiffness or direct vascular effects.

P21. Low Incidence of Antidrug antibody in Type 2 Diabetes Patients Treated with Once-Weekly Dulaglutide.

Cagri Senyucel, Zvonko Milicevic, Gregory Anglin, Kristine Harper, Robert Konrad, Zachary Skrivanek, Wolfgang Glaesner, Kenneth Mace. Eli Lilly (Dubai, UAE, Vienna, Austria, Toronto, Canada, Indianapolis & San Diego, USA).

Background: Dulaglutide, a once-weekly glucagon-like peptide-1 immunoglobulin G4-Fc fusion protein for type 2 diabetes treatment, was structurally modified to reduce immunogenic potential by eliminating T-cell epitopes based on the EpiVax algorithm results. **Design and methods:** The immunogenicity of dulaglutide was assessed in 9 clinical studies. Blood samples collected serially were assayed for dulaglutide antidrug antibodies using validated enzyme-linked immunosorbent assay tests. Samples with treatment-emergent antidrug antibodies were tested for dulaglutide-neutralizing antibodies and native sequence glucagon-like peptide-1 cross-reactivity, and then neutralization of native sequence glucagon-like peptide-1. Associations between antidrug antibodies and hypersensitivity adverse events, injection site reactions, and A1C changes were assessed. **Results:** A total of 3907 dulaglutide and 1114 non-glucagon-like peptide-1 receptor agonist comparator patients were tested. The incidence of treatment-emergent antidrug antibodies with dulaglutide was 1.6% versus 0.7% with non-glucagon-like peptide-1 receptor agonist comparator. Dulaglutide-neutralizing antibodies, native sequence glucagon-like peptide-1 cross-reactivity, and native sequence glucagon-like peptide-1 neutralizing antibodies were observed in 0.9%, 0.9%, and 0.1% of dulaglutide patients, respectively. There was no evidence of an effect of antidrug antibodies on A1C change after 26 or 52 weeks of treatment. Only 19 (0.5%) dulaglutide patients had a hypersensitivity adverse event; none had treatment-emergent antidrug antibodies. There were 20 (0.5%) dulaglutide-exposed patients with potentially immune-mediated injection site reactions; 2 of them (0.05% of 3907) had treatment-emergent antidrug antibodies. **Conclusions:** The incidence of antidrug antibodies in patients exposed to dulaglutide was low. No association between dulaglutide antidrug antibodies and hypersensitivity adverse events, injection site reactions, or A1C changes was observed.

Disclosures: This study was conducted by Eli Lilly & Company, Indianapolis, IN, USA. This abstract is an encore of an abstract presented at the 75th Annual Scientific Session of the American Diabetes Association, June 5 – 9, 2015; Boston, MA, USA.

P22. Knowledge on Glucagon Injection Among Health Care Professionals in a Tertiary Care Centre

Deepa Manoharan, Prakash Shanmugam, Noor Al Busaidi, Faiza Al Zawaidi, National Diabetes and Endocrine Centre, Muscat, Oman

Objective: To assess the knowledge on Glucagon injection among health care professionals (HCPs) in a tertiary care centre. **Methods and Analysis:** Short questionnaire containing 5-9 set of questions prepared separately for doctors, diabetes educators and pharmacists were applied. Thirty two HCPs participated in this study, doctors(n-19), diabetes educators(n-10) and pharmacists (n-3) The survey questions tested their knowledge about the availability, use and details about glucagon therapy. **Results:** Analysis of the questionnaire survey showed that. Eighteen (95%) of the doctors knew that the centre has a stock of glucagon kit. Twelve (62%) prescribe glucagon depending on the symptoms and need of the patient. Only 5(26%) of the doctors knew how to prepare and administer injection glucagon. 63% of the doctors knew that oral carbohydrates has to be given after the patient wakes up post injection. Among diabetes educators, 10 (100%) of them knew about the availability and use of glucagon. Six (69%) of them checked with the patients whether they have a kit at home, however only 3(30%) reminded the doctor about prescribing glucagon in a patient. 100% of the pharmacists teach how to use the glucagon kit, are aware of the shelf life and inform the shelf life to the patient. While 100% of them were unaware that oral carbohydrates are required post glucagon injection. **Conclusion:** The knowledge on glucagon injection among HCPs in a tertiary care setup needs to be improved for a proper utilisation of a life saving drug like glucagon.

P23. Ghrelin and Constitutional Delay in Growth and Puberty

Laila Mahmoud Ali Hendawy, Mohamed Fahmy Abd Elaziz, Yara Mohamed Eid, Nada Galal Eldin Abd Elwahab Salama, Eman Mohamed Fahmy, Faculty of Medicine Ain Shams University, Sednawy Hospital for Insurance, Helwan University Hospital, Egypt

Background and Objectives: Constitutional delay in growth and puberty is a common clinical observation in childhood. It is believed to be a normal variant growth. The exact etiopathogenesis remains unknown. Ghrelin may play a role in puberty initiation and progress. we aim to evaluate the association between ghrelin and constitutional delay of growth and puberty.

Design and Methodology: Case control study was conducted on 51 adolescent boys, 25 adolescent boys aged 14 – 18 years old with constitutional delay of growth and puberty (cases) and 26 healthy adolescent boys matched for age (3-5 Tanner stage) (control) .Patients and relatives attending the outpatient endocrine clinic, inpatients and their relatives at Ain Shams University hospital were participants in our study. All participants were subjected to detailed history, thorough clinical examination and lab investigations including CBC, ESR, Fasting blood glucose, urine and stool analysis, TSH , Free T4, Growth hormone (basal and after stimulation), Prolactin, FSH, LH, Testosterone, Ghrelin , Plain X-ray left wrist joint for bone age. **Results:** Our study showed a highly significant difference between both groups in serum ghrelin (P=0.000) being (82.36 ± 8.865pg/dl) in cases and (56.23± 2.643pg/dl) in controls. There was a highly significant negative correlation between ghrelin and FSH and serum testosterone. ($P < 0.001$), a significant negative correlation between serum ghrelin and LH and growth

hormone. ($P < 0.05$). **Conclusion:** Ghrelin level is associated with Constitutional delay in growth and puberty and its elevated levels indicate the impact of nutritional status in the etiopathogenesis of this condition.

P24. Diagnosis of CNS Langerhans Histiocytosis, 5 Years After the Initial Presentation with Central Diabetes Insipidus A Case Report From an Endocrine Center in Oman.

Muna Omar Majed Alhakmani, Hilal Nasser Rashid Almuslahi, National Diabetes and Endocrine Center, Muscat, Oman

Background: Langerhans Histiocytosis is a rare disorder seen in all age groups, but is most common in children. The clinical presentation varies depending upon the sites and extent of involvement. It can infiltrate nearly every organ. The etiology is unknown and the pathogenesis is still unclear .The diagnosis of LCH should be based on histologic and immunophenotypic examination of a lesional biopsy. **Objective:** To report a case of CNS Langerhans Histiocytosis (LCH), diagnosed 5 years after the initial presentation with Central Diabetes Insipidus (DI) in the adult age. **Case Report:** A 50 years old women with past history of type 2 diabetes, dyslipidemia and hypothyroidism presented in 2010 with 3 months history of polyuria and polydipsia with urine output of 12.9L/day. Biochemical investigations suggest the diagnosis of DI, and water deprivation test confirm central DI (urine osmolality pre DDAVP 65 mOsmol/kg, increased to 431 mOsmol/kg after DDAVP) . She had complete evaluation of anterior and posterior pituitary functions. MRI pituitary at that time showed thickened and enlarged pituitary stalk, with absence high signal intensity of neurohypophysis . So she was diagnosed to have DI due to granulomatous hypophysitis. She was treated with desmopressin nasal spray 40 mcg twice a day to control her symptoms. She was doing fine and follow up serial MRI (s) showed no changes. In April 2015 she presented with 1 month history of severe headache, MRI brain/ pituitary this time showed an enhancing left parietal clavarial/ meningeal lesion associated with enhancing extra and intracranial soft tissue component measuring 1.6 x 1.3 cm, which is a new lesion. Tissue biopsy from the lesion reported to be Langerhans Histiocytosis (eosinophilic granuloma). CT scan of neck, chest and Abdomen showed no other lesions. **Conclusion:** Langerhans histiocytosis most commonly seen in pediatric age group .However, it can affect the adult population , and involvement of C.N.S is very rare and only few cases reported. DI is the most common endocrine manifestation of LCH as seen in this case. No consensus available for the management of adult LCH patients. Highly index of suspicion is required for the diagnosis in adults.

P25. Pituitary Tumor Management-Surgical Viewpoint

Saied Alhabash, Canadian Speciality Hospital, Dubai, United Arab Emirates

Background and Objectives: Pituitary tumors are still a place of discussion between the endocrinologists and the surgeons. There are many factors control the way of treatment if it is medical , surgical, or both. **Design and Methods:** By reviewing many cases of pituitary adenomas(prolactinoma, cushing, GH tumors , and non secreting) we can define the good indication for doing the surgery ,and when the surgical approach is not preferred by the eye of the skull base surgeon **Results:** Although GH tumor and Cushing tumors are considered surgical diseses , you may sometimes should have complementary medical therapy, contrary to that prolactinoma is considered basically surgical case in circumstances of optic nerve compression or recurrence of medical therapy, or because of surgical considerations. **Conclusions:** Pituitary tumors has some standard guidelines that refer the patient to the medical or surgical therapy, But in every case it is advised to have good discussion with the other doctor and giving the patient the advantages and disadvantages of every way of treatment.

P26. ROHHAD Syndrome: Case Report and Review of Literature

Binu Parameswaran Pillai, Praveen V P, Varun Chandra Alur, Praveen Jayapathy. International Medical Center, Muscat, Oman, Amrita Institute of Medical Sciences, Kochi, India

Background: Rapid-onset obesity with hypothalamic dysfunction, hypoventilation, and autonomic dysregulation (ROHHAD) is a rare genetic obesity syndrome manifesting during early childhood and is associated with various forms of hypothalamic-pituitary endocrine dysfunction. **Aims and Objectives:** We describe two cases of ROHHAD syndrome presented with autonomic and hypothalamic dysregulation and hypoventilation. **Case Reports: Case 1:** A 3 year old boy was referred for evaluation of rapid weight gain, loss of thirst and excessive appetite since one year. He had normal weight till 1 ½ years of age. Evaluation elsewhere showed fluctuating serum sodium and osmolalities and he was treated for "asthma like" episodes with documented $SpO2 < 90\%$, with inhaled bronchodilators and oxygen. **Case 2:** A 6 year old girl was referred with sudden onset of abnormal behavior, polydypsia, polyphagia and polyuria of one year duration. She had hypersomnolescence and weight gain accompanying these symptoms. Two months after the onset of these symptoms she developed choreo-athetoid movements of left upper and lower limb and recurrent seizures.
Discussion: The remarkable feature of patients with ROHHAD syndrome is the apparent normality in their early life, with sudden onset of hypothalamic dysfunction (HD), typically with rapid weight gain , followed by autonomic dysregulation and later hypoventilation. It is fatal if not identified or treated inadequately. **Conclusions:** ROHHAD syndrome is a rare , but severe disorder. It should be considered in all cases of isolated, rapid and early onset obesity.

P27. Sensitivity of Various Adiposity indices in Identifying Cardiometabolic Diseases in Arab Adults

Nasser M Al-Daghri, Omar Al-Attas, Kaiser Wani, Abdullah Alnaami, Shaun Sabico, Abdulrahman Al-Ajlan, George Chrousos, Majed S. Alokail. King Saud University, Saudi Arabia

Background: Obesity is a recognized risk factor for various cardiometabolic diseases and several indices are used clinically to assess overall cardiometabolic risk. This study aims to determine the sensitivity of 6 anthropometric indices [Body mass index (BMI), waist, waist-to-hip ratio (WHR), waist-to-height ratio (WHtR), body adiposity index (BAI) and visceral adiposity index (VAI)) in determining diabetes mellitus type 2, coronary heart disease, dyslipidemia, hypertension and metabolic syndrome (MetS) in Saudi adults recruited from 2 independent cohorts (2008-2009 and 2013-2014). **Methods:** A total of 6821 Saudi adults [2008-2009, N=3971 (1698 males and 2273 females); 2013-2014, N=2850 (926 males and 1924 females)] aged 18-70 years old were included in this descriptive, cross-sectional study. Anthropometrics were obtained and fasting blood samples analyzed for glucose and lipids. BMI, WHR, WHtR, BAI and VAI were computed mathematically. **Results:** VAI was the most sensitive index in determining DMT2 [AUC 0.72; $p<0.001$] in the 2008-2009 cohort and MetS [AUC=0.84; $p<0.001$] in the 2013-2014 cohort. WHR was most discriminating for CHD in both cohorts [AUC 0.70 and 0.84 for 2008-2009 and 2013-2014, p-values<0.001, respectively]. WHtR was most sensitive but rather modest in determining hypertension [AUC 0.66; $p<0.001$], while waist circumference was most sensitive for dyslipidemia [AUC 0.72; $p<0.001$] in the 2008-2009 cohort and MetS [AUC 0.85;$p<0.001$] in the 2013-2014 cohort. BAI was the least sensitive adiposity index. **Conclusion:** Sensitivity of adiposity indices regarding cardiometabolic diseases highlight the importance of body fat distribution in determining overall cardiometabolic risk, with indices involving abdominal obesity being more clinically significant than BMI and BAI. The sensitivity of these adiposity indices should be noted in assessing a particular cardiometabolic disease.

P28. Biochemical, Radiological and Genetic Characterization of Congenital Hypothyroidism in Abu Dhabi, United Arab Emirates

Ihab Hussein Mohamed Hassan Elkadry. Mafraq Hospital, Abu Dhabi, UAE.

Background: Congenital hypothyroidism (CH) is the most common endocrine disease in the neonatal period. It is caused by thyroid gland (TG) dysgenesis or inadequate thyroid hormone biosynthesis in a structurally normal gland. Different etiologies are known to be associated with different clinical, biochemical and imaging markers and a subset of cases have an underlying genetic basis. **Aim:** We aim to study the etiology of CH in our center and examine its relationship with the clinical, biochemical, genetic and radiological features. **Patient & Method:** Patients with CH who are followed up in our center between 2011 and 2014 are enrolled in the study. Data collected included gender, gestational age, history of CH in a first degree relative, initial TSH and T4 levels, imaging findings, associated disease/malformation and treatment details. Selected patients with associated systemic disease or familial CH underwent genetic testing. **Statistical Method:** Anova and Pearson Chi Square test are used. **Results:** 65 patients were enrolled. 10 patients had a genetic study; 7 patients with associated congenital disease/malformation, 1 with a sibling and 2 with cousins with CH. 49 subjects had Technitium99 and/or Ultrasound scans. Dyshormonogenesis was diagnosed in two third of patients while a third had dysgenesis (6 agenesis, 6 ectopia and 4 hypoplasia). 3 patients of 10 tested had likely causative genetic mutations; 2 homozygous TPO and one heterozygous TSHR missense mutations. 2 patients had novel genetic variations. **Conclusion**: Dyshormonogenesis is the commonest etiology in CH in the studied group. Initial TSH, but not T4, correlates with the etiology. Girls are more likely to have dysgenesis. It is expected that genetic mutations are more prevalent in our region due to the nature of the CH etiology and the rate of high consanguinity.

P29. Renal Cell Carcinoma Metastasis to Thyroid Gland

Abdulaziz Alwosaibei, Mohammed AlQambar, Jamal Alsaeed, Ibrahim Alkadhim, Ali Elarini, Amani Judeh. King Fahad Specialist Hospital, Dammam, Saudi Arabia

Introduction: Metastatic neoplasms to the thyroid gland are rare in clinical practice, reported as 1.4-3% of all patients who had surgery for thyroid malignancy (1). Renal cell carcinoma is the most common site of origin accounting for 33% of all secondary thyroid tumours. **Case presentation:** 54 year old lady presented with painless enlarged thyroid gland for five months. She had history of renal cell carcinoma (RCC) managed by right radical nephrectomy ten years earlier, diagnosed with metastatic RCC to the head of pancreas five years ago and was treated by Pancreato-duodenectomy. Ultrasound thyroid showed bulky gland with 5 cm heterogeneous nodule at the left lobe with internal vascularity, Fine needle aspiration was done twice and in each time it was reported as unsatisfactory (Bethesda system category I) and mostly bloody sample with no enough cells to evaluate. The patient underwent total thyroidectomy and the histopathology examination showed metastatic renal cell carcinoma. **Conclusion:** We are reporting a rare case of renal cell carcinoma metastasizing to thyroid gland after five years latency of the tumor. We believe that secondary thyroid cancers should be considered in work up of thyroid nodules especially in context of tumors of common site of origin.

P30. Well Differentiated Thyroid Cancer: The Efficiency of Thyroid Remnant Ablation with I-131 After rhTSH Stimulation and After Thyroxine withdrawal: A Prospective Randomized Control Trial.

Samir Hussein S, Reem Al-Mazroui, Omayma Elshafie, Haddia Bererhei, Aziza Khalef Al Jabri, Sukhpal Sawhney, Nicholas Woodhouse. Sultan Qaboos University Hospital, Muscat, Oman

Purpose: Our aim is to compare the efficacy of post surgical thyroid remnant ablation using I-131 in patients whose Thyrogen (TSH) levels are elevated due either to thyroxin (T4) withdrawal, or the administration of exogenous recombinant human TSH (rhTSH) in patients with Well Differentiated Thyroid Cancer (WDTC). **Method:** 74 patients with histologically confirmed Well Differentiated Thyroid Cancer (WDTC) referred to Sultan Qaboos University Hospital

for I-131 ablation dose from 2008 till 2012 were studied. After written informed consent is obtained they were enrolled into 2 groups by consecutive selection. Group (A) 40 patients stopped Thyroxin intake for 4 to 6 weeks before administration of I-131 ablation dose of 2.7 GBq. Group (B) 34 patients continued taking Thyroxin but they received two injections of rhTSH intramuscularly (0.9 mg) before administration of I-131 ablation dose of 2.7 GBq. The efficiency of either method was assessed by I-131 Whole Body Scintigraphy (I-131 WBS), uptake in the neck, serum Thyroglobulin (Tg) level, serum Thyroglobulin antibodies (TgAb) and thyroid remnant size or lymph nodes seen on Ultrasound (US) and MRI of the neck. Our exclusion criteria include patients with age less than 18 years, pregnant, breast feeding females and patients with metastatic disease. The thyroid ablation was considered successful if Thyroglobulin level is <1 ng/ml, negative serum Thyroglobulin antibodies and I-131 WBS are negative after 6 months after the ablation dose. The results were analyzed by statistician blind to the treatment protocol used in the two groups. Results: Of 74 patients there were 64 females with a ratio of Female: Male of 6:1, and age range of 20 to 84 years and a mean of 36 years. There were no significant difference between the groups according to sex, age, I-131 ablation dose, histopathology type and stage of the thyroid cancer (P value is > 0.05). There were 13 (17%) patients with thyroglobulin antibodies (9 in Group A and 4 in Group B). The Tg level < 1 ng/ml after excluding patients with positive TgAb was similar in both groups, in Group A were 30 (97%) patients and in Group B were 26 (87%) patients P value is 0.15. The I-131 WBS negative was similar in both groups, in Group A were 32 (80%) patients and in Group B were 25 (74%) patients P value is 0.51. There was no significant difference in ablation success rate between the two groups, in Group A were 31 (78%) patients (95% CI 62.5- 87.5), while in Group B were 25 (74%) patients (95% CI 56.9-85.4) P 0.692 with a relative risk of 0.95 (95% CI 0.73- 1.23). Conclusion: This study showed there is no significant difference in I-131 thyroid remnant ablation between using rhTSH stimulation and thyroxin withdrawal. Therefore administration of rhTSH can successfully ablate thyroid remnant in well differentiated thyroid cancer, obviating thyroxine withdrawal and hypothyroidism.

How to cite the whole “Abstract Book”:
Beshyah SA, Elsyed N, Al-Ozairi E, Al Kaabi JM, Lamki M, Al Zahrani A, Khalil AB, Hassoun A, Zirie M. (Guest Editors). The third clinical congress of the Gulf Chapter of the American Association of Clinical Endocrinologists, October, 29th-31st 2015, Dubai, UAE. Ibnosina J Med BS 2015;7(5):184-210

How to cite your own abstract e.g. Abstract P30
Hussein S, Al-Mazroui R, Elshafie O, Bererhei H, Al Jabri AK, Sawhney S, Woodhouse N. Well differentiated thyroid cancer: The efficiency of thyroid remnant ablation with I-131 after rhTSH stimulation and after thyroxin withdrawal: A prospective randomized control trial. Ibnosina J Med BS 2015;7(5): 184-210 (Abstract P30).