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Irish Endocrine Society 41st Annual Meeting

13th and 14th October 2017

Grand Hotel, Malahide, Dublin

Local Organiser: Professor Maria Byrne

Mater Misericordiae Hospital, Dublin

Royal Academy of Medicine in Ireland

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**Friday 13th of October 2017**

1pm to 1.45pm: Poster Viewing session

1.45pm: Welcome and Introduction

Professor FPM O’Harte

President, Irish Endocrine Society

1.50pm: Professor AJ van der Lely

President of the European Society of Endocrinology

Friday Oral Presentations

2.00pm **OC1**. **High Density Lipoprotein (HDL) function is enhanced in females with Type I Diabetes compared to Type 2 Diabetes and lean control subjects**

*M Ahmed3, W Guo1,2, FC McGillicuddy1,2, J Gibney3*

Nutrigenomics Research Group1, Diabetes Complications Research Centre, UCD Conway Institute and School of Medicine, University College Dublin2, Department of Endocrinology, Tallaght Hospital, Dublin3.

2.15pm **OC2**. **Association of serum TRAIL with cardiovascular disease in patients with Type 2 diabetes**

*Forde H1., Davenport C2., Durkan E3., Thompson CJ1., Agha A1., O’Gorman DJ3., Cummins PM2., Smith D1.*

Department of Endocrinology, RCSI medical school and Beaumont Hospital, Beaumont, Dublin1. School of Biotechnology, Dublin City University, Glasnevin, Dublin2. School of Health and Human performance, Dublin City University, Glasnevin, Dublin3.

2.30pm **OC3. Hyperandrogenaemia in women with type 1 diabetes mellitus; associations with lipids and lipoprotein particle size, and early vascular disease**

*A Gunness1, A Pazderska 1, M Ahmed 1, A. McGowan1, N Phelan1, G Boran 2,AE Taylor3, MW O’Reilly3, W Arlt3, K Moore1,LA Behan1,M Sherlock1 and J Gibney1*

Department of Endocrinology1 and Clinical Chemistry2, Adelaide and Meath Hospital, Tallaght, Dublin.Institute of Metabolism and Systems Research (IMSR), University of Birmingham, Edgbaston, Birmingham3

2.45pm **OC4**. **An *in vivo* pre-clinical study exploring microRNA-224 (miR-224) as a new therapeutic target for the treatment of diabetes.**

*Pfeiffer S1, Halang L1, Engelbrecht B1,Byrne MM2, Prehn JHM1*

Centre for Systems Medicine, Dept. of Physiology and Medical Physics, Royal College of Surgeons in Ireland, Dublin1, Department of Endocrinology, Mater Misericordiae University Hospital, Eccles Street, Dublin2.

3.00pm **OC5.****Vitamin D status of adults in the community, hospital and nursing homes in the West of Ireland.**

*Griffin TP1, Wall D2,Blake L3, Griffin D3, Bell M1, Mulkerrin E4, O’Shea PM3*

Centre for Endocrinology, Diabetes and Metabolism, Galway University Hospitals, Galway1, School of Mathematics, Statistics and Applied Mathematics, National University of Ireland, Galway2, Department of Clinical Biochemistry, Galway University Hospitals, Galway3, Department of Geriatric Medicine, Galway University Hospitals, Galway4.

3.15pm **OC6**. **Bone resorption and dietary calcium in pregnancy are associated with bone mineral density 5 years later.**

*EC O’Brien1, AA Geraghty1, MT Kilbane2, EJ O’Sullivan1, MJ McKenna1,3,4, FM McAuliffe1*

UCD Perinatal Research Centre, Obstetrics & Gynaecology, School of Medicine, University College Dublin, National Maternity Hospital, Dublin, Ireland1; Departments of Clinical Chemistry2, and Endocrinology3, St Vincent’s University Hospital, Dublin, Ireland; 4School of Medicine, University College Dublin, Ireland.

3.30 – 4.25pm **Coffee and Poster Viewing Session**

4.30pm **OC7. Investigating the role of oxysterols on mitotane resistance in adrenocortical carcinoma.**

*Kate M Warde, Reethika Ravindran, Thomas M McHugh, Michael C Dennedy.*

Discipline of Pharmacology & Therapeutics, Lambe Institute for Translational Research, School of Medicine, NUI, Galway, Costello Road, Galway.

4.45pm **OC8.**  ***In vivo* metabolomics using MRI spectroscopy in SDH deficient tumours provides evidence for translational clinical application.**

*R T. Casey 1, 2, M. McLean5, B. Madhu5, A. Marker4, O. Giger4, B G Challis1, H.L Simpson1, I. Patterson3, E R. Maher2, F.Gallagher3*

Departments of Endocrinology1, Medical Genetics2, Radiology3, and Histopathology4, Cambridge University Hospital, Cambridge, UK, Cancer Research UK, Cambridge Institute, University of Cambridge, Cambridge, UK5

5.00pm **IES Hadden Lecture**

**“Truth in the Folktales”**

**Professor Marta Korbonits**

**Department of Endocrinology, William Harvey Institute, Barts and the London Medical School, Queen Mary University of London, London, UK**

**Saturday 15th of October 2016**

8.00 – 9.00am **IES Annual General Meeting**

**Oral Presentations**

9.15am **OC9. Chronic administration of stable apelin-13 peptide analogues show promising therapeutic efficacy in diabetic *db/db* mice**

*FPM O’Harte, V Parthsarathy and PR Flatt*

The SAAD Centre for Pharmacy and Diabetes, School of Biomedical Sciences, Ulster University, Coleraine, N.Ireland

9.30am **OC10. Evaluation of the functional role of GPR120 on islet cell function upon biological activation with selective long chain fatty acid agonists**

*A.G. McCloskey, M.G. Miskelly, P.R. Flatt, A.M. McKillop.*

Biomedical Sciences Research Institute, Ulster University, Coleraine, Northern Ireland.

9.45am **OC11. Comparing the Oral Glucose Tolerance Test and the Glucose Challenge Test in Screening for Gestational Diabetes:**

**A Randomised Clinical Trial**

*Connerton Á1, Ahern T1, Collins C2, Gannon M2, Hoashi S1*

Diabetes Centre, Midlands Regional Hospital, Mullingar, Co Westmeath1,

1Department of Obstetrics and Gynaecology, Midlands Regional Hospital, Mullingar, Co Westmeath2.

10.00am **OC12 Delivery Outcome with in Gestational Diabetes Treated with Lifestyle Modification, Metformin and Insulin: A 2-Year National Maternity Hospital Experience**

*Wan Mahmood WA1, Cahill T1, Rutter E2, Coveney C2, Daniel U2, Harrington L2, Walsh J2, Higgins M2, Hatunic M1*

Department of Endocrinology and Diabetes, Mater Misericordiae Hospital and The National Maternity Hospital, Dublin, Ireland1, Department of Obstetrics and Gynaecology, The National Maternity Hospital, Holles Street, Dublin2

10.15am **OC13. Gastric bypass vs. ‘Medical Bypass’ – Impact on experimental diabetic kidney disease**

*Nair M1, Canney AL1, Elliot JA1, Fearon NM1, Casselbrant A2, Fändricks L2, le Roux CW1, 2,3, Docherty NG1, 2*

Diabetes Complications Research Centre, University College Dublin, Ireland1

Gastrosurgical Research & Education, University of Gothenburg, Sweden2

Investigative Medicine, Imperial College London, United Kingdom3.

10.30am **IES McKenna Lecture**

**GPCRS in the islets: an untapped opportunity for novel diabetic therapies**

**Professor Aine McKillop**

**SAAD Centre for Pharmacy & Diabetes, School of Biomedical Sciences, Ulster University, Coleraine**

11.00 – 11.30am **Coffee and Poster Presentation session**

11.30am **OC14. TRAIL protects from RANKL-induced calcification in an *in vitro* vascular co-culture model, in part via attenuation of NF-κB pro-calcific signalling**

*E Harper1, H Forde1,2, C Davenport2, KD Rochfort1, D Smith2, PM Cummins1*

School of Biotechnology, Dublin City University, Glasnevin, Dublin1

Department of Academic Endocrinology, Beaumont Hospital, Dublin2.

11.45am **OC15. FKBPL, a novel angiogenesis-related protein, is downregulated in response to myocardial stress**

*A Alqudah1, R McNally1, A Connell1, TJ Lyons2, DJ Grieve1, T Robson3, L McClements1*

Centre for Experimental Medicine, Queen’s University Belfast, 97 Lisburn Road, Northern Ireland1 Division of Endocrinology and Diabetes, Medical University of South Carolina, Charleston, SC 29425, USA2 Irish Centre for Vascular Biology, Molecular and Cellular Therapeutics, Royal College of Surgeons in Ireland, Dublin, Ireland3.

12.00pm **OC16**. **Adherence to physical activity recommendations and barriers to physical activity among Irish adults with type 1 diabetes**

*Finn M1,2, Sherlock M1, Feehan S2, Guinan EM3, Moore KB1*

Department of Endocrinology, Tallaght Hospital, Dublin1, Department of Nutrition & Dietetics, Tallaght Hospital, Dublin2, School of Medicine, Trinity College Dublin, Dublin3

12.15pm **OC17. Serum and Urine Adiponectin, NGAL and MCP-1 in Diabetic Kidney Disease.**

*Griffin TP1,2\*, Islam MN1\*, Fahy RP1, O’Shea PM3, O’Brien T1,2, Griffin MD1,4.*

Regenerative Medicine Institute at CÚRAM SFI Research Centre, School of Medicine, National University of Ireland Galway, Galway1, Centre for Endocrinology, Diabetes and Metabolism, Galway University Hospitals, Galway2, Department of Clinical Biochemistry, Galway University Hospitals, Galway3, Department of Nephrology, Galway University Hospitals, Galway4.

12.30pm **OC18. Human Mesenchymal Stem Cells Suppress Glucose-Induced Inflammatory Responses of Stable Renal Proximal Tubular Epithelial Cell Monolayers**

*Md Nahidul Islam1, Tomás P. Griffin1,2 Stephanie Rocks1 , Joana Cabral1, Thomas Ritter1, Tara McMorrow3 , Timothy O’Brien1,2 , Matthew D. Griffin1,4*

Regenerative Medicine Institute, School of Medicine, National University of Ireland Galway, Galway, Ireland1 Centre for Endocrinology, Diabetes and Metabolism, Galway University Hospitals, Galway2 School of Biomolecular and Biomedical Science, Conway Institute, University College Dublin, Ireland3 Department of Nephrology, Galway University Hospitals, Galway4.

12.45pm **OC19. Twice daily oral administration of boarfish (*Capros aper*) protein hydrolysate improves lipid parameters and glycaemic control in obese diabetic *ob/ob* mice**

*C. Mc Laughlin1, V. Parthsarathy1, P.J. Allsopp1, E.M. McSorley1, R.J. FitzGerald2, P.A. Harnedy2 & F.P.M O’Harte1*

School of Biomedical Sciences, Ulster University, Coleraine, N. Ireland1, Department of Life Sciences, University of Limerick, Castletroy, Limerick, Ireland2,

1.00pm **IES Summer Student Award Presentations**

1.15pm **Presentation of Irish Endocrine Society O’Donovan Medal (best oral presentation) and Montgomery medal (best poster presentation)**

**Close of meeting**

**Oral Presentations**

**OC1 High Density Lipoprotein (HDL) function is enhanced in females with Type I Diabetes compared to Type 2 Diabetes and lean control subjects**

*M Ahmed3, W Guo1,2, FC McGillicuddy1,2, J Gibney3*

Nutrigenomics Research Group1, Diabetes Complications Research Centre, *UCD Conway Institute and School of Medicine, University College Dublin2,* Department of Endocrinology, Tallaght Hospital, Dublin3.

Patients with T1DM have increased cardiovascular disease risk despite exhibiting normal/favourable lipid profiles. HDL promotes efflux of cholesterol from lipid laden foam cells; smaller particles facilitate efflux via ABCA1 while larger particles accept cholesterol via ABCG1 and SRBI. This study characterized the impact of T1DM and T2DM on HDL efflux function compared to lean controls in a female population. Female lean (n=34), T1DM (n=103) and T2DM (n=43) subjects of reproductive age were recruited from the Diabetes Day Centre in Tallaght Hospital. Efflux of 3H-cholesterol via ABCA1-dependent and ABCA1-independent pathways from J774 macrophages to HDL was determined and correlated with various measures of metabolic health. Statistical Analysis: normal data, one-way ANOVA (Bonferroni post-hoc test); non-normal data, Kruskal-Wallis testing (Dunn’s post-hoc test). ABCA1-dependent efflux to HDL was significantly increased in T1DM subjects compared to both T2DM (p<0.001) and healthy controls (p<0.001) with no significant difference in ABCA1-independent efflux observed. ABCA1-dependent efflux positively correlated with triglyceride (TAG) (r=0.235, p<0.05) and not HDL-C (r=-.117, p=0.24) in T1DM. By contrast ABCA1-independent efflux strongly correlated with HDL-C (r=0.633, p<0.001) and not TAG (r=-0.039, p=0.698). A similar association between ABCA1-dependent efflux and TAG (r=0.336, p=0.052) and ABCA1-independent efflux with HDL (r=0.637, p<0.001) was observed in T2DM. These findings indicate that there might be a compensatory increase in the ability of HDL particles to support ABCA1-mediated efflux in diabetes to circumvent increased cardiovascular disease burden. Lack of correlation between ABCA1-efflux and HDL-C highlights the limitation of static measurements of HDL-C to capture particle functionality.

**OC2. Association of serum TRAIL with cardiovascular disease in patients with Type 2 diabetes.**

*Forde H1., Davenport C2., Durkan E3., Thompson CJ1., Agha A1., O’Gorman DJ3., Cummins PM2, Smith D1.*

Department of Endocrinology, RCSI medical school and Beaumont Hospital, Beaumont, Dublin1. School of Biotechnology, Dublin City University, Glasnevin, Dublin2. School of Health and Human performance, Dublin City University, Glasnevin, Dublin3.

Cardiovascular disease (CVD) remains the leading cause of mortality in type 2 diabetes (T2DM). Identification of serum biomarkers for early detection of so-called ‘silent’ CVD may allow timely cardiovascular intervention. Epidemiological studies have demonstrated that low serum levels of tumour necrosis factor related apoptosis inducing ligand (TRAIL) are associated with increased risk of death in patients with known CVD [1]. We aimed to examine the utility of serum TRAIL as a marker of cardiovascular risk in patients with T2DM. Serum TRAIL levels were measured in 133 adults by ELISA. The cohort was divided into 3 groups, non-diabetic controls, newly diagnosed T2DM and patients with T2DM and a documented history of a CV event Clinical information, demographics, anthropometric measurements and other laboratory parameters were recorded. In a multivariable regression analysis adjusted for potential confounders including HbA1c (glycated haemoglobin), CRP (C reactive protein), cholesterol levels and medications, serum TRAIL was inversely associated with the presence of CVD in patients with T2DM. A serum TRAIL cut-off of 178pg/ml predicts the presence of CVD in a patient with T2DM with a sensitivity of 86% and specificity of 70%. In conclusion, serum TRAIL may be a useful biomarker of underlying CVD in patients with T2DM.

**OC3. Hyperandrogenaemia in women with type 1 diabetes mellitus; associations with lipids and lipoprotein particle size and early vascular disease**

A Gunness1, A Pazderska 1, M Ahmed 1, A. McGowan1, N Phelan1, G Boran 2,AE Taylor3, MW O’Reilly3, W Arlt3, K Moore1,LA Behan1,M Sherlock1 and J Gibney1

Department of Endocrinology1 and Clinical Chemistry2, Adelaide and Meath Hospital, Tallaght, Dublin.Institute of Metabolism and Systems Research (IMSR), University of Birmingham, Edgbaston, Birmingham3

Hyperandrogenaemia and polycystic ovary syndrome (PCOS) are common in women with Type 1 diabetes, but it is not known if they contribute to increased cardiovascular risk. We aimed to compare associations between androgen levels, lipid variables and early atherosclerosis in reproductive-age women with and without T1DM. 87 (16 with PCOS) women with T1DM (mean±SD; age 28.7±6.1yrs, BMI 25.4±4.4kg/m2), and 87 (16 PCOS) nondiabetic women (mean±SD; age 31.8±5.9yrs, BMI 28.3± 4.01kg/m2), were studied. Androgens (LCMS), plasma lipids and lipoprotein subclasses (polyacrylamide-gel-tube-electrophoresis) and carotid-intima-media-thickness (CIMT), a validated marker of atherosclerosis were measured. In non-diabetic women SHBG correlated negatively and free testosterone positively with VLDL(r=-0.37/r=0.32), triglyceride (TG) (r=-0.26/r=0.28) and TG/HDL-C ratio(r=-0.28/r=0.29) while DHEAS correlated negatively with LDL-C(r=-0.29) (P<0.05 for all). In T1DM, SHBG correlated negatively(r=-0.26) and free testosterone positively(r=0.22) with TG and TG/HDL-C ratio(r=0.24) while androstenedione correlated positively with TC(r=0.24), VLDL (r=0.32) and LDL-C(r=0.32) (P<0.05 for all). TC, LDL-C and TG were not associated with CIMT in either group, but VLDL(r=0.59, P<0.0001) and the proportion of atherogenic small-dense LDL (sdLDL, r=0.24, p=0.04) correlated with CIMT only in women with T1DM. Androgens did not correlate with CIMT in either group. In summary, in T1DM and nondiabetic women, SHBG and free testosterone correlated with lipid and inflammatory markers characteristic of insulin resistance, but did not correlate with CIMT. VLDL and sdLDL were associated with CIMT in T1DM only. These results do not support a role of hyperandrogenaemia in atherogenesis in T1DM. The role of VLDL and sdLDL in early atherogenesis in T1DM requires further exploration

**OC4. An *in vivo* pre-clinical study exploring microRNA-224 (miR-224) as a new therapeutic target for the treatment of diabetes.**

*Pfeiffer S1, Halang L1, Engelbrecht B1,Byrne MM2, Prehn JHM1*

Centre for Systems Medicine, Dept. of Physiology and Medical Physics, Royal College of Surgeons in Ireland, Dublin1, Department of Endocrinology, Mater Misericordiae University Hospital, Eccles Street, Dublin2.

New therapies are required that modify disease manifestation, progression and preserve β-cell function in diabetes. MicroRNAs (miRNA) play crucial roles in pancreatic development and β-cell function and their ability to regulate multiple genes in similar pathways, combined with remarkable stability, highlight microRNAs as ideal novel therapeutic targets, currently entering many clinical trials. We identified significantly elevated levels of a novel diabetes–associated miRNA, miR-224, in the serum and recently in the urine of HNF1A-maturity-onset diabetes of the young (HNF1A-MODY) patients (*n*=38) who present with a primary β-cell defect. Levels were not significantly elevated in type 2 diabetes mellitus (T2DM) patients (*n*=36), suggesting that elevated miR-224 levels may compensate for β-cell dysfunction. In line with this hypothesis, qPCR analysis indicates that overexpression of miR-224 in INS-1 cells is associated with a 1.5-fold increase in glucose transporter 2 (GLUT2) mRNA levels, the main glucose transporter in liver and in β-cells (p<0.01). This study therefore explores miR-224 as an attractive novel therapeutic target, examining the effect of therapeutic manipulation of miRNA-224 using delivery of a stable miRCURY LNA™ microRNA-224 mimic on disease pathology and progression utilising a transgenic mouse model of diabetes with a primary β-cell dysfunction and impaired insulin secretion, achieved through an autosomal dominant missense insulin 2 gene mutation (Ins2) (“Akita”), and a model of insulin resistance ("*db/db*"). This study evaluates a novel and promising approach in the treatment of diabetes and associated complications, and will further elucidate the role of diabetes-associated miRNAs in mediating the decline β-cell function.

**OC5. Vitamin D status of adults in the community, hospital and nursing homes in the West of Ireland.**

*Griffin TP1, Wall D2,Blake L3, Griffin D3, Bell M1, Mulkerrin E4, O’Shea PM3*

Centre for Endocrinology, Diabetes and Metabolism, Galway University Hospitals, Galway1, School of Mathematics, Statistics and Applied Mathematics, National University of Ireland, Galway2, Department of Clinical Biochemistry, Galway University Hospitals, Galway3, Department of Geriatric Medicine, Galway University Hospitals, Galway4.

Introduction:Vitamin D deficiency is common. The aim of this study was to compare the prevalence of vitamin D deficiency, insufficiency and sufficiency in samples collected from adult patients in the community, hospital and nursing homes in the West of IrelandMethods**:** A cross-sectional study was designed. The laboratory data system was interrogated to identify all requests for 25-hydroxyvitamin D (25(OH)D) analysis carried out in Galway University Hospitals between April 2011 and December 2015. In total 34,063 samples from adult (≥ 18 years) patients were identified. Only the first sample from individual patients was included. Baseline demographics, location (community, hospital or nursing home), date and time of sample collection were recorded. Vitamin D deficiency, insufficiency and sufficiency were classified according to the following 25(OH)D cut-offs: <25nmol/L, 25-50nmol/L and >50nmol/L respectively.Results:A total of 24,302 patient samples were eligible for inclusion: community; n=15,319, hospital; n=8,710, and nursing home residents; n=273. More females than males were 25(OH)D sufficient (50% versus 42%, p<0.001). There was a significant difference observed in Vitamin D status between patients sampled in the community (deficiency: 13%; insufficiency: 36%; sufficiency: 51%), in hospital (deficiency: 23%; insufficiency: 34%; sufficiency: 43%) and in nursing homes (deficiency: 42%; insufficiency: 25%; sufficiency: 33%) (p<0.001).Conclusions:This study determined that Vitamin D deficiency was most common in nursing home residents. In this cohort, the combined prevalence of Vitamin D deficiency and insufficiency was 67%, 10% higher than patients sampled in hospital and 18% greater than patients in the community.

**OC6. Bone resorption and dietary calcium in pregnancy are associated with bone mineral density 5 years later.**

*EC O’Brien1, AA Geraghty1, MT Kilbane2, EJ O’Sullivan1, MJ McKenna1,3,4, FM McAuliffe1*

UCD Perinatal Research Centre, Obstetrics & Gynaecology, School of Medicine, University College Dublin, National Maternity Hospital, Dublin, Ireland1; Departments of Clinical Chemistry2, and Endocrinology3, St Vincent’s University Hospital, Dublin, Ireland; 4School of Medicine, University College Dublin, Ireland.

Pregnancy is characterised by increased bone turnover and reversible loss of bone mineral density (BMD) to meet fetal calcium demands. The long-term effect of bone turnover and diet in pregnancy on maternal BMD is unclear. We aimed to determine the association between maternal factors in pregnancy (bone resorption, calcium intake, serum 25-hydroxyvitamin D [25OHD]), and BMD 5 years’ post-pregnancy. This is a longitudinal study of 107 women recruited to the ROLO study at 13 weeks’ gestation and followed up to 5 years’ post-pregnancy. In pregnancy, we measured urine cross-linked N-telopeptides of type I collagen (NTX), a biomarker of bone resorption. Five years’ post pregnancy we measured BMD. Anthropometry, dietary calcium and 25OHD were measured at both times. Multiple linear regression was used for statistical analysis. Mean BMD 5 years’ post-pregnancy was 1.208g/cm3. At 13 and 28 weeks’ gestation, median NTX concentrations were 68.8 and 107.24nMBCE/mmol creatinine, respectively. NTX greater than the median at 13 and 28 weeks’ gestation was associated with a 0.060 and 0.050g/cm3 reduction in BMD at 5 years’ post-pregnancy, respectively. Calcium <800mg/day in trimester 3 was associated with a 0.072g/cm3 reduction in BMD at 5 years’ post-pregnancy. Vitamin D deficiency (<30nmol/L) at 5 years was associated with 0.066g/cm3 reduction in BMD.

Higher bone resorption and low calcium intakes in pregnancy, as well as vitamin D deficiency at the 5 year visit were associated with lower BMD 5 years’ post-pregnancy. These novel findings could allow health care professionals to identify women at risk of declining of BMD in later life.

**OC7. Investigating the role of oxysterols on mitotane resistance in adrenocortical carcinoma.**

*Kate M Warde, Reethika Ravindran, Thomas M McHugh, Michael C Dennedy.*

Discipline of Pharmacology & Therapeutics, Lambe Institute for Translational Research, School of Medicine, NUI, Galway, Costello Road, Galway.

Adrenocortical carcinoma (ACC) carries a poor prognosis due to limited treatment options. Adjuvant mitotane following tumour resection improves survival but is limited by a narrow therapeutic window, severe adverse effects and escape from therapeutic efficacy. Mitotane modulates its adrenolytic effect through toxic free cholesterol accumulation in adrenocortical cells through inhibition of SOAT-1. Oxysterols are mediators of cellular free cholesterol accumulation which work through upregulation of ABC efflux receptors. Methodology**:** We studied the effects of oxysterols on mitotane-induced cell death and free cholesterol accumulation in ACC cells. ATCC-H295R ACC cells were pre-treated with the oxysterol, 27-hydroxycholesterol (HC) (10, 20, 40μΜ) for 24 hours followed by mitotane treatment (10, 20, 40μΜ) for 24 hours. Apoptosis was assessed using Annexin-V/PI staining by flow cytometry and Calcein/PI using microscopy. Intracellular cholesterol accumulation was evaluated by microscopy and flow cytometry using bodipy. Combined effects of mitotane and 27HC on cholesterol efflux receptors (ABCA-1 and ABCG-1), SOAT-1 and lipoprotein uptake receptors were evaluated by qRT-PCR. Results:Mitotane (14mg/mL) effectively induced H295R cell death (Live:9.88%, Early Apoptotic:42%, Late Apoptotic:44%, Necrotic:4%).Co-treatment with27HC attenuated mitotane-induced cell killing at concentrations >20μΜ (Live:31%, Early Apoptotic:40%, Late Apoptotic:24%, Necrotic:5%) and this was accompanied by lower cholesterol accumulation and SOAT-1 downregulation. Conclusion:Inhibition of mitotane-induced ACC cell death by oxysterols presents a novel mechanism for therapeutic escape which may be modulated by tumour-associated immune-cells or native ACC cells. Pharmacologic targeting of oxysterol production may present a novel approach to broadening mitotane’s therapeutic efficacy.

**OC8. *In vivo* metabolomics using MRI spectroscopy in SDH deficient tumours provides evidence for translational clinical application.**

*R T. Casey 1, 2, M. McLean5, B. Madhu5, A. Marker4, O. Giger4, B G Challis1, H.L Simpson1, I. Patterson3, E R. Maher2, F.Gallagher3*

Departments of Endocrinology1, Medical Genetics2, Radiology3, and Histopathology4, Cambridge University Hospital, Cambridge, UK, Cancer Research UK, Cambridge Institute, University of Cambridge, Cambridge, UK5

SDH deficient tumours have a unique tumour metabolome due to the interruption of the citric acid cycle and the accumulation of the ‘oncometabolite’ succinate, which drives tumourigenesis. Elevations in succinate (>100 fold) has been identified *in vitro* in SDHx-mutated tumors compared with sporadic tumoursby our group. The aim of this study was to assess the clinical applications of *in vivo* succinate detection using MRI spectroscopy (1H-MRS) on a 3T MRI scanner. *In vivo* succinate detection was correlated with germline mutational status and SDHB immunohistochemistry in all cases. Succinate, when detected, was visible on the acquired spectra at a frequency of 2.4ppm.

This is the largest study to date and includes 12 patients (6 with GIST, 5 with phaeochromocytoma/paraganglioma and a single patient with a non-functioning pituitary macroadenoma). A succinate peak was detected for 8/12 (66.7%) patients and the detection of succinate correlated with SDHB IH and or germline mutational status in 11/12 (92%) cases. 1H-MRS identified a succinate peak in two patients with metastatic GIST without a germline mutation in *SDHx*, subsequent analysis confirmed *SDHC* promoter hypermethylation and a somatic epimutation as a cause for the succinate peak. Furthermore, we demonstrated that *in vivo* metabolomics using 1H-MRS has a role as a surrogate biomarker to validate therapeutic strategies in SDH deficient tumourigenesis, as succinate was detected in a patient with a germline *SDHB* mutation and a metastatic paraganglioma before treatment with lutetium labelled peptide receptor radionuclide therapy, but no succinate was detectable in the same tumour deposit post treatment.

**OC9. Chronic administration of stable apelin-13 peptide analogues show promising therapeutic efficacy in diabetic *db/db* mice**

*FPM O’Harte, V Parthsarathy and PR Flatt*

The SAAD Centre for Pharmacy and Diabetes, School of Biomedical Sciences, Ulster University, Coleraine, N.Ireland

We have recently shown that stable analogues of the adipokine apelin-13, which activate the APJ receptor, have beneficial antidiabetic actions in diet-induced obese diabetic mice. Here we compared the efficacy of two apelin analogues, (pGlu)apelin-13 amide and (pGlu)(Lys8GluPAL)apelin-13 amide, with two incretin mimetics following chronic administration in adult male diabetic *db/db* mice. Five groups of *db/db* mice (n=8) received twice daily (09:00 and 17:00 h) i.p. injections of saline vehicle, (pGlu)apelin-13 amide, (pGlu)(Lys8GluPAL)apelin-13 amide, exendin-4(1-39) or liraglutide (25 nmol/kg) for 21 days. Apelin analogues had no effect on body weight or food intake, but exendin-4 reduced cumulative food intake (p<0.01) compared with saline-treated *db/db* mice. All four peptide treatments showed sustained improved glycaemic control (p<0.05 to p<0.001, from day 9) and enhanced insulinotropic responses versus saline-treated *db/db* mice. Both (pGlu)apelin-13 amide and (pGlu)(Lys8GluPAL)apelin-13 amide, along with incretin mimetics showed improved oral glucose tolerance compared with saline-treated *db/db* mice (p<0.05 to p<0.001). Apelin analogues significantly reduced %HbA1c by 1.5-1.6% after 21 days of treatment (p<0.05) which was similar to incretin mimetics. (pGlu)apelin-13 amide was superior to incretin mimetics lowering plasma triglycerides by 34% (p<0.05) compared to control *db/db* mice. Apelin peptides and liraglutide, unlike exendin-4, reduced pancreatic -cell area by 15-20%, (p<0.05 to p<0.01) and all peptide treatments enhanced pancreatic insulin content by 39-72% (p<0.05 to p<0.01) versus *db/db* controls. Chronic administration of apelin-13 related analogues, which operate through the APJ receptor, was at least as effective as GLP-1 receptor activation in *db/db* mice, providing an alternative promising antidiabetic therapeutic target.

**OC10. Evaluation of the functional role of GPR120 on islet cell function upon biological activation with selective long chain fatty acid agonists**

*A.G. McCloskey, M.G. Miskelly, P.R. Flatt, A.M. McKillop.*

Biomedical Sciences Research Institute, Ulster University, Coleraine, Northern Ireland.

Long-chain fatty acid (LCFA) G-protein coupled receptors (GPCRs) have been identified as potential anti-diabetic targets, through enhanced hormone secretion and islet cell regeneration. GPR120 function was evaluated by identifying and utilising selective GPR120 agonists and assessing their potential as novel therapeutic agents.

Insulinotropic activity and specificity of GPR120 agonists was assessed in rodent (BRIN-BD11) and human (1.1B4) pancreatic cell lines. Expression of GPR120 was assessed by qPCR and western blotting in BRIN-BD11 cells upon agonist treatment and in lean/high-fat-fed (HFF) mouse pancreas. Acute effects *in-vivo* of agonist treatment was investigated in lean and HFF-induced diabetic NIH-Swiss mice. Novel agonists GSK137647 (10-11-10-4M) and Compound-A (10-10-10-4M) stimulated insulin secretion at 5.6mM (p<0.05-p<0.001) and 16.7mM (p<0.05-p<0.001) glucose in BRIN-BD11 and 1.1B4 cells. No cytotoxicity was observed. Potent GPR120 antagonist (AH7614) impaired the insulinotropic response of GSK137647 and Compound-A (p<0.05-p<0.001). GPR40 antagonist (GW1100) had no significant effect. GPR120 (p<0.05) and insulin (p<0.01) gene expression were upregulated in HFF pancreas, compared to lean control. Incubation of BRIN-BD11 cells with GSK137647 and Compound-A increased GPR120 (p<0.01) and insulin (p<0.01) gene expression at 16.7mM glucose. Increased GPR120 (p<0.01) protein expression was confirmed by western blotting. GPR120 upregulation was attenuated under normoglycaemic conditions. Orally administered GSK137647 and Compound-A (0.1µmol/kgBW) improved glucose tolerance (p<0.001), increased plasma insulin (p<0.001) and improved satiety (p<0.001) in lean and HFF NIH-Swiss mice, with findings augmented in combination with DPP-IV inhibitor (Sitagliptin). Agonist specificity *in-vivo* was confirmed with AH7614. These findings indicate that the selective activation of GPR120 has potential as a novel therapy for type-2-diabetes.

**OC11. Comparing the Oral Glucose Tolerance Test and the Glucose Challenge Test in Screening for Gestational Diabetes:**

**A Randomised Clinical Trial**

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Hyperglycaemia during pregnancy is common and increases the risks of maternal and fetal complications. The risks of GDM can be mitigated by optimising glycaemia. A high proportion of women fail to attend for GDM screening by 75g oral glucose tolerance test (OGTT). We hypothesized that the proportion of women experiencing a greater than 3 mmol/mol rise in HbA1c between 16 and 36 weeks of gestation would be greater with screening using the OGTT than with the 50g glucose challenge test (GCT, non-fasting, one-step). Reducing HbA1c by 3.3 mmol/mol decreases neonatal morbidity by 30%. We allocated randomly 600 pregnant women (aged 31±5 years, BMI 27±6 kg/m2) to universal screening with either the OGTT or GCT.

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **75g fasting OGTT**  **(n=302)** | **50g non-fasting GCT**  **(n=298)** | **P Value** |
| Did not attend for screening, n (%) | 51 (16.9) | 17 (5.7) | **0.001** |
| Glucose-lowering therapy, n (%) | 14 (5.1) | 33 (11.7) | **0.005** |
| Change in HbA1c >3 mmol/mol, n (%) | 43 (16.7) | 34 (12.7) | 0.196 |
| Birth weight >4.0 kg, n (%) | 54 (19.9) | 39 (14.1) | *0.074* |
| P values calculated using Chi-squared testing. | | | |

Use of the GCT improved the rate of screening and selected better those who met criteria for glucose-lowering therapy.

**OC12. Delivery Outcome with in Gestational Diabetes Treated with Lifestyle Modification, Metformin and Insulin: A 2-Year National Maternity Hospital Experience**

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Treatment options for gestational diabetes (GDM) include lifestyle modification (LM), insulin (INS) or metformin (MF). We reviewed patients with GDM in 2015/16 (n=683, mean age of 35.6 ± 4.5 years old). T-test, χ2 test, and ANOVA were used to analyze the data. Majorities were overweight (30%), obese (35%) and Europeans (75.9%). While 423(61.9%) patients continued on LM, 116(17%), 111(16.3%) and 19(2.8%) required MF, INS or both treatments respectively. Spontaneous vaginal delivery, Cesarean section and assisted delivery accounts for 346 (50.7%), 213 (31.2%) and 71 (10.4%) deliveries, while 25(3.7%) had miscarriages. Macrosomia (>4kg) accounts for 116 babies (17%), with no differences in macrosomia and delivery methods between treatments. Asians (28.1%) and African (26.1%) required more INS compared to Europeans (14.2%, p=0.006). Mothers treated with INS had higher 50g-glucose challenge (GCT) values (11.24 ± 2.33 mmol/L) compared to MF-treated (9.35 ± 1.64 mmol/L) and LM-treated (9.41 ± 1.9 mmol/L, p <0.005). Plasma glucose at OGTT (fasting, 1 hour post OGTT) were also higher in INS-treated (5.8 ± 0.9, 12.41 ± 1.72 mmol/L) compared to MF-treated (5.19 ± 0.53, 11.18 ± 1.21 mmol/L) and LM-treated (4.7 ± 0.55, 10.7 ± 1.38 mmol/L, p <0.005) group respectively. Our patients with GDM were older and overweight at baseline. INS-treated patients had higher GCT, fasting and 1-hour OGTT values compared to MF and LM. Equal numbers of patients were treated with metformin and insulin without differences in the outcome for mothers and babies. Our data shows that metformin is a safe treatment option for GDM.

**OC13**. **Gastric bypass vs. ‘Medical Bypass’ – Impact on experimental diabetic kidney disease**

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Reductions in albuminuria are reported after Roux-en-Y gastric bypass (RYGB). Herein, we assess the impact of RYGB on podocyte injury in the Zucker Diabetic Fatty (ZDF) rat model of diabetic kidney disease (DKD) and compare glomerular injury and global renal transcriptomic responses of RYGB and matched ‘‘Medical Bypass’’(MB). Study 1: Adult male ZDF rats underwent sham surgery (n=8) or RYGB (n=7). Study 2: Adult ZDF rats underwent sham surgery (n=15) or RYGB (n=9). Nine sham-operated rats were calorie restricted and received insulin, liraglutide, metformin, ramipril, rosuvastatin and fenofibrate for 2 months (MB). Zucker Fa/+ rats acted as healthy controls throughout. Bodyweight, glycaemia, albuminuria and glomerular injury specifically podocyte number, density and ultrastructure were assessed at follow up. Renal transcriptomes were compared by RNA-seq. RYGB resulted in 20-30% weight loss, normalized glycaemia and albuminuria and reduced indices of glomerular injury, specifically podocyte injury (foot process effacement). RYGB equivalent outcomes were obtained on all parameters following MB. A number of RYGB-discrete changes appear to relate to procedure rather than correction of disease. MB recapitulates many of the gene expression alterations observed after RYGB, but modifies expression of a much larger number of genes. A discrete and potentially beneficial response to RYGB was the induction of ALOX15 expression, a potential source of anti-inflammatory lipids. Equivalent improvements in DKD are obtained following RYGB and matched MB.ALOX15 upregulation may be a useful component of RYGB amenable to targeting in non-surgical bariatric mimetic approaches.

**OC14. TRAIL protects from RANKL-induced calcification in an *in vitro* vascular co-culture model, in part via attenuation of NF-κB pro-calcific signalling**

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Vascular calcification (VC), an arterial hardening process prevalent in type-2 diabetics, is a leading risk factor for cardiovascular morbidity/mortality. Key evidence points to the involvement of receptor-activator of nuclear factor kappa-beta ligand (RANKL) and tumour necrosis factor-related apoptosis-inducing ligand (TRAIL) in VC manifestation/progression. While RANKL is a well-established promoter of VC, the precise role(s) of TRAIL (and its mechanism of action) are unknown. Research has shown that RANKL can activate the non-canonical NF-κB pathway, previously implicated in VC pathogenesis. We hypothesise that TRAIL can ameliorate RANKL-induced pro-calcific paracrine communication within the endothelial monolayer, potentially via attenuation of non-canonical NF-κB signalling.

To investigate this hypothesis, a non-contact human aortic endothelial (HAEC)/smooth muscle (HASMC) co-culture model was employed to approximate vascular structure. HAECs (apical compartment) were treated for 72 hrs with RANKL (25ng/ml), TRAIL (5ng/ml), or were co-treated with both. HASMCs (basal compartment) were assessed for pro-calcific indices. HAECs, in contact with RANKL, had the ability to induce HASMC calcification responses via paracrine signalling, while TRAIL co-incubation attenuated RANKL-induced bone morphogenetic protein (BMP)-2 release, alkaline phosphatase (ALP) activity, ALP/Sox9 mRNA expression, and OPG down-regulation. Furthermore, siRNA knockdown of the non-canonical NF-κB pathway in HAECs attenuated RANKL-induced BMP-2 signalling, ALP/Sox9 mRNA expression and OPG mRNA downregulation in co-cultured HASMCs.

We therefore conclude that TRAIL has the ability to block the pro-calcifying actions of RANKL in the vasculature, in part via attenuation of NF-κB-dependent pro-calcific signalling, yielding valuable mechanistic information on VC pathogenesis and on the potential therapeutic value of TRAIL in this context.

**OC 15. FKBPL, a novel angiogenesis-related protein, is downregulated in response to myocardial stress**

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People with diabetes show five-fold higher incidence of cardiovascular disease, the leading causes of death globally. FKBPL is a novel angiogenesis-related protein, with a critical role in physiological and pathological angiogenesis. A first-in-class clinical FKBPL peptide mimetic, ALM201, is currently in phase I/II clinical trials for treatment of solid tumours. More recently, in FKBPL knockdown (FKBPL+/-) mice, a pro-angiogenic phenotype was observed, accompanied by vascular dysfunction and a propensity to become overweight and glucose intolerant when fed a high fat diet. We now investigate a specific role for FKBPL in myocardial angiogenesis associated with diabetes. In streptozotocin (STZ) mice, cardiac FKBPL mRNA levels were significantly downregulated at 12 weeks post STZ injection versus vehicle controls (p<0.05, n=5), in association with diastolic dysfunction (e.g. mitral valve E/A ratio). This was in concert with a reduction of FKBPL protein in hearts from STZ-induced vs. control diabetic rats (p<0.01, n=3), also at 12 weeks. Complementary *in vitro* studies in cultured endothelial cells (HUVEC) demonstrated two-fold reduction in FKBPL protein levels following exposure to hypoxia (1%) for 24 h (p<0.01, n=6), indicating that reduced FKBPL levels observed *in vivo* may be, at least in part, driven by impaired oxygenation. Indeed, in an experimental mouse model of myocardial infarction (MI), associated with severe cardiac ischaemia/hypoxia and increased angiogenesis, FKBPL mRNA (p<0.05) and protein levels (p<0.01) were downregulated versus sham controls (n≥3). In conclusion, FKBPL may be a key early regulator of cardiac angiogenesis in diabetes, and may thereby hold novel biomarker and therapeutic potential.

**OC 16. Adherence to physical activity recommendations and**

**barriers to physical activity among Irish adults with type 1 diabetes**

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Information on physical activity (PA) levels and its association with glycaemic control and cardiovascular disease risk is lacking among Irish adults with T1DM. We assessed PA levels in this population and evaluated the relationship between PA, glycated haemoglobin (HbA1c) and cardiovascular risk factors. We also identified the barriers to PA. Using an observational cross-sectional design, PA was measured objectively over 7 days in 72 patients (34 males) using accelerometry (ActiGraph). Anthropometrical, biochemical and clinical parameters were recorded. Subjectively-reported PA levels were captured using the International Physical Activity Questionnaire (IPAQ) and the Barriers to Physical Activity in Diabetes (Type 1) scale. Multiple linear regression models were applied to assess how PA influenced HbA1c and cardiovascular risk factors. Mean age (+SD) was 40.9 (±12.9) years, diabetes duration was 18 (±11.6) years and HbA1c was 8.0 (±1.3)%. Twenty-three (32%) participants exercised to PA recommendations as measured by accelerometry, compared to 69 (97%) participants reporting meeting the recommendations as per the IPAQ. Those meeting recommendations (accelerometry) had a lower HbA1c (p=0.001), BMI (p=0.032), waist circumference (p=0.006) and fat mass (p=0.032) and a greater number of hypoglycaemic events (p=0.004). Fear of hypoglycaemia was the strongest barrier to PA (3.4 ± 2.0). Other barriers included low fitness levels, weather and loss of control over diabetes. The majority of participants fail to meet PA recommendations; however those that do have healthier cardiovascular risk factor profiles. Participants overestimate their PA level. Several barriers to PA were identified. Patients with T1DM require support and education to safely improve activity levels.

**OC17. Serum and Urine Adiponectin, NGAL and MCP-1 in Diabetic Kidney Disease.**

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Introduction:New biomarkers are needed that predict both disease progression and favourable therapeutic response in Diabetic Kidney Disease(DKD). The aim of this study was to determine the levels of Adiponectin(Adip), Neutrophil Gelatinase-Associated Lipocalin(NGAL) and Monocyte Chemoattractant Protein-1(MCP-1) in serum(s) and urine(u) at different stages of DKD and to evaluate their correlations with traditional markers of renal disease (estimated glomerular filtration rate[eGFR], urine albumin creatinine ratio[uACR]). Methods: 126 patients with diabetes, in a cross-sectional study, were divided into groups based on stage of DKD. Serum and urine Adiponectin, NGAL and MCP-1 were measured using R&D ELISA. Urine biomarkers were adjusted for urine creatinine concentration. Results: uAdip, uNGAL, sNGAL and sMCP-1 distinguished subjects with different stages of DKD. eGFR showed a significant correlation with sAdip(r=-0.180, p =0.029), sMCP-1(r=-0.336, p<0.001), sNGAL(r=-0.491, p<0.001), uAdip(r=-0.306, p<0.001) and uMCP-1(r=0.165, p=0.042). Using the best subsets and stepwise regression techniques, the most useful regression model to predict current eGFR involved sNGAL, uAdip and uMCP-1(R-sq:34.9%).sAdip, uAdip, sNGAL, uNGAL and sMCP-1 distinguished subjects with different degrees of albuminuria. ACR showed a significant correlation with sAdip(r=0.168, p=0.044), uAdip(r=0.512, p<0.001), sNGAL(r=0.224, p=0.006), uNGAL(r=0.237, p=0.003), sMCP-1(r=0.233, p=0.004) and uMCP-1(r=0.559, p<0.001). Using the best subsets and stepwise regression techniques, the most useful regression model to predict current ACR involved uAdip and uMCP-1 (R-sq:28.5%).Conclusions:Our results identify sNGAL, uAdip and uMCP-1 as biomarkers that show a significant relationship to the severity of DKD. Longitudinal follow-up is necessary to determine if this combination of biomarkers relate to progression and other adverse outcomes in DKD.

**OC18. Human Mesenchymal Stem Cells Suppress Glucose-Induced Inflammatory Responses of Stable Renal Proximal Tubular Epithelial Cell Monolayers**

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Introduction:Renal proximal tubular epithelial-cells-(RPTEC) are dysfunctional in diabetic-kidney-disease (DKD). Mesenchymal-stem-cells (MSCs) may modulate DKD pathogenesis. We aimed to investigate the pro-inflammatory effects of prolonged exposure to high-glucose concentration on RPTECs and to determine whether MSC-derived factors modulate this response. Methods:Human RPTEC/TERT1 cells were cultured for 12 days to generate stable-confluent monolayers. Media containing “Normal”-(5mM) and “High”-(25mM) D-Glucose or D-Mannitol (25mM) were added for a further 5 days. Supernatants/cells were collected for ELISA (IL-6,-IL-8,-MCP-1,-NGAL) and flow-cytometry (cell-death by Annexin-V/PI staining). 10X-concentrated “full” and “extracellular-vesicle (EV)-depleted” conditioned-media (CM) from human bone marrow-derived MSCs were added for the final 2-days at 20:80v/v. Additionally, MSCs were co-cultured 1:10 with RPTEC for 2-days in a trans-well system. Results were statistically analysed with Graphpad-Prism-6.0®. Results:Five-day exposure to high-glucose caused significant increases in RPTEC/TERT1 secretion of IL-6,-IL-8,-MCP-1-and-NGAL compared to normal-glucose and mannitol without increasing cell-death. The increases in cytokine secretion were only evident after 80-hours (IL-6, MCP-1, NGAL) or 96-hours (IL-8) of culture. Addition of either full- or EV-depleted-CM was associated with significantly reduced high glucose-induced RPTEC/TERT1 secretion of IL-6,-IL-8 and MCP-1 (40%-125%), but not NGAL. Indirect contact of MSCs with RPTEC/TERT1 cells in trans-well cultures resulted in even more potent reduction in the secretion of IL-8,-IL-6-and-MCP-1 (90%-250%). Conclusion: Prolonged high-glucose exposure induced secretion of pro-inflammatory mediators by RPTEC stable monolayers. Soluble factors released by MSC suppressed high-glucose-induced RPTEC secretion of inflammatory cytokines. EV depletion did not prevent this suppressive effect. Indirect contact of MSCs with RPTEC/TERT1 cells resulted in more potent anti-inflammatory effects.

**OC19. Twice daily oral administration of boarfish (*Capros aper*) protein hydrolysate improves lipid parameters and glycaemic control in obese diabetic *ob/ob* mice**

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This study examined the antidiabetic actions of orally administered boarfish protein hydrolysates in leptin-deficient obese diabetic *ob/ob* mice. Protein hydrolysates were generated from boarfish *(Capros aper)* using combined food-grade alcalase 2.4L/flavourzyme 500L digestion. Treatment groups (n=8) consisted of boarfish (50 mg/kg/bw), metformin (200 mg/kg/bw) and saline controls. Treatments were administered by oral gavage twice daily for 30 days to male obese diabetic *ob/ob* mice (aged 8-12 weeks). Diabetic status was monitored every three days, including non-fasting blood glucose, plasma insulin and bodyweight during the study, with terminal analysis of HbA1c, LDL, HDL, total cholesterol and triglyceride concentrations. Diabetic mice exposed to chronic oral treatment with boarfishproteinhydrolysate for 30 days displayed significantly lower circulating non-fasting blood glucose concentrations from day 18 to 27 (p<0.01 to p<0.001) versus the saline-treated control group. Circulating blood glucose concentrations were lowered on average by 48% (p<0.01) within the boarfish treatment group compared to saline controls. Terminal analysis of HbA1c displayed a 27% reduction (p<0.01) within the boarfish group versus saline-treated controls. Terminal plasma lipid analysis displayed a 20% reduction in total cholesterol, 28% reduction in triglycerides and 40% reduction in low-density lipoprotein (LDL), compared to saline-treated controls. Boarfish hydrolysate actions matched or exceeded the antidiabetic efficacy of the metformin group. This intervention with boarfish protein hydrolysate had potent antidiabetic actions, improving glycaemic control and plasma lipid profiles in diabetic *ob/ob* mice. In conclusion, protein hydrolysates could provide a novel dietary approach in the management of dyslipidaemia and hyperglycaemia found in type 2 diabetes.

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**Poster Presentations**

**P1 Antenatal Gestational Diabetes Mellitus care - an audit on follow up visits & antenatal attendance**

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Introduction:Currently there is no published data nationally on the rate of lost appointments for Gestational Diabetes Mellitus (GDM) care during the antenatal period. Objective:To determine the rate of did not attend appointments (DNAs) for patients with GDM during their antenatal period and the differences in attendance between GDM and obstetric follow-up visits and their associated factors. Methods: A retrospective examination to all the newly diagnosed patients with GDM during 2016 was conducted.

Results: 31.6% of GDM patients didn’t attend for at least 1 visit during their antenatal period compared to 12% of obstetric visits (*p*-value <0.0001). They attended 3 visits in average during their pregnancy. There was a significant difference between the age of regular attendants and non-attendants (mean age 35 Vs 30 respectively). Most Irish patients (72.8%) attended their appointments regularly compared to only 52% of non-Irish nationals. Age & nationality appeared to influence the DNA rate.

**Table.1** Overall study findings

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| --- | --- |
| **Characteristics** | **Frequency** |
| Total no. | 117 |
| Non-Irish | 25 (21%) |
| Mean age (SD) | 33.9 (5.77) |
| Antenatal GDM DNAs | 61 visits |
| Antenatal Obstetric DNAs | 31 visits |

**P2 A Novel Mutation in Overgrowth Syndrome and Congenital Hyperinsulinism**

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Congenital hyperinsulinism, the inappropriate and unregulated secretion of insulin from the pancreatic beta cells resulting in recurrent, profound hypoglycaemia, is the most frequent cause of persistent hypoglycaemia in newborns and infants. It represents a heterogeneous group of diseases of pancreatic insulin regulation that differ with regards to molecular aetiology, histopathology, responsiveness to treatment with Diazoxide and requirement for surgery. The estimated incidence in Ireland is 1:27,000. The index case is a 26 year-old male. He was macrosomic at birth, dysmorphic, greater than the 99th centile for height throughout his life with large hands and feet, overweight, and had bilateral ptosis. He developed “vacant episodes” at age 5 and at the age 10 was admitted to hospital unconscious with plasma glucose of 0.8 mmol/l. Biochemistry was consistent with hyperinsulinaemic hypoglycaemia and he was also diagnosed with overgrowth syndrome and developmental delay. Initial genetic testing in 2005 (age 14) which included genes associated with Beckwith-Wiedemann, Soto’s and Simpson-Globadi-Behmel syndromes, was negative. He was enrolled in the Child Overgrowth Study, Cancer Research Centre, UK, and in 2017, a pathogenic mutation was detected in EED c.581A>G\_P.Asn194Ser. This mutation has been demonstrated in Weaver’s syndrome and certain haematologic malignancies, but not in hyperinsulinaemic syndromes. In summary, we report a pathogenic mutation underlying for the first time a case of overgrowth and congenital hyperinsulinism. Understanding the genetic basis of these rare disorders helps understand their pathophysiology, and this case highlights that enrolling patients in multicentre surveillance studies can elucidate previously unrecognised abnormalities.

**P3 Performance Of Thyroid Fine Needle Aspiration In St.James Hospital**

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Fine needle aspiration cytology (FNAC) of the thyroid is a cost effective procedure that is valuable for distinguishing benign nodules from neoplastic. The aim of our study was to determine the diagnostic accuracy of thyroid FNAC performed in St.James hospital by correlating cytological diagnosis to the histological outcomes of all thyroid nodule FNAs performed between January2008 and December 2012. We retrospectively retrieved reports from the pathology laboratory information system. The cytological results were correlated with histological examinations for those who proceeded to surgery. Results as follows:912 thyroid FNAs were performed on 747 patients of those, (81.9%) were primary FNAs and 165 (18%) were repeat samples. The cytological diagnosis for all FNAs performed was as follows: **Thy1**) in 184 (25%) cases, **Thy2** in 423 (57%) cases, **Thy3** in 85 (11%) cases, Thy4 in 17 (2%), **Thy5** in 38 (5%) cases.

**Repeat FNA in Thy1 (82 samples)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Thy1 | Thy2 | Thy3 | Thy4 | Thy5 |
| 29 (34.5%) | 43 (52.4 %) | 6 (7.3%) | 3 (3.6%) | 1 (1.2%) |

Histology from those patients originally designated Thy1 who proceeded to surgery resulted in malignancy in 7 (3.8%).US guided FNA has become the standard of care. Thy 1 rate is high but improved within the last year of the audit period. Failure to repeat Thy1 samples may result in a missed opportunity to detect thyroid cancer.

**P4 Enhanced efflux function of HDL particles in type 1 diabetes**

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Cardiovascular disease(CVD) is increased in type 1 diabetes(T1DM) despite normal-to-high levels of HDL-cholesterol. HDL particles mediate cholesterol efflux from peripheral cells and deliver acquired lipid to the liver for excretion. Cellular efflux to small HDL particles is mediated via ABCA1(‘ABCA1-dependent efflux), while larger particles accept cholesterol via ABCG1 and SR-BI(‘ABCA1-independent efflux’). Measurement of HDL efflux is a better predictor of CVD than HDL-C alone. Previous data has suggested that HDL function might be impaired in T1DM. We compared ABCA1-dependent and ABCA1-independent efflux function of HDL particles in T1DM (n=80(34 males); 38±10(mean±SD)years, BMI 26±4kg/m2) and matched nondiabetic subjects (n=80(34 males); 38±12 years, BMI 26±4kg/m2).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Total | ABCA1-dependent | ABCA1-Independent |
| T1DM | 14.57±2.56# | 6.39±2.73# | 8.19±1.63# |
| Non-diabetic | 10.71±3.00 | 4.21±2.11 | 6.51±1.48 |

# P<0.0001 vs non-diabetic

Total, ABCA1-dependent and ABCA1-independent efflux were increased in T1DM. Unexpectedly these findings provide evidence that HDL efflux function is enhanced in T1DM patients. Further studies are needed to understand the mechanisms through which this occurs and how this knowledge can inform interpretation of CVD risk in T1DM.

**P5 Successful transition from insulin to sulfonylurea for a 26 year old female with neonatal diabetes secondary to KCNJ11 gene mutation**

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Neonatal diabetes (NDM) is defined as diabetes that occurs in the first 6 months of life. Sporadic mutation is the main etiology of this type. ATP-sensitive potassium channels located in the beta cells of pancreas play a major role in insulin secretion and blood glucose hemostasis. Mutations that alter the function of these channels may lead to neonatal diabetes. We herein report a case of a 26 year old Irish female who was diagnosed with neonatal diabetes at the age of one month old and was labeled as type 1 diabetes mellitus, in which she was started on multiple daily injection of insulin with suboptimal control and frequent episodes of hypoglycemia. She has a positive family history of diabetes. Anti-GAD antibody and Islets cell antibody were both negative. However, at the age of 16 years, she underwent genetic testing and was diagnosed with KCNJ11 gene mutation. The gene is encoded for Kir6.2, which is a major subunit of ATP-sensitive potassium channels that lead to channels malfunction and development of diabetes. She was transferred to glibenclamide at the age of 16 but the trail was failed and restarted on insulin. Prior to the second trail of transition her HbA1C was 63 mmol/mol and her total daily dose of insulin was 50 units. At 23 years of age she was successfully shifted from insulin to high dose sulfonylurea (glibenclamide 15mg twice daily) with optimal control of blood glucose (HbA1C 44 mmol/mol), lower rates of hypoglycemic episodes and better quality of life.

**P6 Pomalidomide induce hypothyroidism in a multiple myeloma patient**

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Hypothyroidism has been previously reported as a side effect of thalidomide drugs. Pomalidomide is a derivative of thalidomide was approved in February 2013 by the U.S. Food and Drug Administration (FDA) as a treatment for relapsed and refractory multiple myeloma. We herein report a case of 83 year old Irish female with known case of type 2 diabetes and hypertension, diagnosed with IgG kappa multiple myeloma. Our patient received pomalidomide multiple courses of chemotherapy and achieved very good initial response for her multiple myeloma but subsequently she relapsed. The patient did not have any past history of thyroid disease or family history of thyroid disorders. Priory treatment with pomalidomide the patient thyroid function test was completely normal. Pomalidomide treatment was started on February 2017, four weeks after the patient presented with worsening fatigue and as a part of workup, thyroid function test were done which showed profound hypothyroidism. The patient Free T4 was low at 7.2 pmol/l (reference range: 9.0-20.0) and a TSH of 44.7 mIU/L (reference range: 0.35-4.94). Her Pomalidomide treatment was terminated and she was started on thyroid hormonal therapy replacement therapy with thyroxine and she had good clinical and biochemical response. Reviewing the literature we found only one case report of pomalidomide induce hypothyroidism. Thus, like with other thalidomides, practitioners prescribing pomalidomide should be aware of this complication and screen for it. Patients who are receiving immunomodulatory drugs like thalidomide should undergo estimation of thyroid hormone levels periodically as patients may develop both hypo and hyperthyroid state.

**P7 Unilateral Adrenal infarction in Pregnancy Secondary to Elevated Factor VIII**

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Adrenal infarction in pregnancy is an extremely rare event. We report a case of a 29 year old pregnant woman at the 24th week of gestation who presented with an acute episode of severe localized right upper quadrant pain. Her preliminary blood investigations and abdominal ultrasonography were essentially unremarkable. A diagnosis of right adrenal infarction was subsequently established on the basis of a non-enhanced swollen right adrenal gland on CT scanning of the abdomen with contrast, consistent with the clinical presentation. She was treated with subcutaneous low molecular weight heparin (LMWH) until 2 weeks post-partum. A thrombophilia screen post-partum revealed a significantly elevated factor VIII level, a hypercoagulable state which justified prolonged anticoagulation. This case highlights the importance of high index of suspicion for adrenal infarction in pregnancy on the clinical ground of otherwise unexplained acute abdominal pain accompanied by suggestive radiological findings, especially in the presence of thrombophilia.

**P8 Phaeochromocytoma – an unusual cause of acute hyperglycaemia presenting to the Emergency Department – a case report**

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Hyperglycaemia is a well-recognized complication of phaeochromocytoma and is commonly found when evaluating these rare tumours. A review of the literature suggests that acute symptomatic hyperglycaemia is a rare de novo presentation of phaeochromocytoma. A 46 year old woman presented from her workplace - she felt severely unwell with acute polyuria, polydipsia, profound diaphoresis and nausea of 6 hours duration. She complained of left loin pain. Family history was strongly positive for T1DM. In ED she had mild hypertension, 151/66. She was hyperglycaemic with blood glucose 23.8mmol/L, pH 7.28 and raised lactate 5.2, urine ketones negative. She was commenced on iv actrapid infusion with iv fluids. Insulin requirements were noted to be very low over the subsequent 24 hours and HbA1c was reported normal at 30mmol/mol, suggesting an acute hyperglycaemia and raising the possibility of secondary diabetes. 24 hour urine collection showed elevated uAdrenaline 880nmol/24hrs(0-120), uNA 1529nmol/24hrs(90-500), uNormet 4244nmol/24hrs(300-2200) and uMetadren 5191nmol/24hrs(200-1500). CT abdomen revealed a left adrenal mass and MRI was suspicious for phaeochromocytoma. MIBGI123 showed increased uptake in adrenal bed. She was started on alpha blockade prior to her definitive surgical management which proceeded uneventfully. This case exemplifies the need to maintain a wide differential and to look for the uncommon cause of a common presentation, namely hyperglycaemia. This is particularly important when there are atypical signs, symptoms, response to therapy or laboratory findings as was the case in this lady.

**P9 Hypophysitis secondary to the checkpoint inhibitor Pembrolizumab – a rare condition, a new cause - a case report**

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Immune Related Adverse Events (iRAEs) of the endocrine system are commonly recognised in Ipilimumab treatment (an anti-CTLA-4 antibody). Their frequency with programmed cell death (PD-1) receptor agents remains incompletely characterised. We present a case of Pembrolizumab-induced hypophysitis in a 47 yo. male with melanoma (M). Initial diagnosis of M in 2007, lymph node recurrence 2013. He then entered adjuvant clinical trial of Vemurafenib versus placebo (patient unblined to placebo arm). In 2015 he presented with oligometastatic M1a disease and received 4 courses of Ipilimumab. This was complicated by a sarcoidosis-type reaction and erythema nodosum. Due to progression of M he proceeded to Pembrolizumab therapy. TSH fell from 0.988 to 0.1mIU/ml with fT4 13.43pmol/L pre vs 15.33pmol/L post 3 cycles. MRI pituitary was normal. He was asymptomatic with normal synacthen test (post stimulation cortisol 570nmol/L) and normal GCT for cortisol + Growth hormone. Thyroid USS and uptake scan were normal, TPO and TRAb negative. TSH recovered over 5 days reaching 2.92mIU/ml. Diagnosis: Grade 2 hypophysitis. 10 days later he re-presented with severe headache and TSH was 0.045. He received pulse iv steroids then po steroids as per protocol for Grade 3 hypophysitis. While he developed deficiencies in thyroid and sex hormones requiring temporary supplementation he ultimately had a full recovery in regard to his pituitary function. While hypothyroidism is noted commonly in patients receiving Pembrolizumab, hypophysitis is rare. The recognition and management of hypopituitarism particularly potential adrenal insufficiency is increasingly important for endocrine management of oncology patients.

**P10 A novel *IGSF1* mutation in a large Irish kindred highlights the need for systematic familial endocrine screening in the IGSF1 deficiency syndrome**

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Loss-of-function mutations in *IGSF1* result in X-linked congenital central

hypothyroidism (CeCH), occurring in isolation or in association with additional

pituitary hormone deficits. Intrafamilial penetrance is highly variable and a minority ofheterozygous females are also affected. We identified and characterized a novel *IGSF1* mutation and investigated its associated phenotypes in a large Irish kindred. A novel, hemizygous *IGSF1* mutation was identified by direct sequencing in two brothers with CeCH and its functional consequences were characterized *in vitro*. Genotype-phenotype correlations were investigated in the wider kindred. The mutant IGSF1 protein (c.2318T>C, p.L773P) exhibited decreased plasma membrane expression *in vitro* due to impaired trafficking from the endoplasmic reticulum. Ten hemizygous males and 11 heterozygous females exhibited characteristic endocrine deficits. Ireland operates a TSH-based CH screening programme, which does not detect CeCH; therefore genetic ascertainment preceded biochemical diagnosis of moderate CH in four of seven boys, and their 75 year-old grandfather. Tissue manifestations of hypothyroidism were variable; normal free T3 (FT3) levels and low/low normal reverse T3 (rT3) measurements suggested that preferential deiodination of FT4 to FT3 may help maintain tissue euthyroidism in some individuals. However, jaundice, impaired growth, speech delay and obesity were associated with delayed diagnosis of endocrinopathy in four childhood cases. As observed with other loss-of-function IGSF1 mutations, L773P results in variably penetrant IGSF1 deficiency syndrome. Our observations emphasise the need for multi-generation genetic ascertainment in affected families, especially where TSHbased CH screening programmes may fail to detect CeCH at birth.

**P11 Post natal screening in patients with gestational DM**

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Background: Approximately 70,000 women give birth in Ireland each year with up to 5% of these women having either pre-existing diabetes or gestational diabetes .GDM is associated with a higher risk of important adverse outcomes. It is well recognized that early diagnosis of diabetes aids in timely intervention to reduce long term complications. Aim: To assess post natal screening in patients with diagnosed gestational diabetes as per HSE guidelines. Methodology: 50 patients were identified with GDM between 1st February 2016 & 31st July 2016 based on records provided by diabetic clinic. We checked results of these patients for OGT performed at 6 weeks post-delivery via lab results in hospital records. Results: Out of 50 patients with GDM only 10(20%) were screened as per HSE Guidelines. While 6 others were screened with either fasting glucose or HbA1c.there is no screening information about 34 (70%) patients. Recommendations: Diabetes team will hand over blood test request forms to patients in the clinic & encourage them to be tested at 6week post-delivery. Enhance awareness in primary care by arranging audit presentations by diabetes specialist nurses at GP practices. Booking of patients for OGTT in diabetic opd after 6 weeks is another option.

**P12 Adrenal venous sampling (AVS) as a diagnostic procedure for primary hyperaldosteronism: experience from a tertiary referral centre**

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AVS distinguishes unilateral from bilateral adrenal disease in primary hyperaldosteronism (PA). The AVS procedure is invasive and should only be performed by a skilled operator in candidates for surgical cure. This audit was conducted to review the technical success rate and outcome of AVS in a tertiary referral centre. A retrospective study of AVS procedures conducted between 2009 and 2016 in St Vincent’s University Hospital was performed. Confirmation of catheterisation was defined as a cortisol ratio between the adrenal vein and IVC of >2 or >3 with ACTH stimulation. Lateralisation index (higher aldosterone:cortisol/lower aldosterone:cortisol) of >2, (>4 stimulated) was indicative of unilateral disease. Twenty three AVS procedures were conducted by 4 interventional radiologists. Information was available for 18 individuals (60% male, mean age 57±12 years) with PA.

Histology confirmed adrenal adenoma in 9 patients who underwent surgery. After surgical intervention all were normotensive off medication post-operatively; 2 later recommenced lower antihypertensive regimens. Concordance of AVS with imaging in the surgical group was 100%. Half the cohort was not referred for surgery. In 3 cases, neither AVS nor imaging revealed unilateral adrenal disease. In 6 cases co-morbidities prevented surgical intervention. An MDT approach would have identified these patients prior to undergoing an unnecessary invasive procedure; this is now in place. Nine patients had either cure or reduced pharmacological treatment for hypertension as a direct result of adrenalectomy.

**P13 The Performance & Technical Usability of a Flash Glucometer Monitoring System.**

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The novel flash glucose monitoring system (FGMS);Free Style Libre was launched with much interest recently. This study was conducted to evaluate the usability and clinical performance of the FGMS. A prospective multicentre study was conducted across 4 sites under the St Vincent’s University Hospital Campus. Diabetes nurse specialists completed a proforma at initiation and review of individuals with T1DM using FGMS over a minimum of a 3 month period. Statistical analysis was conducted using paired student t-tests. 58 individuals (46% male) were studied.17.2% were CSII users.34.4% were DAFNE educated. The mean age was 46±16 yrs. The average time spent on instruction was 30 minutes although a proportion of individuals were self-taught. The practical issues with FGMS usage could be categorized as;“detachment”(28%), “technical”(3.3%) and“skin irritation”(6.7%).The number who checked corresponding capillary blood glucose(CBG) was 41.3%. If FGMS detected hypoglycaemia, 58% checked a CBG. If hyperglycemic, 50 % checked a CBG. If driving, 40.6 % would perform a CBG. Paired HbA1c data available at initiation and at 3 months post FGMS usage demonstrated a significant improvement (65±15 mmol/mol vs. 59±12 mmol/mol,p=0.02). A principal citing indication for FGMS was convenience. The manufacturers market FGMS as an attractive alternative to CBG. It is stated, however that a CBG be performed if glucose levels are changing rapidly and pre-driving. Over 50% of our FGMS users do not comply with these recommendations. We would propose that enhanced education on the limitations of FGMS are necessary to ensure safe usage. When used appropriately FGMS can support enhanced diabetes management.

**P14 Gastrointestinal stromal tumour and phaeochromocytoma; a rare combination with a potential unifying diagnosis.**

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A 58 year old male presented with painless bleeding per rectum. As a child he had corrective surgery for strabismus and an orbital developmental anomaly. In his family history,5 of 6 siblings were treated for hypertension. This gentleman also had hypertension for which he was treated with angiotension receptor blockade. Following a number of investigations for occult bleeding a CT angiogram demonstrated a 6.9 cm distal ileal mass with an appearance consistent with a gastrointestinal stromal tumour. A 2.6 cm left adrenal mass was also detected with a non-contrast attenuation value of 28 HU , not consistent with an adrenal adenoma. Subsequent hormonal evaluation demonstrated an increase in urinary metanephrines on repeated sampling (965 nmol/24hr.) (44-213) resulting in a diagnosis of a phaeochromocytoma.

An MDT decision was made for pre-operative use of phenoxybenzamine and removal of both the GIST and phaeochromocytoma simultaneously This will require a coordinated effort from both the surgical service, endocrine and anaesthetics given the inherent peri-operative complications that can arise with a pheochromocytoma. GIST account for up 3% of GI tumours and of these, less than 20% arise in the small intestine. The association of an ileal GIST with a phaeochromocytoma may suggest a unifying diagnosis such as neurofibromatosis , as NF-1 is one of the hereditary syndromes associated with both small intestine GIST and phaeochromocytoma. Genetic testing post-operatively for the neurofibrin gene will support this diagnosis. If this proves to be NF1 it will be one of just 12 cases reported world-wide in the literature.

**P15 Diabetic Eye Screening in Young Adults with Type 1 Diabetes in Northern Ireland**

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Transitioning from paediatric to adult diabetes clinics is challenging for the young person and the healthcare team. Yearly diabetic eye screening is mandatory in the UK for everyone aged 12yr and over, but little is known of attendance rates and the severity of retinopathy in young adults with Type 1 Diabetes (T1DM) in Northern Ireland. Details of 258 patients with T1DM attending the Transition or Young Adult clinic at the Royal Victoria Hospital, Belfast (aged 16-25 yr) were merged with the NI Diabetic Eye Screening database (DESPNI); attendance and severity of eye disease were recorded.

20 were not known to DESPNI despite disease duration of 2-12 years. 60 had not attended any screening visit despite receiving multiple invitation letters. 76 had attended once but failed to attend follow up appointments. 102 had up to date screening with no retinopathy in 89, retinopathy requiring hospital referral in 11 (including 2 proliferative and 4 maculopathy) and ungradable images in 2 patients. Overall attendance rate was 39.5%.

The high non-attendance rates for diabetic eye screening in young adults is of major concern and clearly shows that finding time to attend for diabetes clinic and eye-screening appointments is not possible for most. To address this, we are looking at new strategies including, in the first instance, making screening an integral part of Transition clinics facilitating both appointments at the same visit. We also plan to review the characteristics of those attending versus not attending to facilitate appropriate clinical support for young people with T1DM.

**P16 GCK-MODY frequently misdiagnosed and inappropriately treated.**

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Aims: Heterozygous inactivating mutations in GCK result in mild, persistent asymptomatic hyperglycaemia due to a glucose sensing defect. It is reported that GCK-MODY is not associated with significant micro- or macrovascular diabetic complications and that pharmacological therapy does not alter glycaemia. We aimed to establish the percentage of GCK-MODY patients on pharmacological therapy and its impact on their glycaemic control.

Methods: 32 patients with GCK mutations were identified from the Mater-MODY cohort. Glycaemic tolerance was established using an OGTT with measurement of glucose at -15,0,30,60,90,120 mins. Treatment details were recorded. Diabetic complications were identified. Following genetic diagnosis of GCK-MODY pharmacological therapy was discontinued in 6 of 12 patients and HBA1c before and after therapy was compared. Results: 13 had NIDDM, 1 had IDDM, 3 had IGT, 10 had IFG and 5 had both IFG and IGT. 20/32 were receiving pharmacological therapy, diet only n=12, Metformin n=12, DPP-IV inhibitors n=4, SU n=2, insulin n=2. Mean HBA1c at presentation in all patients was 45.5+4.3 mmol/mol. 6/12 GCK-MODY patients discontinued metformin and had no deterioration in glycaemic control HBA1c 45.6+1.7 vs 44.5+1.7 mmol/mol, p=0.13. 12/23 screened had BDR, 3/23 had diabetic maculopathy, 1/29 had nephropathy MACR>2.5%. 5/32 had coronary artery disease. Conclusions: Prior to genetic diagnosis of GCK-MODY, patients were frequently misdiagnosed, with 63% of patients on pharmacological therapy. Discontinuation of metformin resulted in no deterioration of glycaemic control indicating that metformin therapy had no impact on the glucose sensing defect. 52 % of those screened had background diabetic retinopathy not requiring treatment.

**P17 Acute Management of Hypercalcaemia in Williams-Beuren Syndrome: Case Series**

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Introduction: Hypercalcaemia in Williams-Beuren syndrome (WBS) is usually mild and transient, but may be severe in about 5% of patients. Some of these patients will not respond well to traditional therapies. Aims/Methods: We describe 3 cases of WBS that presented acutely with symptomatic hypercalcaemia. Results**:** Case 1: 16 month old girl known WBS, presented with irritability, reduced feeding. Serum calcium was 4.51 mmol/L. She was managed acutely with intravenous fluids and frusemide. Serial blood chemistry showed a downward trend of the serum total and ionised calcium. Oral prednisolone was started at 1mg/kg/day, and gradually tapered over 4 months. Case 2: 9 month old girl admitted for investigation of failure to thrive. Serum calcium was 3.78. Acute management was with intravenous fluids and furosemide. 1mg/kg/day oral prednisolone initiated and tapered over 2 months. She presented twice in the following 10 months with symptomatic hypercalcaemia. She received 1 dose of intravenous pamidronate during one presentation. Case 3: 13 month old girl presented with failure to thrive, with serum calcium of 3.99. She received the traditional therapy initially. Intravenous pamidronate was given due to recalcitrant hypercalcaemia. Furosemide and prednisolone were discontinued following sustained normocalcaemia. Cases 2 and 3 were diagnosed WBS following their presentations. All cases demonstrated bilateral medullary nephrocalcinosis on renal ultrasound scan. Conclusion: Treatment of hypercalcaemia in WBS is achieved traditionally with IV fluids, loop diuretics, steroids, and a low calcium diet. Bisphosphonate therapy is required if hypercalcaemia persists despite traditional therapy.

**P18 *SDHA* related tumourigenesis: Do we need to test for *SDHA* gene mutations in clinical practice?**

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Mutations in the *SDHx* genes (*SDHA*/*SDHB*/*SDHC*/*SDHD*) have been implicated in the development of a wide spectrum of tumours including phaeochromocytoma and parganglioma (PPGL), gastrointestinal stromal tumours (GIST), renal cell carcinoma and pituitary tumours. Relatively little is known about the phenotype associated with *SDHA* mutations compared to the other *SDHx* genes and as the most common variant type is missense, careful variant interpretation is essential. Study aims included; evaluation of a novel series of UK patients and interrogation of the molecular consequences of novel *SDHA* missense variants identified in this cohort and in the literature. In silico structural prediction analysis of missense substitutions in *SDHA* was performed using a mCSM computational platform and correlated with results of tumour studies including *in vitro* metabolomics and immunohistochemistry.We identified 10 different *SDHA* variants (seven novel variants) in 18 cases in our UK cohort. The most common *SDHA* mutation in our series and the literature was a nonsense mutation (c.91C>T p.Arg31\*). Associated phenotype included 6 patients with GIST, 12 patients with PPGL, mean age was 37.1 years. Metastatic disease was identified in 33% (6/18) (2 with PPGL, 4 with GIST) and multifocal PPGL tumours were noted in 2 (11%) patients. Functional assessment using structural prediction analysis and tumour studies enabled us to classify 13/18 (72.2%) identified missense variants as a pathogenic/ likely pathogenic mutation. We have demonstrated that *SDHA* mutations can predispose to metastatic and multifocal tumours and have identified various methods of evaluating *SDHA* variants, which will aid interpretation of genetic testing results.

**P19 Novel use of intermittent subcutaneous insulin infusion therapy to meet the requirements of PEG feeding in a patient with Cystic Fibrosis**

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A 20 year old patient with cystic fibrosis (BMI 20kg/m2) on the lung transplant waiting list with insulin requiring diabetes had challenging hyperglycaemia associated with overnight PEG feed. Different insulin combinations were tried without significant improvement. Forty five units of Humulin M3 were required to cover the PEG feed (1500kcal including 183g of carbohydrate over 8 hours at night); capillary glucose rose from 5-7mmol pre-feed to 15-22mmol post-feed. Her insulin to carbohydrate ratio was 1 unit: 20g. The patient and multidisciplinary team agreed to trial insulin pump therapy. Food/glucose diary indicated that she did not require basal insulin; glucose readings overnight (without feed) were 6.1 at 2100, 5.3mmol/l at 0300 and 4.7mmol/l at 0600. Daytime glucose levels were 6.0mmol/l at 0800 and 7mmol/l at 1200 when fasting. The patient wore the pump continuously but used one temporary basal rate for feeds, no basal insulin during the rest of the day and used the bolus function for CHO-containing food. Insulin aspart infusion at feed time was reduced by 30% from pre-pump dose, from 30 minutes before the feed until 30 minutes before feed end. Bolus prescription was unchanged. Her glycaemic control is now on target with a total insulin dose reduction of 36%. This was a novel use of insulin infusion therapy in a patient for whom good glycaemic control would optimise lung function and suitability for transplant. Her case was unusual in that she demonstrated marked insulin resistance with enteral feeding and yet is sensitive to insulin at mealtimes.

**P20 Thyroid nodules: sonographic classification and fine needle aspiration cytology (FNAC) outcomes**

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Introduction**:** The British Thyroid Association (BTA) and American Thyroid Association (ATA) recently updated sonographic classification guidelines to risk-stratify thyroid nodules. We sought to correlate Thy cytological outcome with these guidelines, as well as the older American Association of Clinical Endocrinologists (AACE) guidelines and Kim criteria. Methods**:** 190 FNAC were consecutively reviewed in multidisciplinary meetings at our centre from June 2012 to September 2016. The aspirated nodules were retrospectively reviewed sonographically according to these four guidelines by 2 endocrinology fellows under the supervision of a radiology consultant with an interest in head and neck imaging. The fellows were blinded to the FNAC results. Results**:** Using BTA guideline: 66 nodules classified as U2, the majority were Thy2 (84.8%), some were Thy3 (3.0%) and the rest were Thy1 (12.1%). Using ATA guideline, 65 nodules were classified as “very low suspicion”. The majority were Thy2 (87.7%), some were Thy3 (4.6%) and Thy1 (7.7%). The U3 (BTA) and “low suspicion” (ATA) nodules were less discriminant between Thy2 and Thy3 (although the majority in this categories were still Thy2). None of the nodules classified as U2/”very low suspicion” or U3/”low suspicion” were found to be Thy4 or Thy5. The majority of nodules did not satisfy Kim criteria and AACE criteria. Conclusion:Both U2 (BTA) and “very low suspicion” (ATA) sonographic categories were predictive of Thy2 which may justify a more conservative approach in workup. However, U3/“low suspicion” nodules were much less discriminant between Thy2 and Thy3, which suggests that FNAC is necessary in these nodules.

**P21 When should you stop long-acting insulin therapy in a patient with type 1 diabetes?**

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Type 1 diabetes (T1DM) has a prevalence of 0.42-1.17% and is associated with microvascular disease which can be mitigated with optimal glycaemic control. To achieve this, most people with T1DM are treated with multiple daily injections of insulin (MDI). During pregnancy, insulin sensitivity decreases during the first trimester which can lead to hypoglycaemic episodes. Normoglycaemia during pregnancy reduces the risk of pregnancy, fetal and neonatal complications. At the age of 14 years the index case was diagnosed with diabetes. Her father was known to have diabetes. The patient was counselled on the nature of T1DM and commenced on MDI.

During pregnancy, at the age of 16 years, she experienced frequent hypoglycaemia leading to cessation of long-acting insulin therapy without the development of ketosis or morning hyperglycaemia. Questioning revealed that her father has four first degree relatives with diabetes. Titres of antibodies to insulin, islet cell and glutamic acid decarboxylase were not elevated. Fasting blood insulin, c-peptide and glucose levels were within the normal range during pregnancy. It is more likely to be MODY, hypoadrenalism or return of pancreatic function. This case represents an interesting diagnostic challenge as this patient likely has monogenic diabetes which may no longer require insulin therapy after pregnancy. This has implications for her baby, her father and other close relatives.

**P22 Audit of diabetes inpatient care. Are we sweet enough?**

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The (UK) National Diabetes Inpatient Audit (NaDIA) audits diabetes inpatient care in England and Wales and has taken place every year since 2009. Its aim is to drive improvements in the care of inpatients with diabetes.

We identified all inpatients with diabetes in Our Lady of Lourdes Hospital on 10/12/2016. A NaDIA audit form was completed for each patient and all of the identified patients were asked to complete a patient experience questionnaire. It was not possible to assess for statistical differences between the data that we obtained and those obtained from NaDIA. Data were obtained from 44 inpatients. The median age was 74 years and 50% were female. The prevalence of inpatients with diabetes was 21.3% - 95% had T2DM. 90% of the cohort were admitted via the emergency department. Diabetes was the reason for admission in 11.3% of the cohort. Of the cohort, 36.3% experienced a hypoglycaemic episode while in hospital - 43% of these were managed appropriately. Evidence of a foot examination during the hospital admission was present in 38.6% of the cohort. Of those who required surgery, 75% had no peri-operative diabetes management plan. A medication error occurred in 50% of the cohort. Input from the diabetes specialist team should have been obtained in 61.5% of the cohort using the “Think Glucose” criteria – only 51.% of these received such input. Our audit highlights areas for improvement and a number of interventions are in the process of being implemented. We plan to re-audit in the near future.

**P23** I**dentifying gaps in the management of modifiable cardiovascular risk factors in patients with Type 2 diabetes attending the outpatients department**

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A multifactorial therapeutic approach targeting hypertension and dyslipidemia aswell as glycemic control reduces the risk of cardiovascular disease in patients with Type 2 diabetes (T2DM). Recent American Diabetes Association (ADA) guidelines focus on cardiovascuar risk rather than LDL measurement when recommending statin therapy. We reviewed blood pressure, lipid and glycaemic control in a cohort of patients with T2DM, aswell as rates of aspirin, high-intenstiy statin and ACE inhibitors/angiotensin receptor blockers (ACEI/ARB) prescription in patients with high cardiovascular risk. Sixty-nine consecutive patients with T2DM attending the diabetes clinic were included. Median age was 59 years (max 86, min 26), duration of diabetes 11 years (max 47, min 0.25), HbA1C 57 mmol/L (max 123, min 33), LDL 2.2 mmol/L (max 5.7, min 0.6) and BP 131/80mmHg. 84% were precribed statins – 69% moderate intensity, 31% high intensity. 57% patients were prescribed ACEI/ARBs, 54% of these maximum dose. 62% of patients were prescribed aspirin. 15% of patients over the age of 50 years had at least one additional cardiovascular risk factor but were not prescribed aspirin, while 30% of patients prescribed moderate intensity statins had co-existing hypertension and were between the ages of 40 and 75, thus fitting the criteria for high-intensity statin therapy. While aspirin, anti-hypertensive agents and statins were introduced or dose adjusted at the clinic visit in ­­­four, eight and sixteen patients respectively, a focus on titrating ACEI/ARBs and statins to maximum tolerated dose and to high intensity dose respectively would help bring current practice in line with current ADA guidelines.

**P24 Do Current Treatment Pathways for Severe Obesity Fulfill Ethical Principles Guiding Healthcare Delivery?**

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Notwithstanding the recognition by the Irish government in 2005 that obesity is a disease, as well as the overwhelming evidence that bariatric interventions reduce morbidity and mortality and are cost-effective, access to such care for affected individuals is severely limited, with Irish bariatric surgical rates amongst the lowest in Europe. We sought to determine the extent to which the State’s ethical obligations to provide bariatric care are met in Ireland.

We conducted a systematic literature review of several medical reference databases, screening 3365 articles, articles published from 1991-2017 according to PRISMA guidelines. We identified 8 full papers describing qualitative assessments of ethical considerations with bariatric surgery.

We found that in relation to autonomy (i.e. the right to self-determination), beneficience, nonmaleficience and justice (i.e. the obligation to provide fair and equitable treatment to all patients), the current provision of bariatric surgical care in Ireland fell well short of meeting internationally recognised domains of medical ethics.

These findings have important implications for government policy, for healthcare resource allocation and for the proposed new national clinical programme for obesity treatment. Respecting the individual’s right of self-determination, to do good, prevent harm and provide equity in the provision of services must be paramount, even when that individual is obese.

**P25 A Review of Indications for Thyroid Ultrasound Scanning in Connolly Hospital**

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The increasing incidence of thyroid nodules represents a significant burden on the health service. The aim of this study was to critically review indications for thyroid ultrasound referral to Connolly Hospital. Patient demographics, scan indications, results and outcomes were sourced from the PACS radiology system, histology and biochemistry lab systems and the patient administration system for all patients undergoing thyroid ultrasound from 2012-2016. Data were analysed using GraphPad Prism and expressed in mean±standard deviation. In total, 318 patients (mean age 53±15 years, 85% female) had at least one ultrasound. Scans were requested by GPs (41%), endocrinology (36%), other medical (18%) and surgery (5%) teams. The commonest indications for scanning were to follow-up previously-diagnosed thyroid nodules or goitres (22%), to assess new thyroid goitres (19%) new discrete neck lumps (14%), and due to incidental findings from other imaging modalities (13%). Scans were also requested (in the absence of any signs of goitre or mass) for choking/neck pain/swallowing complaints (12%) and hypo/hyperthyroidism (5%), with GPs more likely to request scans for these indications than endocrinologists (33 versus 8 scans, p<0.05), and with 26 (48%) of these scans diagnosing thyroid nodule(s) that were unlikely to be related to the stated symptoms but which subsequently required follow-up imaging ±biopsy. We conclude that a significant number of thyroid ultrasounds were requested for symptoms without clinically evident thyroid masses. Screening of scan requests could result in more appropriate use of thyroid ultrasound in the future.

**P26 Pregnancy Outcomes in IADPSG-Diagnosed GDM Treated with Insulin versus Medical Nutritional Therapy**

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Introduction: Use of IADPSG diagnostic criteria for GDM diagnosis is now common in Europe. In Ireland, the prevalence of GDM using these criteria is 12.4%. Objective: The study objective was to assess if women with GDM diagnosed using IADPSG criteria treated with insulin have comparable pregnancy outcomes to those treated with medical nutritional therapy (MNT).

Materials and Methods: This retrospective cohort study included 752 women with insulin-treated GDM and 567 women with GDM treated with MNT only. Maternal outcomes examined were preeclampsia, ante and postpartum hemorrhage (APH, PPH), pregnancy-induced hypertension (PIH), polyhydramnios, and cesarean delivery. Fetal outcomes examined were shoulder dystocia, malformations, hypoglycemia, prematurity, mortality, neonatal intensive care unit admission (NICU), macrosomia, large and small for gestational age (LGA, SGA). Results: Women with insulin-treated GDM had a greater risk of polyhydramnios (aOR 2.33, 95%CI 1.31-4.14) and were more likely to deliver by cesarean section (aOR 1.67, 95%CI 1.25-2.23). Infants of women with insulin-treated GDM were more likely to require NICU admission (aOR 4.88. 95%CI 3.54- 6.73) and the rates of macrosomia and LGA were greater (22.2% GDM insulin, 12.7% MNT, p<0.01; 19.7% GDM insulin, 12.5% MNT, p<0.01). There was no difference between the two groups in terms of age, ethnicity, pre-eclampsia, PIH, APH, PPH, perinatal mortality, prematurity, malformations, SGA, shoulder dystocia and infant hypoglycemia. Conclusions: Many outcomes are similar in GDM pregnancies treated by insulin or MNT. However, there are higher rates of caesarean delivery, macrosomia and LGA in the insulin treated GDM group, contributing to the costly NICU admissions.

**P27 The impact of maternal BMI and excessive weight gain (EWG) on pregnancy outcomes in women with IADPSG-diagnosed GDM treated with insulin compared to those receiving medical nutritional therapy only.**

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Introduction:Use of IADPSG diagnostic criteria for GDM diagnosis is now common in Europe. In Ireland, the prevalence of GDM using these criteria is 12.4%. Objective:The objective of this study was to examine the impact of maternal BMI and EWG on pregnancy outcomes in women with GDM treated with insulin compared to those receiving medical nutritional therapy (MNT) only. Materials and Methods:This retrospective cohort study included 752 GDM women on insulin (GDM-I) and 567 GDM women treated with MNT only (GDM-M). Maternal and fetal outcomes examined were pregnancy-induced hypertension (PIH), preeclampsia (PET), ante and postpartum hemorrhage (APH, PPH), polyhydramnios, cesarean delivery, shoulder dystocia (SD), malformations, hypoglycemia, prematurity, mortality, neonatal intensive care unit admission (NICU), macrosomia, large and small for gestational age (LGA, SGA). Results:Women with a BMI ≥30 kg/m2 had higher rates of macrosomia (26.5% vs 16.2%; p<0.01) and LGA (22.5% vs 15.1% p<0.01) in GDM-I compared to GDM-M women. Infants of GDM-I women had a greater birth weight (p<0.01) and were more likely to be LGA (p<0.05) compared to GDM-M women in both AWG and EWG groups. PET, PIH, APH, PPH, mortality, shoulder dystocia, malformations, SGA, hypoglycemia and prematurity rates were not influenced by BMI or weight gain. Conclusions:Obesity in GDM-I women is associated with higher rates of polyhydramnios, LGA and macrosomia. EWG is associated with higher rates of cesarean delivery in GDM-I women. Strategies to address these modifiable risk factors are urgently needed in clinical practice.

**P28 Neuroendocrine tumour within a retroperitonel mature teratoma mimicking an adrenal tumour: Report of a rare association**

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Primary retroperitoneal neoplasms comprise only 0.1%–0.3% of all tumours.Several cases of carcinoid tumour components in ovarian teratomas have been reported,but to our knowledge,this is only the third reported case of a carcinoid tumour occuring in a retroperitoneal teratoma in the adrenal region of an adult patient. A 27-year old woman presented with a 1 year history of right flank pain.She had no past medical or surgical history and had no recent history of trauma.She was normotensive and clinical examination was unremarkable. CT abdomen and pelvis reported a complex,cystic,12cm right suprarenal mass with peripheral calcification and indeterminate Hounsfield units.The differential diagnoses included an adrenocortical carcinoma, an adrenal cyst with haemorrhage and a cystic phaeochromocytoma.Biochemical assessment including a serum androgen profile,24-hour urine free cortisol collection, aldosterone: renin ratio;and plasma normetanephrines and metanephrines were negative.An MIBG scan demonstrated no significant internal uptake.The patient proceeded to an open right adrenalectomy. Histopathology revealed the presence of a mature cystic teratoma, comprising squamous mucosa with associated adnexal structures, respiratory type mucosa, cartilage, bone and adipose tissue. The teratoma was closely associated with the adrenal gland but separate from it and the adrenal gland was histologically unremarkable. Focally, a well differentiated neuroendocrine tumour (carcinoid tumour) was identified within the teratoma, with immunohistochemistry staining positive for chromogranin, synaptophysin, CD56 and has a MIB index less than1%. Primary retroperitoneal teratomas are very uncommon tumors and can mimic a primary adrenal tumor. Histopathological examination of the resected tumour is mandatory to exclude malignant transformation and differential diagnoses.

**P29 Endocrinopathies and renal outcomes in lithium therapy: impact of lithium toxicity.**

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Lithium is the mainstay of treatment for bipolar disorder, mania and an augmentation therapy in patients with treatment resistant depression. It has a narrow therapeutic index, with recognized adverse multi-system and endocrine side effects. A retrospective analysis was performed of the prevalence of lithium toxicity and renal, thyroid and parathyroid dysfunction in our study population. Our study population included all patients who had at least one serum lithium measurement from January 1st 2000 to December 31st 2014 inclusive. A total of 580 patients were included in the study. Among our study group, 70 patients (12.1%) had ≥1 toxic lithium measurement (lithium level>1.2mmol/L). 27.8% (n=161) of patients developed stage 3 Chronic kidney Disease (CKD) or higher, which was commoner in those patients who developed toxic lithium levels (p<0.0001) and in those who developed hypernatraemia (p=0.0001). 16.2% of patients (n=94) had one serum sodium>145mmol/l during follow up. 60 patients (10.3%) had a TSH>10mU/L, while complete suppression of TSH (<0.05mU/L) was observed in 22 patients (3.8%) during follow-up. 4% (n=37) of the study population had ≥1 serum corrected calcium level >2.55mmol/l, and 4 patients had biochemical confirmation of primary hyperparathyroidism but PTH levels were only performed in 2.8% (n=16) of the study population.

Stage 3 CKD is common in patients receiving lithium therapy. Lithium toxicity is associated with CKD and hypernatraemia. Thyroid dysfunction and hypercalcaemia are common in patients receiving lithium therapy. Patients receiving lithium therapy require surveillance of renal and thyroid function as well as monitoring of bone biochemistry.

**P30 Lost in Transition**

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We report a rare case of hypopituitarism. A 34 year old male was referred to the Endocrinology Department by his GP with fatigue and loss of libido. Physical examination showed no dysmorphic features but pre-pubertal secondary sexual characteristics and genitalia. Hormonal profile showed prolactin 304 mIU/l (103-460), FSH <0.5 IU/l (1.4-10.8). LH <0.5 IU/l (1.4-6.5), Testosterone 1.2 nmol/l (6.3-24.7) TSH 5.5 mIU/l (0.35-4.94) free T4 6.8 pmol/l (9.0-20.0), random cortisol 252 nmol/l and IGF-1 27 µg/l (117-329). He had a prior diagnosis of panhypopituitarism for which he had attended the paediatric services and CT-pituitary at that time reported no pituitary mass. He had been treated with growth hormone, levothyroxine, hydrocortisone and testosterone replacement therapies. However, he became lost to follow up and was poorly compliant with medications for several years. Upon engagement with the adult services, an urgent pituitary MRI was performed and showed hypoplastic anterior pituitary gland, absent infundibulum and ectopic posterior pituitary gland. A diagnosis ofpituitary stalk transection syndrome (PSTS) with panhypopituitarism was made. Full hormone replacement was re-instituted. PSTS is characterised by isolated or multi-pituitary hormone deficiency and classical MRI radiological findings. Clinical presentation depends on age of diagnosis, hormone deficiency and absence or hypoplasia of the pituitary stalk. This case serves to remind us of the importance of transitional care. It highlights the significance of re-visiting a prior diagnosis and the value of MRI in detection of PSTS. While a rare disorder, PSTS should be considered in the differential of hypopituitarism.

**P31 Auto-immune Disease Associations in a Cohort of Type 1 Diabetes Mellitus**

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Introduction: 1-16% of patients with Type 1 Diabetes (T1DM) have co-existent autoimmune diseases (AID) in the form of coeliac disease and 25 % have thyroid antibodies. The American Diabetes Association recommends screening for common AID as part of the management of patients with T1DM.

Objectives: To determine the frequency of associated AID. To assess if patients are being screened for such conditions in our type 1 cohort. To determine if the association of AID has implications for glycaemic control.

Methods: A retrospective analysis of 98 patients with T1DM was undertaken. Demographic and biochemical data was collected in addition to assessment of organ-specific autoantibodies(TTG, TPO). Results: Of 98 patients (57% male), mean age was 43±16years. Mean duration of diabetes of 23±16years. Mean HbA1c was 67±16mmol/mol . 18 patients had AID, 17 of these with thyroid disorders (3 Graves’ Disease, 14 Autoimmune hypothyroidism) and 3 patients with coeliac disease (2 with thyroid and coeliac disease). TTG and TPO were tested in 54 % of our cohort. Of the patients with thyroid disorders, there was no significant difference in glycaemic control (mean HbA1c 65±12mmol/mol v 67±16mmol/mol p-value= 0.63), however they tended to be older (47±15years vs 43±17years p-value=0.3) and have a longer duration of diabetes (29±15years vs 23±16years p-value=0.15). Conclusions: The frequency of AID in our cohort is higher than expected. Over 50% were tested for AID. To improve screening of AID in our cohort, we are reviewing our clinical assessment pro forma to include a prompt to screen patients appropriately.

**P32 Attitudes towards Insulin Pump Therapy in Patients with Type 1 Diabetes**

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Insulin pump usage in Ireland falls below the recommended number. This study explored the attitudes of those with type 1 diabetes towards insulin pump therapy to determine the reasons why continuous subcutaneous insulin infusion (CSII) is rejected or desired by patients with type 1 diabetes. It also examined the relationship between interest in commencing CSII therapy and patient demographics e.g. Kaufman Competency score. This was a descriptive, cross-sectional study. Patients with type 1 diabetes who had never used an insulin pump were selected and, after consent had been obtained, were invited to complete a 3 page questionnaire. Demographic data was obtained from their medical records. SPSS was the statistical programme of choice. 61 patients participated in this study. 35 participants (57.4%) were interested in obtaining an insulin pump and 26 participants (42.6%) were not interested. 'Constant attachment to a device', 'pump is bothersome during sport and leisure activities' and 'pump is overly visible' were chosen most frequently as reasons for reluctance to initiate CSII respectively. Improvement in quality of life and expected improvement in HbA1c values were chosen most commonly as reasons for favouring CSII. A chi-square test demonstrated that Kaufman competency was the biggest demographic determinant of preference for CSII use in Type 1 diabetes, with those demonstrating more self-empowered diabetes management (Kaufman ≥5) less likely to favour CSII (p<0.033). In conclusion, the factors responsible for reluctance to initiate CSII were largely psychosocial. Education is crucial, both for suitable CSII candidates and patients with less suitability.

**P33 Erectile dysfunction in patients with diabetes mellitus**

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In 2008 we presented data regarding prevalence rates and attitudes to erectile dysfunction (ED) in male diabetes patients attending Connolly Hospital, and found high ED rates with low rates of self-reporting. In this study we re-examined ED prevalence and patient attitudes in our diabetes clinic in 2017. Male patients attending the Connolly Hospital diabetes clinic from January to April 2017 were screened for ED. A clinical history, physical examination and relevant blood results were recorded. A validated questionnaire, *International Index of Erectile Function* (IIEF-5 score) was used to grade ED. 132 patients were screened for ED. 96 (73%) reported suffering from ED, graded as severe by IIEF- 5 score in 27%, moderate in 18%, mild-moderate in 28% and mild in 27%. Patients complaining of ED were older (61 years v 54 years, P=0.003) had a longer duration of diabetes (median 10 v 8 years, P=0.02), and were more likely to have retinopathy (11 v 0, P=0.035). There was no difference in BMI or HBA1c between groups. 61 males with ED (65%) had never approached a healthcare professional regarding ED, with a majority citing embarrassment as a barrier. ED is common in patients with diabetes with similar rates in 2017 (73%) as in our prior study (70%). As in our prior study, the majority of patients had not discussed their ED with a health care provider, largely as a result of embarrassment. Clinicians should be aware of ED in diabetes and should question patients sensitively regarding its presence.

**P34 A National Diabetes in Pregnancy Audit – Aiming for Best Outcomes for Women with Diabetes.**

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Women with diabetes have an increased risk of adverse pregnancy outcomes. In 2010, the Health Service Executive (HSE) published national guidelines for the management of diabetes in pregnancy and they were endorsed by multiple national professional bodies1. In 2017, with support from the National Clinical Programme for Diabetes, this first National Diabetes in Pregnancy (DIP) Audit was commenced. Its aim is to identify the number of pregnancies affected by pre-gestational diabetes in Ireland; examine implementation of the national guidelines; and report on clinical outcomes for women with pre-gestational diabetes in pregnancy and their offspring.

Healthcare professionals caring for women with diabetes during pregnancy at 18 antenatal centres in Ireland were invited to participate and a data collection tool was developed based on the annual DIP audit cycle in the United Kingdom. Collection of anonymised data pertaining to pregnancies with an estimated date of delivery between January 1st 2015 and December 31st 2015 is underway. It is anticipated that the information obtained from this collaborative approach will allow for quality improvement in diabetes care. Pending the outcome of this initial retrospective audit, the collection tool will be refined and real-time, continuous data collection with annual reporting will become established. In doing so, appropriate resources can be justified and quality improvement monitored to ensure that the aims of the St Vincent declaration are achieved.

**P35 Safe prescribing of Sliding Scale Insulin, what we need to do better**

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Introduction: Insulin is a serial offender in drug error incidents (1). Sliding scale insulin (SSI) regimens underestimate insulin requirements and respond to hyperglycaemia rather than preventing it (2). We evaluated the prescribing of SSI regimens in a level 3 hospital. Methods: we retrospectively analysed 124 general medical patients with type 2 Diabetes Mellitus (T2DM) admitted to NGH from 01/09/2016 till 30/09/2016. Results: 36 (29%) were prescribed SSI. Of the 36 prescriptions for SSI; 14(38.8%) had no date , 9 (25%) didn`t write the amount of insulin clearly, 32(88.9%) had no instruction in dealing with complications .16 ( 44.4%) didn`t document the frequency of insulin administration ,12 (33.4%) used actrapid as short acting insulin and 3(8.3%) didn`t mention the name of any short acting insulin . 4 (11,1%) patients had at least one episode of hypoglycemia but none were classified as severe hypoglycemia. In contrast, 28(77.8%) had frequent episodes of hyperglycemia (PPG > 11mmols at least one reading every day). Finally, 12 (33.4%) of the prescribers didn`t sign the prescription. Conclusions:Our results demonstrate that SSI regimes are not being prescribed properly and are frequently not associated with optimal blood glucose control. Prescribers of insulin (doctors) need to clearly document the type of insulin and frequency of administration. Strategies need to be implemented to encourage safer prescribing of insulin and to optimise glucose control for inpatients.

**P36 Characterization of patients with low glucometer readings attending the emergency department of a level 3 hospital.**

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This study was performed to investigate prevalance, potential causes and to monitor the course of patients with hypoglycemia attending our Emergency Department (ED). Quantitive and qualitative retrospective analyses of electronic records, lab results and scanned ED cards of patients presenting with hypoglycemia (defined as finger stick glucose <4.0mmol/L) over a 12-month period were carried out. Patients with a glucometer reading under 5.0 mmol/L were also investigated to capture possible lab-confirmed hypoglycaemia. Analysis of 38,552 attendances revealed that only 109 (0.3%) patients were identified at triage as being hypoglycemic. Of these, 75 (68%) had a lab glucose performed and 33 (44%) had a lab glucose less than 4.0 mmol/L, 12 (38%) of whom have diabetes. The main presenting complaint was feeling generally unwell (27%), whilst the major causative agent was excess alcohol intake (38%). Two patients with diabetes (1.8%) had been involved in a motor vehicle accident. Over a third, (38.5%) of patients (mean glucose 3.5 mmol/L) did not have a documented plan regarding hypoglycemia management. Half of patients were admitted to hospital and mortality was 1%. In conclusion, when compared to previous data, attendances with hypoglycemia episodes at Connolly hospital were less common in people with diabetes and had lower mortality rates than other studies. Lab glucose was not performed on all patients to confirm hypoglycemia and in those in whom it was only 44% were confirmed to have a low glucose. Surprisingly, anti-diabetic drugs were not the commonest cause of hypoglycemia.

**P37 The use of Continuous Glucose Monitoring for sport in Type 1**

**Diabetes**

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The benefits of exercise for patients with Type 1 Diabetes (T1D) are difficult to balance with associated glycaemic excursions. The aim of this study was to show that Continuous Glucose Monitoring (CGM) could reduce glycaemic excursions in patients with T1D already using insulin pumps, exercising at moderate to high intensity. Questionnaires were used to identify T1D patients using insulin pumps and naïve to CGM use, who reported regular exercise. 6 were enrolled and trained on Enlite sensor use with Medtronic Minimed Paradigm® Veo™ system, and given activity trackers and written advice on adjustment of insulin or carbohydrate intake for exercise. Resting

heart rate (HR) and age were used to determine HR surrogates of moderate and high intensity exercise. They were to exercise as usual for 3 weeks, using the activity trackers and heart rate monitors. PAID, HFSII, DTQ and Gold scores were completed prior to run-in and at the end. The downloaded sensor glucose data was used to compare the change in time in target range (glucose 3.9-10.0mmol/l) from week 1 to week 2 For the duration of exercise this time in the target glucose range increased from 72 ±20 to 88 ± 16%, p=0.05. The time in hypoglycaemia range (glucose <3.9mmol/l) went from

3.9 ± 7.9 to 2.4 ± 4.8%, p=0.39. The time in hyperglycaemia range (>10mmol/l) reduced from 24 ± 19 to 10 ± 17%, p=0.04. These results demonstrate the benefit of CGM use for patients with T1DM doing

moderate to high intensity exercise.

**P38 Coeliac Disease and Type 1 Diabetes: impact on glycaemic control**

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The prevalence of Coeliac Disease (CD) in the general population is approximately 1% and in patients with Type 1 Diabetes (T1D) rates between 0.6-16.4% are reported. A gluten free diet for the control of CD may influence BMI, HbA1c and lipid profile of patients with T1D. To determine whether glycaemic control is better in our patients with with T1D or T1D+CD, after gaining ethical approval, we investigated 1320 patients with T1D attending the clinic in GUH. We divided the patients according to whether CD was present (n=46), or not (n=1274). Last recorded HbA1c, weight, BMI, BP and lipid profiles were compared between the two groups. Tissue Transglutamine IgG antibody titres (TTG) <1 U/ml indicated adherence to a gluten free diet.

Paired Student’s T-Test was used for statistical evaluation. HbA1c in T1D+CD group was 75.07 (SD 20.32) vs 68.93 (17.78) mmol/mol in T1D group (p <0.05). The HbA1c the patients that were non-compliant to a gluten free diet in the T1D+CD group was greater than that of those who were (79.7± 20.7 vs 61.9±12.2, p<0.01). BMI and lipid profiles were similar. The compliant group was older (48±19 vs 35.5±15.5 yrs, p<0.05) and had CD for a longer duration than those that were non-compliant (16.3±14.8 vs 8.5±3.5, p<0.05). Patients with T1D only, have better overall glycaemic control than those with both T1D and CD. Eating a gluten free diet is associated with better glycaemic control. More research is needed to determine whether this is due to the dietary composition or another cause.

**P39 A case of Type B insulin resistance syndrome in a patient with scleroderma**

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We report the case of a 61 year old lady who has been attending our diabetes clinic with a presumptive diagnosis of Type 2 Diabetes Mellitus (T2DM) since the age of 44 years. She was initially treated with Metformin and Gliclazide for 2 years, but was transitioned to insulin therapy when her glycaemic control remained suboptimal on maximum available oral therapy. Over the next number of years, it was noted that she required large insulin doses for her 45 kilogram frame. She is currently taking 5units of insulin per kilogram, in a basal/bolus regime, to maintain a HbA1c of 8.0%. She reports no hypoglycaemia. She also has marked hypertriglyceridaemia with a peak fasting triglyceride level measured at 77mmol/l. This patients’ medical history is significant for diffuse cutaneous scleroderma, complicated by eosinophilic fasciitis and restrictive lung disease and papillary thyroid cancer. She is treated with Methotrexate for her scleroderma. Although she had no clinical manifestations of insulin resistance, her insulin requirements and concomitant rheumatological disorder prompted measurement of anti-insulin antibodies which were strongly positive at 20.9% (Normal <5.5%). Type B insulin resistance syndrome is almost always associated with other autoimmune connective tissue disorders. It is caused by the generation of autoantibodies to the insulin receptor and results in a spectrum of glucose homeostasis abnormalities. Immunosuppression has been used to treat this rare disorder with mixed success and as spontaneous remission can occur, the risks associated with such therapies should be considered on a case by case basis.

**P40 Clinical characteristics and management of 4 patients with Clivus chordomas attending Beaumont Hospital**

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Chordomas are primary malignant bone tumours arising from remnants of embryonic notochord with an incidence of <0.1 per 100,000 inhabitants per year [1]. These tumours commonly originate in the sacrum but parasellar/clivus chordomas account for one third of chordomas [1].

We conducted a retrospective review of 4 chordoma patients who were treated in Beaumont Hospital between 2011-2017. The median age at presentation was 39 years and median length of follow up was 36.5 months (Table 1). All patients presented with diplopia and cranial nerve palsies. None of the patients had distant metastases. All patients underwent surgery followed by radiotherapy. One patient (patient 3) required six further surgeries for recurrent chordoma prior to radiotherapy. Post radiotherapy, all patients are alive and have stable disease on surveillance imaging. Chordomas are aggressive tumours and their management requires a multidisciplinary approach in a neurosurgical centre.

Table 1. Clinical and disease characteristics of 4 chordoma patients

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Patient | 1 (Male) | 2 (Female) | 3 (Male) | 4 (Male) |
| Age at presentation | 28 | 49 | 57 | 29 |
| Tumour location | Cavernous sinus, Pituitary,left temporal lobe | Clivus | Suprasellar region | Clivus |
| Post-top pituitary dysfunction | No | Partial ACTH deficiency | ACTH deficiency  *TSH + gonadotrophin deficiency post 2nd surgery* | Partial ACTH deficiency |
| Type of radiotherapy | Fractionated  Intensity Modulated radiotherapy | Fractionated  radiotherapy  + stereotactic boost | Stereotactic radiosurgery | Fractionated stereotactic radiotherapy |

**P41 Progression of Endocrine and Metabolic Variables in Adulthood in Prader-Willi Syndrome – a Retrospective Review of Patients Attending a Single Centre**

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Prader-Willisyndrome(PWS) is a genetic condition usually diagnosed in childhood, associated with multiple endocrine and metabolic abnormalities, and with reported prevalence of 1/8000 to 1/45000. It is likely that the phenotype of PWS in adulthood is changing due to changes in paediatric practice including intensive intervention to limit weight gain, and widespread use of sex steroid and growth hormone replacement. Although most patients now live into adult life the majority of published data is from paediatric populations. This was a retrospective observational study of the progression of endocrine and metabolic variables in early adulthood in patients with PWS attending an Irish tertiary referral centre. Data are expressed as median(range). We studied 23 adult PWS patients 8 males and 15 females who had data available from before age 18, and who were followed up for a median duration of 7.5(1-17) years. Initial BMI was 24(16-53)kg/m2. Fifteen subsequently gained weight, the median increase being 7.5(2-26)kg/m2. No males and 3 females entered puberty spontaneously. Among those who did not, gonadal replacement was prescribed in 1 male and 6 females. 6 developed diabetes, the median age being 20. 18 were diagnosed with severe growth hormone(GH) deficiency, and 8 continued GH replacement into adult life. 4 were diagnosed with osteoporosis. In summary, significant metabolic changes occur in early adult life in patients with PWS. BMI increases and diabetes occurs in some patients. Few undergo spontaneous puberty, and most are not receiving gonadal replacement. There is currently little evidence guiding optimal management of PWS in adulthood.

**P42 Assessing dosimetry and outcome for radioiodine treatment in benign thyroid disease in SJH/ AMNCH, Dublin.**

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Aim: Assess activity, dosimetry and outcome in radioiodine treatment of benign thyroid disease. Standard:Hammersmith Protocol Hypothyroidism ( TSH >4.2 mU/L)  Hyperthyroidism (TSH <0.2 mU/L)  Euthyroid state (TSH 0.2- 4.2 mU/L) Introduction: Activity used in SJH; 22MBq- other centres typically using 370MBq. The aim is to minimise radiation dose. The question remains- what dose exposure does the patient receive with each activity administered? Results: 362 patients have been treated since 1992, with a total of 391 therapies. 23 patients (6.4%) received two treatments, 2 (0.6%) received three. That gives a total repeat treatment rate of 7%.

Activity received: 53% of patients were treated with 50MBq or less, 65% with less than 150MBq, and 91% with 400MBq or less. Outcome: Treatment success 88-90% at 1 year with 45% of patients hypothyroid. This is achieved with significantly reduced activity- up to 50%- indicating a lower radiation dose exposure. Conclusion: The future treatment aim for benign thyroid disease in St James’ hospital is dosimetry, as mandated by European guidelines. This will determine an estimation of radiation dose which can vary up to ten fold depending on activity administered. Going forward we intend to prospectively assess this cohort to determine optimal ablative dose and improve monitoring of tissue response.

**P43 Prevalence of insulin pump use in adults with type 1 diabetes in Ireland**

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Insulin pump use is increasing worldwide in recent years. Rates of insulin pump use by adults with type 1 diabetes (T1D) in developed countries vary from as low as 6% in the UK to as high as 40-50% in the United States. However, accurate, current data from most countries, including Ireland, are lacking. In this study, we aimed to estimate the prevalence of insulin pump use in adults with T1D in Ireland using the Health Service Executive’s (HSE) Primary Care Reimbursement Service (PCRS) pharmacy claims database. This database includes all community-dispensed medicines for diabetes through two main drug schemes, the Long-Term Illness and GMS scheme. Adults (≥18 years) were assumed to have T1D if they received a co-prescription of insulin, blood-glucose and ketone strips within each year from 2013 to 2015. Insulin pump users were identified by at least one infusion set dispensed in the same year. Since pump use in type 2 diabetes is uncommon in Ireland, subjects receiving these items were assumed to have T1D. We found that 13.5% (n=1080) of adults with T1D in Ireland (n=8012) were using insulin pumps (95% CI: 12.7%-14.2%). Insulin pump use varied geographically across the four HSE regions from 10.1% in the West to 15.3% in Dublin Mid-Leinster. We conclude that the prevalence of insulin pumps use in adults is higher than in UK, but much lower than the United States, and varies regionally within Ireland. Further studies on barriers or enablers to accessing insulin pumps by adults with T1D are required.

**P44 The diagnostic utility of late night salivary cortisol (LNSF) and cortisone (LNSE) in Cushing’s Syndrome and their relationship to metabolic markers**

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Late night salivary cortisol (LNSF) has been advocated as a simple and reliable outpatient diagnostic tool for patients with suspected Cushing’s Syndrome (CS) but the usefulness of its metabolite cortisone (LNSE) remains unclear. In this study, we investigated the sensitivity of LNSF and LNSE (measured using LCMS) as compared to the traditional urine free cortisol (UFC) and overnight dexamethasone suppression test (ONDST) in 18 patients (15 female) with confirmed CS (16 ACTH-dependent). We also studied any association between LNSF or LNSE and relevant metabolic parameters. Sensitivity of ONDST was 100% (data for 17 patients). UFC was measured in 17 patients – median number of samples 1.5 (range1-6) with a sensitivity of 92%. One patient had four measurements for UFC, all of which were negative. Median number of LNSF and LNSE samples measured was 3 (range1-18); LNSF had a sensitivity of 91%. Seventeen of 18 LNSF samples were positive in the patient with four negative UFCs. Serial LNSF and LNSE identified 4 patients with cyclical Cushing’s Disease. LNSE had a sensitivity of 84%. On multivariate analysis, LNSF was not significantly associated with HbA1C, ALT or BP, while LNSE was negatively associated with HbA1C (p=0.01) but not with BP or ALT. Late night salivary cortisol is more sensitive than salivary cortisone as a diagnostic test for CS and may identify cases of cyclical ACTH secretion. The negative association between LNSE and HbA1C requires further elucidation. We did not identify an association between LNSF and metabolic parameters.

**P45 Alemtuzumab and thyroid dysfunction in patients with Multiple Sclerosis: A case series.**

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Alemtuzumab is a monoclonal antibody directed against CD52 licenced for the treatment of multiple sclerosis (MS). Thyroid dysfunction secondary to immune reconstitution occurs in one third of patients. We report three cases of hyperthyroidism in patients with MS treated with alemtuzumab in the preceeding 2-18 months.

A 36 year old female presented with thyrotoxicosis at 12 weeks gestation (fT4 83.7 pmol/L; RR 12-22, TRAB 15.2 IU/L; RR 0-1.5). TRAB titers rose in the third trimester to >40 IU/L and she required increasing doses of carbimazole. The neonate, born at 38 weeks by spontaneous vaginal delivery and weighing 3.1kg, required treatment for transient thyrotoxicosis. A 26 year old male presented with functional decline and fT4 37.9 pmol/L (RR 9-20), TRAB 18.9 IU/L. He became hypothyroid on decreasing doses of carbimazole within 16 weeks and was commenced on levothyroxine. A 39 year old female developed spontaneous hypothyroidism (fT4 <5.2 pmol/L) six weeks after presenting with thyroiditis (fT4 60.2 pmol/L, TRAB 24 IU/L). Twelve months later she is euthyroid on levothyroxine 100mcg. This series includes the first report of alemtuzumab-induced Graves Disease occurring in pregnancy - close monitoring for foetal thyrotoxicosis is required. The second and third cases highlight that TRAB positivity is not specific for Graves Disease and may be associated with overt hypothyroidism. Reliance on TRAB alone in establishing a diagnosis of Graves Disease in the setting of alemtuzumab use can therefore be misleading and may lead to profound hypothyroidism from anti-thyroid medications if thyroid function tests are not followed closely.

**P46 Unexpected Diabetic Ketoacidosis in two patients with Type 2 diabetes, Cause or coincidence with use of SGLT2 inhibitors: A report of two cases**

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The positive results from the cardiovascular outcome trial of empagliflozin has led to some experts recommending early use of sodium-glucose cotransporter-2 (SGLT2) inhibitors in the algorithm of diabetes management, particularly in patients with cardiovascular disease. Despite warnings from the FDA regarding risk of euglycemic diabetic ketoacidosis (DKA) and acute kidney injury (AKI), there is no evidence from randomized controlled trials that the risk of such complications is increased. A 52 year old female with a 15 year history of type 2 diabetes presented with a two day history of vomiting and diarrhoea. Blood glucose was 21.9mmol/L, ketones 6.3mmol/L, pH 7.19, and serum creatinine 1021umol/L. Medications included metformin, Novomix(30) insulin, dapagliflozin (commenced three weeks previously), losartan and ibuprofen. A 70 year old lady with a twenty year history of type 2 diabetes presented with a four day history of vomiting and haematemesis and DKA - blood glucose 17.3mmol/L, ketones >7mmol/L and pH 7.27. Medications included metformin, gliclazide, sitagliptin, empagliflozin (commenced one year previously), candesartan and aspirin. In both cases ketoacidosis resolved and renal function returned to baseline with intravenous insulin, fluids and withdrawal of SGLT2 inhibitors. GAD and islet cell antibodies were negative. In both cases the degree of ketonemia was higher than what one would expect – this may be due to an increased glucagon-insulin ratio due to drug effect. Patients and physicians should be educated about the risk of ketoacidosis and AKI to facilitate prompt detection and treatment should it occur.

**P47 Essential hypernatraemia and the performance of copeptin versus vasopressin measurement in osmoregulatory studies**

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A 68 year-old female presented with chronic asymptomatic hypernatraemia (plasma sodium 147-160mmol/l, reference 135-145mmol/L). Urine osmolality 636mOsm/kg indicated significant vasopressin activity and urinary volumes of 1270mls/24hrs excluded a diagnosis of diabetes insipidus. A 3% hypertonic saline test was performed to assess thirst and vasopressin secretion. Plasma osmolality rose from 314-323mOsm/kg, vasopressin rose from 0.7-7.1pmol/l, & a copeptin rose 7.8-26 pmol/l, showing normal vasopressin secretion over an elevated osmotic threshold 312mOsm/kg(normal 281-286mOsm/kg). Thirst ratings only rose after an elevated osmotic threshold 311mOsm/kg(normal 281-286mOsm/kg). The diagnosis is essential hypernatraemia due to upward resetting of the osmotic threshold for thirst and vasopressin secretion. During water loading (20mls/kg), vasopressin fell and became undetectable once osmolality was suppressed below the osmotic threshold. There was a normal excretion of water (1265/1330 mls, 95%). Suppression of vasopressin levels confirmed the osmotic threshold for vasopressin. Copeptin levels fell during water loading, but did not approach the lower limit of detection of the assay. This is likely due to the fact that the half-life of copeptin is four times that of vasopressin. This is the first reported case in Ireland of essential hypernatraemia. We contend that the failure of copeptin levels to fall below the limit of detection when osmolality is suppressed below the osmotic threshold for vasopressin secretion indicates that vasopressin measurement is superior to copeptin in the diagnosis of subtle osmoregulatory abnormalities.

**P48 Erdherim-Chester disease: a rare cause of anterior pituitary dysfunction and diabetes insipidus**

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Infiltrative disorders are an uncommon cause of hypopituitarism and give rise diagnostic and management challenges. We describe the case of a 42 year old man who presented with headaches and dizziness. Magnetic resonance imaging (MRI) of the brain demonstrated enhancing lesions in the pons, midbrain and pituitary stalk with probable inflammatory or neoplastic aetiology. The patient subsequently developed marked adipsic hyernatraemia (plasma sodium 170mmol/l) associated with hypotonic polyuria and was commenced on desmopressin. Anterior pituitary assesment, performed while on glucocorticoids, revealed gonadotrophin and TSH deficiency with a low normal IGF-1. Repeat imaging 4 months post presentation demonstrated pituitary gland infiltration. Subsequently, positron emission tomography showed abnormal uptake in the distal femurs and a bone biopsy confirmed the presence of histiocytes consistent with Erdheim-Chester disease (ECD). The patient was treated with pegylated interferon alpha but despite an initial improvement in the appearances of his brain stem lesions, he became refractory to treatment and died 11 months following initial presentation. ECD is a rare non-Langerhans form of histiocytosis, characterized by infiltration of tissues with lipid-rich macrophages and multinucleated giant cells. It may have bone, cardiac, skin & CNS manifestations and has a poor prognosis1. Diabetes insipidus is the most commonly reported manifestation of CNS involvement of ECD, and is present in 33% of cases and anterior pituitary involvement occurs in 20% of cases.

**P49 Characterisation of fluid and electrolyte homeostasis in patients with liver disease [COFE-LD]**

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Ascites is the most common complication of liver cirrhosis; it is a consequence of splanchnic arterial vasodilation in response to portal hypertension. In order to maintain effective arterial blood volume, vasoconstrictor and antinatriuretic pathways are activated, which increase sodium and fluid retention. A prospective cross sectional study was conducted in patients with chronic liver disease (CLD) (n =16, 10 male) attending for large volume paracentesis (LVP) to assess the impact of LVP on electrolyte and volume status. Alcohol liver disease accounted for 68.8% of patients (other aetiologies: haemochromatosis, Wilson’s disease, primary sclerosing

cholangitis and cryptogenic cirrhosis). Eight patients had a pre-LVP serum sodium less than 135mmol/L. Three patients had detectable urine sodium. Mean ascitic volume drained during LVP was 8775ml +/- 4160ml over 7 hours with 380ml+/- 150ml of 20% albumin replacement concurrently. There was no difference between serum and ascitic sodium measurements (p 0.9). Subjects’ serum sodium did not change post LVP (preLVP mean serum Na 136mmol/L, post LVP 135mmol/L, p 0.931), nor did urinary potassium (p 0.6). There was a mean fall of 8mmHg (p<0.05) in systolic blood pressure after LVP. Treatment with albumin was not sufficient to maintain blood pressure in

this cohort, but electrolytes in serum and urine remained stable; this suggests that aldosterone release in response to volume depletion did not occur and that in the setting of secondary hyperaldosteronism the renin-angiotensin-aldosterone system may not be as responsive as in healthy individuals. Further recruitment and biochemical analysis is planned for the LVP cohort.

**P50 Normocalcaemia in the face of marked hypervitaminosis D: the protective role of CYP24A1 activity & utility of the 25(OH)D: 24,25(OH)2D ratio**

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An 89-year old female nursing home resident was re-referred to the Endocrinology Department by her GP. She had been lost to routine endocrine follow-up. Nine years earlier she had been diagnosed with primary hyperparathyroidism. At that time, she was deemed unsuitable for surgery and managed medically with Cinacalcet 60mg/day and Vitamin D3 800 IU/day. On examination she was clinically stable, well hydrated and normotensive. Blood tests revealed haemoglobin of 8.9 g/dL, eGFR 32 mL/min/1.73m2 with absence of proteinuria and haematuria on urinalysis. She was normocalcaemic, adjusted calcium; 2.33 mmol/L (RI: 2.17-2.51), PTH; 213 ng/L (RI: 15-65), 25(OH)D; 635 nmol/L (Optimal: 75-125nmol/L) was markedly elevated with a borderline raised 1,25(OH)2D; 125 pmol/L (RI: 40-120). Total vitamin 25(OH)D measured using liquid chromatography-tandem mass spectrometry (LC-MS/MS), is the composite of the measured 25(OH)D2 (588 nmol/L) and 25(OH)D3 (47 nmol/L) respectively. On review of her medications it was determined that two months prior to this clinic visit she had been prescribed Ergocalciferol (Vitamin D2)50,000 units/day in addition to Vitamin D3 800 units/day. Five months post cessation of prescribed vitamin D she remained normocalcaemic, adj. calcium 2.23mmol/L, iPTH 203 ng/L and 25(OH)D had decreased by 41% to 261 nmol/L with a normal 25(OH)D: 24,25(OH)2D ratio. In elderly patients, drug and dose selection should be cautious mindful of the possibility of polypharmacy and decreased hepatic, renal, and cardiac function. It is likely that upregulation of 25(OH)D catabolism, Cinacalcet and renal impairment were protective from potential toxic effects of overzealous vitamin D supplementation in this case.

**P51 Vitamin D status of adults in urban & rural settings in the West of Ireland.**

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Introduction:Vitamin D deficiency is a global epidemic. The aim of this study was to compare the vitamin D status of adult patients living in an urban (Galway city) and rural (Galway county) setting. Methods**:** A cross-sectional study was designed. Samples for 25(OH)D analysis referred to Galway University Hospitals (GUH) between April 2011 and December 2015 were identified (n=34,063) following interrogation of the electronic laboratory information system. Baseline demographics, location and time of sampling were recorded. Second and subsequent samples from individual patients (n=9,760) and patients whose postal address was not in Galway were excluded (n=6,712). Vitamin D status was classified as follows: deficiency; <25 nmol/L, insufficiency; 25-50nmol/L and sufficiency; >50nmol/L respectively.Results:A total of 17,590 patients were eligible for inclusion (Galway city n=4,824; Galway county n=12,766). The proportion of 25(OH)D sufficiency was significantly higher in patients from Galway city compared to patients from Galway county (53% versus 47%, p<0.001). A significant difference was found in Vitamin D status between patients sampled during different seasons in Galway city compared to Galway county. Spring: deficiency; 16% v 23%, insufficiency; 39% v 43%, sufficiency; 45% v 35%. Summer: deficiency; 8% v 8%, insufficiency; 26% v 27%, sufficiency; 66% v 65%. Autumn: deficiency; 11% v 10%, insufficiency; 30% v 35%, sufficiency; 59% v 56%. Winter: deficiency; 23% v 25%, insufficiency; 35% v 42%, sufficiency; 41% v 33% (p<0.001). Conclusions:Vitamin D inadequacy was more prevalent during Spring and Winter in adults with a postal address in Galway county compared to city dwellers.

**P52 Clinical Utility of Serum and Urine soluble TNFR-1 and TNFR-2 in Diabetic Kidney Disease**

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Introduction:Serum and urine soluble Tumour Necrosis Factor Receptor-1 (sTNFR1) and -2 (sTNFR2) have value as biomarkers of diabetic kidney disease (DKD) but their optimal clinical applications have not been fully determined. The aim of this study was to determine how simultaneously measured serum and urine sTNFR1/sTNFR2 correlate with renal indices in DKD.Methods:Participants [n=126] with diabetes and different stages of DKD, in a cross-sectional study, had simultaneous blood and urine samples collected. Concentrations of sTNFR1/sTNFR2 in serum and urine were measured using ELISA. Urine sTNFR1/sTNFR2 were adjusted for urine creatinine concentration. Results:Serum sTNFR1/sTNFR2 concentrations were progressively higher as stage of CKD increased (p<0.001) and showed strong negative linear correlations with eGFR (r=-0.709, p<0.001; r =-0.710, p<0.001). Urine sTNFR1/sTNFR2 levels progressively increased with CKD stage (p<0.001) but showed only moderate negative linear correlations with eGFR (r=-0.417, p<0.001; r=-0.483, p<0.001). Serum sTNFR1/sTNFR2 concentrations were sequentially higher in subjects with normo-, micro- and macro- albuminuria (p<0.001) and showed moderate positive linear correlations with urine albumin:creatinine ratio (uACR) (r=0.438, p<0.001; r =0.420, p<0.001). Subjects with micro- and macro- albuminuria had higher urine sTNFR1/sTNFR2 concentrations than those with normoalbuminuria (p<0.001). Urine sTNFR1/sTNFR2 showed moderate positive linear correlations with uACR (r=0.554, p<0.001; r=0.433, p<0.001). Conclusions:To our knowledge, this is the first study to report simultaneously measured serum and urine sTNFR1/2 concentrations in DKD. We propose that the clinical predictive value of monitoring serum and/or urine sTNFR1/2 concentrations in DKD should be separately evaluated in patients with normal and abnormal albuminuria.

**P53 Hyperandrogenism and polycystic ovary syndrome in reproductive-age women with diabetes - insights from androgen measurement using Liquid Chromatography-Mass Spectrometry(LC-MS).**

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The prevalence of hyperandrogenism(HA) and polycystic ovary syndrome(PCOS) are increased in reproductive-age Type 1 diabetic(T1DM) women. These observations are based on immunoassay-measurement of androgens; no studies have been reported using more accurate liquid-chromatography-mass-spectrometry(LCMS). Using LCMS, we aimed to characterize androgen profiles and PCOS status in women with T1DM(n=87), and compare them with normal women(n=101), Type 2 diabetic women(T2DM, n=32), and women with PCOS(n=97). Compared to respective sub-groups of BMI-matched non-diabetic women, the dehydroepiandrosterone sulphate(DHEAS)/dehydroepiandrosterone(DHEA-OX) ratio was greater(0.47 vs. 0.33, p=0.03) in T1DM, while DHEA-OX(5.7 vs 12.2 nM, p=0.0005) and SHBG levels(26.2 vs. 37.5 nmol/L, p=0.01) were lower and free testosterone(2.0 vs 1.6 %, p=0.01), DHEAS(5.95 vs.3.9 nM, p=0.0008) and DHEAS/DHEA-OX ratio(0.86 vs. 0.28, p<0.0001) greater in T2DM. Compared to T1DM women without clinical HA, those with HA(with or without anovulation) had greater total testosterone(1.26 vs. 1.14 nM, p=0.04) and androstenedione(7.06 vs.4.91 nM, p=0.004). The 18% of T1DM women with PCOS(NIH criteria) had an older age of menarche(13.0 vs. 12.5 years, P<0.05) and were more likely(12.5% vs. 2.82%, P<0.05) to have a positive family history of PCOS. Androgen levels did not differ between women with T1DM and PCOS compared to BMI-matched non-diabetic women with PCOS, but androstenedione levels were greater (8.17 vs.5.45nM, p=0.03) in lean non-diabetic women compared to overweight women with PCOS. In summary, T1DM and T2DM are associated with differing effects on androgen levels. Testosterone and androstenedione are most useful biochemical markers of clinical HA in T1DM. The mechanisms underlying PCOS in T1DM and its clinical significance are unknown.

**P54 A case of Euglycaemic DKA in a perioperative patient taking an SGLT2 inhibitor for type 2 Diabetes**

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A 42 year old woman became acutely unwell day 1 post abdominoplasty following 8.5 stone weight loss on diet over the preceding 3 years. She had type 2 diabetes for 9 years on Metformin 1g Bd, Liraglutide 1.8mg and Empagliflozin 10mg/d which were omitted perioperatively with recent HbA1c 77mmol/mol. She reported back pain, vomiting and shortness of breath. She was apyrexic with no signs of sepsis. Capillary blood glucose was 9.9mmol/l, however blood gas analysis revealed severe metabolic acidosis with pH 6.92 and anion gap 25.6. Serum lactate was normal however blood ketones were elevated at 4.4mmol/l. A diagnosis of euglycaemic diabetic ketoacidosis was made and she was treated with intravenous insulin, 10% glucose infusion and normal saline. She recovered gradually over 24 hours. Her antidiabetic medications were gradually reinstituted and she was well on discharge.

The association between SGLT2 inhibitors and diabetic ketoacidosis with normal or mildly elevated blood glucose levels, although rare, has been reported with a frequency of <0.1%. Risk factors include, type 1 diabetes, type 2 diabetes on insulin, low calorie and fluid intake, intercurrent illness, surgery and alcohol use. In this case prior massive weight loss, surgery and perioperative fasting were likely contributory. In addition, as the blood glucose was not elevated insulin was not given postoperatively. Furthermore in patients on SGLT2 inhibitors, because of renal reabsorption of ketones, ketonuria may be an insensitive marker of DKA. Awareness of this complication will allow prevention or early recognition and management to prevent potentially serious consequences.

**P55 A rare cause of hypopituitarism arising from a chromosome 2 deletion (2q14.1 – 2q21.1).**

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We present a case of a 7 year old boy who presented with apparent idiopathic isolated growth hormone deficiency with failure to thrive and developmental delay. He was born by caesarean section, weighing 8.5lbs and admitted to the neonatal unit for suspected infection and poor feeding. He walked at two years with first words at age four. His progress was characterised by depressed mood, difficulties with maths, time telling and auditory processing. Other clinical features included missing teeth, a subluxed patella, and a high arched palate. A statement of special educational need was initiated in school. He was treated with growth hormone replacement (1.0-1.6mg). On transitioning to adult endocrine services he was diagnosed with hypopituitary hypothyroidism and commenced Levothyroxine 75mcg (Free T4 12.8 pmol/l). Anterior pituitary function was otherwise normal (testosterone 13.9nmol/l, serum cortisol 787nmol/l following Synacthen test). On referral to the Genetics service this gentleman was found to have a deletion of 2q14.1q21.1.  The contained genes (GLI2 and INHBB) are involved in pituitary gland formation and regulation.  Previously reported associations with this region include learning difficulties, limb and facial abnormalities as well as cardiac and cerebral abnormalities.  Parental testing confirmed normal chromosomes in this gentleman.  This case illustrates a rare cause of hypopituitarism arising from deletion 2q14.1 – 2q21.1. In cases such as these there should be a high index of suspicion for an underlying genetic aetiology, particularly with presence of phenotypic manifestations outlined above during clinical follow up.

**P56 Identifying steroid-induced hyperglycaemia in day-case chemotherapy patients: It’s best to ask! Results from an audit of a regional chemotherapy centre**

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Our regional oncology day-case facility provides chemotherapy to approximately 50 patients each day. Glucocorticoids, which almost every patient receives, are a major contributor to hyperglycaemia. The diabetes service presently provides a reactive referral service. We assessed all patients (n=252) attending for day-case chemotherapy in a single week. We aimed to identify the prevalence of diabetes in this cohort, to assess how best to identify patients with diabetes and to compare potential need for diabetes service input to referral rate. Prevalence of pre-existing diabetes in this cohort was 17% (n=43). Of these, 74% (n=32) were receiving their diabetes care via primary care and only 26% (n=11) were attending secondary care. All patients had a random serum glucose concentration performed. Only 18 of 252 (7%) patients had a serum glucose concentration ≥ 11.1 mmol/L. All 18 were known to have diabetes. A random serum glucose concentration did not identify any patients not already known to have diabetes. It also failed to identify 25 of 43 patients known to have diabetes. No patients were referred to the diabetes service. Our audit demonstrates a high prevalence of diabetes in this cohort, how it is better to ask a patient if they have diabetes than to rely on a serum glucose concentration, and how our reactive referral system is missing a large number of patients who may need specialist diabetes input.

In short, it may be best to ask the patient.

**P57 Clinical features, autoimmune associations and ACTH responses to CRF, in Idiopathic Isolated ACTH deficiency – Data from the Irish National Pituitary Network**

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Idiopathic Isolated ATCH deficiency (IIAD) is a rare cause of secondary adrenal insufficiency. As the condition is rare, and the diagnostic criteria ill-defined, there are few good clinical descriptions in the literature. We have described presenting features, autoimmune associations, natural history and responses to CRF in a large case series of IIAD. This is a retrospective case note analysis with data derived from the recently commenced National Pituitary Database of Ireland. 23 patients with isolated ACTH deficiency were identified. A thorough chart and biochemistry review was performed. 23 patients were examined (18 women and 5 men). Age at presentation ranged from 17 to 88 years, (median 48 years). Most patients complained of fatigue; 9 patients presented with hyponatraemia, 13 had autoimmune illnesses ( primary hypothyroidism, n = 9). CRF stimulation testing was available in 12 of the 23 patients, 5 of whom demonstrated a rise in plasma ACTH concentrations, indicating hypothalamic, rather than pituitary aetiology. 2 patients recovered ACTH secretion and 2 patients progressed to have other pituitary hormone deficiencies. IIAD typically presents with insidious symptoms, and often has euvolaemic hyponatraemia. It is associated with autoimmune diseases, particularly primary hypothyroidism. As two patients recovered ACTH secretion, and two progressed to other pituitary hormone deficits, repeat pituitary testing should be considered.

**P58 Pregnancy and Acromegaly – Clinical Outcomes from the Irish National Pituitary Network**

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Acromegaly is a rare disease characterised by excessive Growth Hormone production. Subfertility is common in acromegaly and has various aetiologies, therefore pregnancy in acromegaly is rare. Here we present a case series of 18 pregnancies in 13 women with acromegaly from the newly formed Irish National Pituitary Registry. 12 women had pituitary macroadenomas, one woman had a microadenoma. The age of the women ranged from 28 to 40 years with a median of 34.5 years. Only 4/18 pregnancies had biochemical control of acromegaly pre-conception as defined by IGF-1 concentration in the age related reference level and plasma GH concentration of <2ug/L. There were 17 singleton pregnancies and one twin pregnancy. 11/18 babies were delivered by caesarean section. 7/18 pregnancies continued dopamine agonist treatment during pregnancy, no other treatments were utilized during pregnancy. *Effect of pregnancy on acromegaly;* No patient had a change in visual field during pregnancy. 9/14 IGF-1 plasma concentrations that were elevated pre-conception normalized during pregnancy, with a reduction in IGF-1 seen in a further 4 pregnancies. *Effect of acromegaly on pregnancy;* 17 healthy babies were born at term. 1/13 women developed pre-eclampsia and had an emergency C-section at 32 weeks. 0/13 women had gestational diabetes. Our data supports safety of pregnancy in acromegaly in spite of earlier concerns of tumour enlargement and pregnancy outcomes. Women with acromegaly should not be dissuaded from pregnancy, even if biochemical control is not achieved pre-conception.

**P59 Patients with Type 2 Diabetes Mellitus Demonstrate Similar Objective Measures of Circadian Rhythm Compared to Age and Gender Matched Controls, But Have an Excess of Social Jetlag when Assessed by Retrospective Questionnaire.**

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Circadian rhythm and various metabolic pathways are co-regulated. Dysfunction in one system could lead the disruption of the other. Circadian misalignment, which occurs in rotating shift workers, has been associated with the development of type 2 diabetes mellitus (T2DM). Furthermore, glycaemic control in T2DM is poorer in those patients with a later chronotype and in those with more social jetlag. This association between circadian misalignment and T2DM is well described, but it has not been determined if patients with T2DM demonstrate a normal circadian rhythm compared to matched, non-diabetic controls. To this end we undertook a multilevel circadian rhythm and metabolic analysis of 31 subjects with T2DM, and 26 age- and gender-matched controls, to determine if the groups demonstrated any significant differences in circadian rhythm. We previously reported on differences in self-reported social jetlag between patients and controls and now report actigraphy and sleep diary analysis. Questionnaires and sleep diaries were used to assess sleep timing on work nights and free nights. Subjects wore an Actiwatch for ≈11 days to provide an objective measure of circadian rhythm. Data were subjected to non-parametric circadian rhythm analysis, which failed to identify any significant differences between the groups. Questionnaires suggested that the T2DM group had a small but significant excess of social jetlag (0.96 hours vs 0.63 hours, p <0.05), however, neither actigraphy nor analysis of sleep diaries supported this finding. There is no difference between subjects with T2DM versus age- and gender-matched controls in circadian rhythm or social jetlag by objective measures.

**P60 Psychosocial risk assessment in children with Type 1 Diabetes in Ireland**

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Background**:** Psychosocial factors may be fundamental explaining poor glycaemic control in children with Type 1 diabetes (T1D). Diabetes management can only be successful if psychosocial needs are addressed.

Objectives:To evaluate the utility of psychosocial risk assessment in terms of its ability to predict glycaemic control. Method: The Risk Index for Poor Glycaemic Control (RI-PCG) is the screening tool to assess psychosocial risk. It defines three groups of risk: low (score 0-1), moderate (score =2) and high (score >2). Results: Two hundred and five T1D patients were recruited for the study, 175 of them completed RIPGC questionnaire: 52% boys, mean age 12.1±3.5, mean HbA1c 66.4±12.9. It was 44.6% children and 55.4% of adolescents with mean HbA1c 64.5±9.4 mmol/mol and 68±14.9 mmol/mol respectively. The percentage of patients with poor glycaemic control (HbA1c>75 mmol/mol) in adolescents was significantly higher compare to children (27.8% vs 9%, p=0.002). 63.8% of patients had a low score (0-1) on the RI-PGC, 14.7% had a moderate score (2), 21.5% had high scores (≥3). There was significant correlation between high score RIPGC and high HbA1c in patients older than 12 years (r=0.24, p<0.03). The mean HbA1c in low risk group was significantly lower compare to high risk group (64.7 vs 77.3 mmol/mol, p=0.01) in adolescents. Conclusion**:** Psychosocial risk factors have negative effect on glycaemic control in adolescents. Psychosocial risk assessment using RIPGC screening tool is helpful in clinical practice. The ability to predict higher risk of diabetes related complications would allow for early intervention by trained clinical Psychologist.

**P61 Patient satisfaction with a secondary care diabetes service**

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For people with diabetes (DM), self-management involves a collaborative relationship between the individual and healthcare provider. Patient-centred care is a core value of healthcare provision in our diabetes outpatient service. Patient feedback/satisfaction is important in evaluating the quality of healthcare provision and frequently informs quality improvement. In this study we assessed patients’ experience of a diabetes day centre (DDC) in a secondary care setting. All patients attending the DDC between 10th and 24th of May 2017 were invited to complete an anonymous survey evaluating: environment and administration processes (i.e check-in etc.); healthcare providers’ attitudes and perceived expertise; time allotted to each patient. Of 80 patients participating to date, most (80%) had type 2 DM with 20% having type 1. Most were aged between 45-65yrs (47%) with 34% over 75. Overall, 36% of patients were reviewed by the diabetes nurse, 29% by the podiatrist and 16% by the doctor (dietician 4%, research nurse, 4%, psychologist 2.5%, more than one healthcare professional [HCP] 9%). Satisfaction with staff was generally high with all patients feeling that the health care professional was polite and welcoming while 99% felt that they could trust that the information from the HCP was accurate and beneficial to diabetes management. Most (80%) felt they were allotted enough time to discuss concerns and questions relating to DM and its treatment and 99% were satisfied with their overall experience. We conclude that there is a high level of satisfaction with the service provided in our DDC.

**P62 A pilot study of Vitamin D Receptor TaqI and ApaI Gene Variants in adult asthma.**

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Background:Vitamin D deficiency andasthma are common in Ireland. Vitamin D receptor (VDR) polymorphisms have been associated with asthma and with asthma risk factors such as obesity and allergy. We studied 2 VDR polymorphisms in Irish asthmatics. Materials and Methods:VDR TaqI gene variant in exon 9 (T/C) (rs731236) and ApaI (rs7975232) in intron 8 (C/T) were determined using TaqMan® Assays. Results**:** 14 adult asthmatics (7 male; 9 atopic; mean age = 36y, mean BMI = 28kg/m2, 25(OH)D=52nmol/L) and 56 (34 male; 6 atopic; mean age = 46y, mean BMI=25kg/m2, mean 25(OH)D=54nmol/L) healthy volunteers were studied. We found that the distribution of C and T alleles for TaqI and ApaI polymorphisms and genotype frequencies varied significantly between asthmatics and controls (p<0.05). CT haplotype was significantly associated with asthma risk (OR 9.38 (95 % CI: 2.39 - 36.86), p = 0.002). Asthmatics with only TC genotype for both polymorphisms had significantly lower FEV1% compared to controls (p<0.05). There were no significant differences between genotypes for 25(OH)D level, BMI, or inflammatory biomarkers. Patients with TC+CC genotypes for ApaI had significantly lower IgE level (p<0.05).

Conclusion Our data suggest that TaqI and ApaI polymorphisms are more common in asthmatics. It is possible that the ApaI polymorphism is associated with the atopic asthma phenotype. More extensive studies are warranted to investigate the importance of these polymorphisms in asthma in Ireland, and also mechanisms by which they may influence the development and course of the disease.

**P63 Defining cardio-vascular risk in the transgender population**

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Information on the effects of cross-sex hormones on cardio-vascular risk in the transgender population is limited. There are no guidelines on whether to use natal or gender affirmed sex for vascular-risk calculations but the transgender population is known to have an increased vascular risk.We sought to determine the cardiovascular profile of transgender patients attending the endocrine service at Galway University Hospital. We retrospectively collected data on transgender patients regularly attending the endocrine clinic using hospital charts and the laboratory system. Twenty-five patients were identified, 5(20%) FTM and 20(80%) MTF. The average age was 31.8 years (25.3 FTM and 33.4 MTF). Seven had had reassignment surgery, 2FTM and 5MTF. Of the 25 patients 2(8%) had serious vascular complications while on hormonal treatment, one had developed a DVT (aged 53, overweight, smoker, on oestogen for 5 years), a second had an MI (aged 45, non-smoker on oestrogen for 8 years). Overall the patient group had a poor cardiovascular risk profile with 4(16%) being active smokers, 1(4%) having uncontrolled hypertension and 2(8%) with type 1 diabetes and poor glycaemic control (mean Hba1c 84mmol/mol). A lipid profile was recorded in only 30% with mean total-cholesterol 5.02mmol/L, LDL-cholesterol 3.03mmol/L and triglycerides 1.43mmol/L. This audit highlights the importance of assessing cardiovascular risk in the transgender population prior to and during hormonal treatment. Encouraging life style modification is important and in some patients, based on their risk stratification, prophylactic medications may be necessary (statin or aspirin therapy). Further prospective studies on larger cohorts are warranted.

**P64 Anthropometric and metabolic effects of a milk-based intensive lifestyle intervention in severely obese adults.**

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Therapeutic options for patients with severe obesity are limited. Low energy meal regimes can induce significant short-term weight loss and improvements in metabolic variables. We sought to estimate the effect size on adiposity and cardiovascular risk factors of a relatively inexpensive 24-week regime based on meal replacement with semi-skimmed milk. A retrospective cohort analysis showed that of 206 patients in our hospital-based bariatric medicine service who started, 111 (54%) completed the programme and underwent an initial milk-based weight loss phase, followed by weight stabilization and weight maintenance phases, each lasting 8 weeks. Patients were seen every two weeks by the bariatric physician, nurse and dietitian. We compared outcomes in completers (who had similar baseline characteristics to non-completers) at time 0, 8, 16 and 24 weeks, with repeated measures ANOVA. 50.9% of completers were female, 40.2% had diabetes, mean age was 50.9±10.3 years. BMI decreased from 52.8±9.25 to 47.0±8.69, 44.9±8.55 and 44.3±8.48 kg m-2 at 0, 8, 16 and 24 weeks, respectively (p<0.001), equivalent to 24.8kg weight loss and a reduction in excess body weight from 111±37.0 to 77.1±33.9%, p<0.001 over 24 weeks. In patients with diabetes, HbA1c decreased from 62.9±18.3 to 48±14.5 mmol/mol, p=0.01. These preliminary findings suggest that a 24-week milk-based meal replacement programme can have large effect sizes on important outcomes in severely obese. However, attrition was high. A more formal assessment of the efficacy of the intervention as well as its safety, feasibility and cost-effectiveness seems warranted.

**P65 Direct measurement of macronutrient intake and preference in obese vs non-obese population.**

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Introduction: Verbal reports, questionnaires and fMRI based data in humans suggests that obese individual have an increased preference for sweet and fatty foods. Direct measurement of food intake and preference in humans would permit definitive documentation of this phenomenon. Objectives: We therefore designed a longitudinal study incorporating a self-selection buffet paradigm, to incorporate direct assessment of food preferences in obese with a Body mass index (BMI) of > 30 kg/m2 and non-obese population with a BMI of < 30 kg/m2. Methods: Participants were recruited to a study in which a standardised buffet meal with their choices was provided. Food intake was recorded and macronutrient breakdown along with caloric intake was assessed. Statistical analysis was done using an unpaired t – test and the data was normally distributed. Results: Nine obese participants (BMI 43±3 kg/m2) and thirteen non-obese participants (BMI 24±0.6 kg/m2) were assessed. Total calorie intake in obese participants was 65% greater than non-obese participants (2009±242 kcal vs 1304±115 kcal, p=0.009). Obese participants consumed more calories from carbohydrates (976±134 kcal vs 617±71 kcal, p=0.01) of which simple sugars (433±86 kcal vs 206±27 kcal, p=0.008) and fat (808±132 kcal vs 499±49 kcal, p=0.02) compared to non-obese. The non-obese relatively had a higher energy intake from protein (15±0.9 %kcal vs 12±0.5 %kcal, p=0.02) in comparison to obese participants. Conclusion: Direct measurement of macronutrient and calorie intake is feasible in humans. Results demonstrate high intake of carbohydrate, sugar and fat in obese and relatively low intake of protein in obese population in comparison to non-obese.

**P66 Post-transplant diabetes mellitus in Mater Misericordiae University Hospital**

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The incidence post-transplant diabetes (PTDM) is variable primarily due to lack of standardised diagnostic criteria. Our objective was to study the incidence of PTDM in patients post heart and lung transplant (HLT) and to review if management of these patients is in accordance with the 2014 American Society of Transplantation guidelines. This was a retrospective study in the Mater University Hospital. Data were reviewed from 309 patients who had undergone HLT from 2005 to 2017. 206 patients had complete data. Majority of our patient had lung 53.4% (110), heart 46.1%(95) and combined heart/lung 0.5%(1) transplant. Most of the patients 174(84.5%) were screened for diabetes pre-transplantation with random plasma glucose (80.0%). Nearly all of the patients 205(99.9%) were screened for PTDM post surgery. The cumulative incidence for PTDM was 19.3% (40/207) patients. Transient hyperglycaemia post surgery was found in 13 (6.3%) patients. We found that PTDM patients were diagnosed by; persistently elevated plasma glucose (42.5%), HbA1c (47.5%) and oral glucose tolerance test (OGTT) (10.0%). All patients with PTDM were on prednisolone, 33(82.5%) on tacrolimus and 4(10.0%) on cyclosporine. Majority of PTDM 34 (85%) patients attended diabetes services. Mean glycated haemoglobin (HbA1c) at last clinic visit was 51 (range 30-105) mmol/mol. Nearly half of PTDM patients 19(47.5%) were on insulin, whereas 16 (40%) were on oral hypoglycaemic and the rest were managed by diet only. In conclusion, nearly all our patients were screened for PTDM and we found a high incidence. The patients were treated appropriately within a target HbA1c.

**P67** **An Unusual Case of Cystic Medullary Thyroid Cancer**

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Calcitonin-negative medullary thyroid cancer (MTC) is rare. A 35 year old female presented with a three month history of left sided painless neck swelling. Background medical and family history was unremarkable. On examination, she had a palpable left thyroid nodule. Thyroid function tests were normal. Thyroid ultrasound showed a large cyst in the left lobe of the thyroid measuring 5.8 x 4 x 2.6 cm, U3 in classification, with no lymphadenopathy. Fine needle aspiration cytology was classified as Thy 3. Following discussion at the multidisciplinary meeting, left thyroid lobectomy was performed. Histology showed an unilocular 5 cm cyst with no vascular invasion. The tumour cells stained negative for thyroglobulin and thyroid transcription factor 1. Proliferative index was 10-15%. Haematoxylin and eosin stain was positive, confirming epithelial tissue. Interestingly, calcitonin, synaptophysin, chromogranin A and amyloid stains were negative. However, carcinoembryonic antigen (CEA) stain was positive. Serum calcitonin and CEA were undetectable. A diagnosis of MTC was made. The patient underwent completion thyroidectomy with anterior neck dissection after computed tomography of neck and thorax was negative for metastasis. RET mutational analysis was negative. Three years post op the patient remains tumour free with undetectable calcitonin, CEA and negative imaging. This case is unusual because of the cystic nature of the tumour and because the tumour stained negative for calcitonin. Discussion will highlight the challenges involved in the diagnosis and long term follow-up in calcitonin-negative MTC.

**P68 One year audit at tertiary care hospital identifies patients at increased risk of Diabetic Ketoacidosis**

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Objectives: To define patient characteristics admitted with diabetic ketoacidosis (DKA) and identify those at increased risk of having recurrent DKA. Methods: Data on all patients admitted with DKA between January 2016 and December 2016 at Cork University Hospital were collected from medical notes and analysed using SPSSv22. Results: 84 DKA episodes were recorded in 59 patients. 89.3 % of those had type1 diabetes. 51.2 % were male, median age was 26 years and mediation duration of diabetes prior to presentation was 8 years (n=78). 60.7 % of the patients had previous DKA and 38.1 % had missed their clinic appointment with in last year. Precipitants of DKA were poor compliance (31%), gastroenteritis (20.2 %), infection (15.7 %), new presentation of type 1 diabetes (14.3 %), alcohol (10.7 %) and unknown precipitant (7.1%). Pre DKA and post DKA mean HbA1c was 101.2 mmol/mol and 90 mmol/mol respectively. Average length of stay was 2.72 days. We found younger age (p=0.019), previous non-attendance at clinic (p=0.023) and non-compliant behavior (p=0.025) as a significant risk factor for DKA. Conclusion: Younger age, previous non-attendance at clinic and non-compliance were significant risk factors identified in our cohort. Significant improvement in HbA1c after DKA reflects positive reinforcement effect of education. Hence intensifying education among “at risk” patients could potentially avert DKA.

**P69 MAIT Cells have similar frequency but raised IL-17 production in children with Type 1 Diabetes**

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Background: Mucosal associated invariant T (MAIT) cells are a T cell population found in the blood, liver, lungs and gut that have antimicrobial functions. They have been implicated in autoimmune conditions such as Multiple Sclerosis and Inflammatory Bowel Disease. IL-17 is a pro-inflammatory cytokine produced by MAIT cells that has been independently linked to autoimmunity as well as insulin resistance. MAIT cell numbers have been shown to be similar in adolescents with T1D and healthy controls. T cell production of IL-17 has been found to be greater in T1D. However, MAIT cell production of IL-17 in this population hasn’t been elucidated.

Methods: Blood samples were collected from 20 children (aged 6-18 years) with T1D and 20 healthy controls in Our Lady’s Children’s Hospital, Dublin. PBMCs were isolated and cultured overnight in the presence or absence of stimulus, then analysed by flow cytometry.

Results: The proportion of MAIT cells was similar between the T1D and control groups. Production of IL-17 by stimulated MAIT cells was significantly higher in the T1D group (p<0.05). There was no difference in production of IFNγ, TNFα or the proliferation marker Ki67. The immune checkpoint CTLA-4 was higher among T1D subjects but didn’t reach significance (p=0.07). There were no significant correlations between the results and age, BMI, HbA1c or length of time with T1D. Conclusions: This research highlights important differences in MAIT cell function between children with T1D and healthy controls and gives more credence for a role for MAIT cells in the pathogenesis of the disease.

**P70**  **Canagliflozin induced Diabetic Ketoacidosis**

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Canagliflozin is a sodium-glucose co transporter- 2 (SGLT-2) inhibitors developed for the treatment of adults with T2DM (DM). Canagliflozin lowers the renal threshold for glucose and promote urinary glucose excretion. Euglycemic diabetic ketoacidosis (EuDKA) is a post market warning in patients with type 1 diabetes and type 2 diabetes treated with SGLT-2 inhibitors. We report a case of 44-year-old male who was treated as a type 2 Diabetes Mellitus for 4 years presented to Emergency Department with history of vomiting, abdominal discomfort, dry mouth and polyuria. His medication regimen includes Insulin Detremir, Sitagliptin, Metformin and Canagliflozin which was started one week prior to admission. His Insulin was also reduced due to hypoglycemic events. His blood glucose was 12 mmol and Blood Gas analysis showed metabolic acidosis which confirmed EuDKA and he was successfully treated as per local DKA guidelines. As part of the work up, he tested positive for glutamic acid decarboxylase auto antibodies (GAD). Based on his presentation and positive GAD antibodies, he was diagnosed as Latent Autoimmune Diabetes of Adult onset (LADA). It is very important to be vigilant with the use of SGLT-2 inhibitors to decrease morbidity and potentially mortality particularly in patients with long-standing type 2 diabetes associated with marked β-cell insufficiency, type 1 diabetes mellitus, or latent autoimmune diabetes of adult onset.

# P71 Efficacy and safety of Glucagon-like peptide-1 receptor agonist (GLP-1RA) plus basal insulin versus basal insulin in Type 2 Diabetes Mellitus: A Systematic review and Meta-analysis.

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Background: Fixed dose combinations of Glucagon-like peptide-1 receptor agonist (GLP-1RA) with basal insulin represent a new therapeutic option for the treatment of diabetes mellitus. We hypothesised that GLP-1RA plus basal insulin is more efficacious and safer than basal insulin for patients with Type 2 Diabetes Mellitus (T2DM). Methods:Randomised controlled trials (RCTs) comparing GLP-1RA plus basal insulin versus basal insulin were searched using PubMed and www.ClinicalTrials.gov database. Inclusion criteria were: (1) RCTs; (2) comparison between GLP-1RA plus basal insulin versus basal insulin; (3) duration of treatment ≥24 weeks. Results: Eight RCTs with 4,942 participants were included in this meta-analysis. GLP-1RA plus basal insulin was associated with a significant reduction in HbA1c (Mean difference [MD]: -0.52%; 95% CI [confidence interval]: -0.70, -0.35; p<0.00001) and weight (MD: -1.94mmol/l; 95% CI -2.45, -1.43; p<0.00001). More patients achieved HbA1c <7% in the GLP-1RA plus basal insulin group (Odds ratio [OR]: 2.57; 95% CI: 2.03, 3.26; p<0.00001). The risk of symptomatic hypoglycaemia was similar between the two groups (OR: 1.13; 95% CI: 0.90, 1.43; p=0.29). However, diarrhoea (OR: 1.93; 95% CI: 1.44, 2.60; p<0.0001), nausea (OR: 5.57; 95% CI: 3.09, 10.05; p<0.0001) and vomiting (OR: 4.57; 95% CI: 2.50, 8.37; p<0.00001) were more common in the GLP-1RA plus basal insulin group. Conclusion: GLP-1RA plus basal insulin is more efficacious for HbA1c and weight reduction when compared with basal insulin in patients with T2DM. Risk of symptomatic hypoglycaemia was similar, however, the gastrointestinal adverse events were more common with GLP-1RA plus basal insulin.

**P72 Diabetes in the Emergency Department**

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Hyperglycaemia and hypoglycaemia are common presentations to the emergency department (ED) often resulting in admission to hospital. The goal of this audit was to assess care provided to patients presenting to ED but not admitted. Data was obtained from the hospital electronic care system. Over a six month period, 89 patients were coded as presenting with hyper- or hypoglycaemia. Seventy seven (59 hyperglycaemia, 18 hypoglycaemia) cases were reviewed in detail. Of the 59 patients presenting with hyperglycaemia, 52 had known diabetes (24 T1DM, 28 T2DM) and 7 were new presentations (1 T1DM, 5 T2DM, 1 secondary diabetes). 51 (86.4%) had ketones checked. The diabetes specialist team was contacted for 7 cases. Treatment was adjusted in 19 (36.5%) cases and follow up arranged for 17 (28.8%) cases. Eighteen presentations with hypoglycaemia were reviewed (11 T1DM, 7 T2DM). Fourteen (77.8%) were on insulin alone the remainder on sulphonylurea alongside insulin or other medications. Twelve patients required third party assistance. The diabetes specialist team was contacted in 5 (27.8%) cases and treatment adjusted in 12 (66.7%) cases. Driving regulations were not documented for any episode. This audit identified areas we could improve in the management of diabetes related emergencies in the ED. We have now implemented hyperglycaemia pathways to facilitate referral and communication between ED and the diabetes specialist team both within and out of hours. A similar pathway for hypoglycaemia is in progress. We anticipate these will enhance management of diabetes emergencies in the ED ultimately reducing hospital attendances.

**P73 Pre-Existing Diabetes and Pregnancy: A 2-Year Outcome Study from The National Maternity Hospital**

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Diabetes in pregnancy increases the risk for perinatal outcome. We reviewed patients with pre-existing diabetes (81 T1DM and 26 T2DM) attending our unit in 2015/16. T-test, χ2 test, and ANOVA were used to analyze the data. Majority (86%) were Caucasians, mean age and diabetes duration of 34.5 ± 4.9 years old and 12.7 ± 9.3 years. Most mothers (n=28, 33.7%) were obese (BMI > 30kg/m2) notably in T2DM (31.8 ± 7.5 vs. T1DM 26.2 ± 4.0 kg/m2, p=0.002), although they had better diabetes control (HbA1c 42.2 ± 9.4 vs. T1DM 57.2 ± 15.8 mmol/mol, p <0.005) at booking. Mean HbA1c improved during pregnancy (1st trimester, 53.4 ± 15.8 vs. 2nd trimester 41.0 ± 9.5 mmol/mol vs. 3rd trimester 43.6 ± 8.83 mmol/mol, p<0.005) with 89 patients (84%) treated with insulin. Caesarean section (CS) and spontaneous vaginal delivery accounts for 53 (49.5%) and 26 (24.3%) cases. Miscarriage occurred in 18 patients (16.8%) and majority (83%) in T1DM patients. Average baby weight was 3.7 ± 7.7 kg and macrosomia (>4kg) was detected in 33 babies (38.4%). More macrosomia were identified in overweight (BMI > 25 kg/m2, n=23, 74.2%, p=0.326) and older mothers (n=33, 35.8 ± 4.9 years old, p=0.02) and most (n=21, 63.6%, p=0.852) required CS. Mothers requiring emergency CS (EmCS) had longer diabetes duration compared to SVD (16.43 ± 9.0 vs. 9.16 ± 8.16 years, p=0.018). For diabetes in pregnancy, pre-pregnancy control and duration of diabetes are significant risk factors for complications in pregnancy.

**P74 The Effects of GLP-1 Therapy On The Inflammatory Markers In Obese Patients**

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Glucagon-like peptide-1(GLP-1) is an incretin hormone released in response to nutrient intake and causes increased insulin secretion from pancreatic β-cells, delays gastric emptying and stimulates glucose disposal. Emerging data shows that GLP-1 has anti-inflammatory effects on the liver, endothelial cells and skin by reducing the production of inflammatory cytokines and infiltration of immune cells in the tissues. Additionally, anti-inflammatory effects are also observed in chronic inflammatory diseases, such as non-alcoholic steatohepatitis, Type 2 diabetes, atherosclerosis, and psoriasis. Obesity is also a chronic inflammatory condition. We aim to elucidate the effects of GLP-1 therapy on inflammatory markers in obese subjects. To date, 34 participants (58.8% female; mean age 52.8 years) from the Weight Management Service (WMS) in St Columcilles Hospital have been enrolled for 12-week Liraglutide therapy. Treatment was associated with a significant reduction of mean BMI (45.0 to 43.1 kg/m2, p<0.0001) and HbA1c (47.2 to 43.6 mmol/mol, p<0.001). Additionally, fasting blood glucose decreased from 7.98 to 6.97 mmol/L (p=0.07). There was a significant reduction in serum IL-1β (3065.6 to 392.6 pg/mL, p<0.0001), soluble CD163 (284059.2 to 249130.5 pg/ml, p<0.0001), and Galectin-3 from 7982.2 to 7208.4 pg/ml (p<0.05) in the serum of patients. Analysis of adipokines found a reduction in serum Leptin (54288.8 to 44683.4 pg/ml, p<0.0001) and Adiponectin (71559.8 to 69353.7 pg/ml, p=0.05). Our study found that GLP-1 therapy displays possible anti-inflammatory effects in obesity, lending further evidence that GLP-1 has anti-inflammatory functions. We plan to investigate the pathways involved in this process.

**P75 Acute opioid induced secondary adrenal insufficiency.**

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A 31 year old female with Fowler’s syndrome was admitted for intravenous antibiotics for a catheter related urinary tract infection. Her suprapubic catheter was replaced under sedation followed by a severe pain crisis, necessitating a large dose of opioids including – 2mg fentanyl, 20mg morphine, and ketamine and intravenous morphine via Patient Controlled Analgesia (PCA). Blood pressure remained stable throughout.

Within 16 hours of procedure and while on the morphine PCA, a random cortisol was measured (19 nmol/L). She had no recent steroid exposure or opiate use prior to admission. There were no clinical features of hypocortisolaemia/Addison’s disease. Pituitary profile: FSH 7.5 IU/L, LH 6.2 IU/L, TSH 4.09 mIU/L (R.I. 0.27-4.20), free T4 17.6pmol/L (R.I.12-22.0), LH 6.2 IU/L, Prolactin 1459 mIU/L (R.I. 102-496). Repeat 9 am cortisol 69nmol/L . Short synacthen test: Baseline cortisol 124 nmo/L with rise to 489 nmol/L at 60 min. A cortisol level of 415 nmol /l I considered to exclude adrenal insufficiency on this laboratory assay. While synacthen test shows adequate response, it is not helpful to out rule secondary adrenal insufficiency. She was placed on hydrocortisone replacement with a plan for dymanic testing of the hypothalamic- pituitary –adrenal axis . Recurrent urosepsis with recurrent hospitalisations have so far made it difficult to reassess recovery of cortisol axis. This is a case of acute secondary adrenal insufficiency related to acute opioid use for a pain crisis. Chronic opioid use causing secondary adrenal insufficiency is well documented in the literature. Acute opioid related secondary adrenal insufficiency is not well described.

**P76 The importance of awareness of ritonavir / cobicistat CYP 34A enzyme inhibition and its effect on steroid metabolism.**

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A 69 year old man with HIV attended the endocrine clinic with a six month history of weight loss and fatigue. A random cortisol level measured 26 nmol/L and hydrocortisone treatment was started. His weight stabilised at 55 kg. His HIV was well controlled with an undetectable viral load and a normal CD4+ count on a stable regimen of Truvada (emtricitabine and tenofovir) and Rezolsta (Darunavir and Cobicistat). He had no features of lipodystrophy or Cushing’s syndrome. On further questioning he had used a nasal spray bottle of fluticasone 9 months ago not prescribed by his usual doctor. He had a history of intra-articular steroid joint injection 48 months ago.

Ritonovir and Cobicistat have multiple drug interactions via inhibition of CYP 34A. This increases the plasma concentrations of fluticasone with the risk of iatrogenic Cushing’s syndrome and as in this case, secondary adrenal insufficiency. Increased awareness to their interactions is necessary. HIV medications are commonly prescribed by HIV specialists while steroids are prescribed and administered by other healthcare professionals (e.g. Inhalers, nasal spray, creams and intra-aarticular or epidural injections). At this hospital the introduction of a steroid information card for the patient to give to his healthcare professionals regarding possible interactions is a means of improving awareness.9 am cortisol with short synacthen test is used for on-going assessment.

**P77 Is risk factor based screening for GDM effective?**

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Universal screening along the Irish Atlantic seaboard reveals a prevalence of gestational diabetes (GDM) of 12%. The national guidelines recommend risk factor based screening. This study aimed to evaluate this risk factor based approach. All women who attended for antenatal care in a single centre from January- December 2014 were included. A retrospective review of demographic data was collected and a dataset collected. This was linked to biochemistry database for results of OGTT. Risk factors evaluated included: age >30, Body mass index >30kg/m2, non-white ethnicity, family history of diabetes, history of polycystic ovarian syndrome, prior GDM. 2942 women attended for antenatal care during this period and were included for evaluation. 17 women had pre-existing diabetes and were excluded. At least one risk factor was present in 2679 (91%) women, of whom 1976 (74%) had an OGTT.. 135 (6.7%) of those who had an OGTT had GDM

|  |  |  |  |
| --- | --- | --- | --- |
|  | **1+ Risk factor Identified** | |  |
| **Pregnancy Outcome** | Screened  n=1976 | Not screened  n=703 | GDM diagnosis  N=135 |
| Total C-section | 29.8% | 35.9% | 41.5% |
| Macrosomia (>4kg) | 16.4% | 12.9% | 14.1% |
| NICU admissions | 3.9% | 1.4% | 5.2% |
| Apgar <7@ 5 mins | 0.7% | 0.3% |  |

Table 1. Neonatal and obstetric outcomes in those with a positive risk factor

These results demonstrate that a risk factor based approach for GDMscreening resulted in a missed screening opportunity in 26% of women.This may have implications for perinatal outcomes but also for the future health of the mother and her offspring.

**P78 High Density Lipoprotein (HDL) particle function and proteomic composition is modulated during obesity**

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HDL-cholesterol (C) levels inversely correlate with cardiovascular disease (CVD) but raising HDL-C pharmacologically does not infer improved outcomes. HDL particles promote cellular efflux and exert anti-inflammatory/anti-oxidant effects. This study hypothesized that HDL function and protein composition is compromised in obesity. Obese subjects (n=105) and non-obese subjects (n=55) were recruited by St. Vincent’s University Hospital and Tallaght Hospital. Obese subjects were categorized by NCEP-ATP III guidelines (38 metabolically healthy (MHO) and 67 metabolically unhealthy (MUO) obese subjects). Efflux function of small (ABCA1-dependent) and large (ABCA1-independent) HDL particles and paraoxonase-1 (PON1) activity was determined. 10 age- and sex-matched subjects were selected from each group and HDL proteome assessed. ABCA1-independent (p<0.001) efflux to HDL and serum PON1 activity (p<0.001) were significantly reduced, while ABCA1-dependent (p<0.01) efflux was significantly increased, in obese individuals compared to lean controls. Significant reductions in ApoA1, ApoA4 and PON1 and increases in complement proteins, CRP and SAA were observed on MUO-HDL compared to lean-HDL by proteomics analysis. The MHO group demonstrated an intermediate proteomic signature between lean and MUO groups. Statistical Analysis: normal data, unpaired t-tests/one-way ANOVA (Bonferroni post-hoc test); non-normal data, Mann Whitney U test/Kruskal-Wallis testing (Dunn’s post-hoc test). Obesity modulates HDL efflux function with reduced capacity of larger particles, and increased capacity of smaller particles, to support cholesterol efflux. Increased lipase-mediated remodeling of large HDL particles may account for this effect. Increasing the number of HDL particles that are enriched with pro-inflammatory proteins and depleted of anti-inflammatory proteins may be detrimental for CVD in MUO individuals.

**P79 Influence of fetal distress on the arteriovenous umbilical cord glucose concentrations of term neonates exposed to labour**

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We aimed to establish the relationship between umbilical cord glucose concentrations and markers of fetal distress among term neonates exposed to labour. It is a retrospective study of nulliparous non-diabetic women diagnosed in labour at term from April 2011-January 2012 in a tertiary maternity centre. Acid-base status and glucose concentrations of paired arterial and venous cord blood were tested using a blood gas analyser. Delivery method, Apgar score, and presence of fetal distress (meconium, abnormal fetal blood sampling, cardiotocographic abnormalities) were recorded. SPSS was used for statistical analyses. Data from 358 women and babies were studied. 95.5% (n=342) delivered vaginally (67% (n=240) spontaneous; 28.5% (n=102) instrumental). 4.5% (n=16) were emergency Caesarean sections (CS). Fetal distress precipitated either CS or instrumental delivery in 7.8% (n=28) of labours. There was no significant difference in cord glucose concentrations between these labours and those without fetal distress. Arterial glucose correlated negatively with venous pH (r=-0.16,p<0.01), venous base excess (BE) (r=-0.30,p<0.01), and arterial BE (r=-0.19,p<0.01). Venous glucose correlated negatively with venous pH (r=-0.16,p<0.01), venous BE (r=0.-30,p<0.01), arterial pH (r=-0.13,p<0.01), and arterial BE (r=-0.19,p<0.01). Arterial and venous glucose correlated positively with venous and arterial lactate. Arteriovenous umbilical cord glucose concentrations rise as lactate rises and as pH and BE fall, possibly due to anaerobic metabolism and catecholamine-induced glucose release. However, clinical markers of fetal distress had no significant impact on cord glucose. Cord glucose concentrations outside normative ranges may be part of the biochemical picture of perinatal distress, but are not reliable independent diagnostic markers.

**P80 Reducing errors in hypoglycaemic screens in a tertiary neonatal intensive care unit – Optimising the system**

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An audit in our tertiary neonatal intensive care unit (NICU) of 45 hypoglycaemic screens (“critical samples”) taken on 36 patients between August 2014 and December 2016 revealed at least one error associated with each screen. We designed a quality improvement project to reduce the number of errors associated with hypoglycaemic screens from 100% to 50% over six months. “Plan, Do, Study, Act” (PDSA) cycles guided the project. The first cycle involved process mapping to understand the processes defining the system of critical sampling. The second cycle used our audit data to produce a Pareto diagram that identified key areas of improvement. The third cycle implemented four improvement efforts focused on these areas, guided by a driver diagram. The fourth cycle is ongoing, measuring the impact of changes over time using run charts. Process mapping revealed the critical sampling process to be multidisciplinary, involving doctors, nurses, biochemists, and lab technicians. 257 errors were made in 45 critical samples performed on 36 patients over 53 months. The Pareto diagram illustrated that the major contributing errors were incomplete hypoglycaemic screens, delays in receiving results > 1 week, and delays > 15 minutes from low point-of-care blood glucose to time of critical sampling. Improvement efforts were implemented. A standardised checklist was developed to ensure reproducible follow-up of results. Hypoglycaemic “packs” were devised to aid doctors in accurately completing the screen. Guidelines on timing of hypoglycaemic screens were circulated, and an educational session was held. Errors since implementation of these changes are being actively monitored.

**P81 Labour physiology and its relationship to arteriovenous umbilical cord glucose concentrations of term neonates**

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This study explored the influence of labour physiology on arteriovenous umbilical cord blood glucose concentrations. It is a retrospective study of nulliparous non-diabetic women diagnosed in labour at term (>37 weeks) from April 2011-January 2012 in a tertiary maternity centre. Postpartum paired arterial and venous cord blood glucose concentrations (mmol/L) were tested on blood gas analyser. SPSS was used for statistical analyses. 358 women and babies were studied. 95.5% (n=342) delivered vaginally (67% (n=240) spontaneously, 8.5% (n=102) instrumental). 4.5% (n=16) were emergency Caesarean sections (CS). Arterial glucose was significantly lower than venous glucose (5.3±1.2 *vs* 5.6±1.2,*p*<0.01). There was no significant difference between the cord glucose concentrations of babies delivered by spontaneous vaginal delivery, instrumental delivery, or emergency CS. Women who had a spontaneous membrane rupture had higher arterial glucose concentrations than women who had an artificial rupture (5.5±1.2 *vs* 5.2±1.1,*p*=0.49). Epidural use yielded significantly lower glucose concentrations (arterial: 5.1±1.0 *vs* 5.9±1.4,*p*<0.01; venous: 5.4±1.0 *vs* 6.2±1.4,*p*<0.01). There were no significant predictive effects of maternal age, baby gender, or birth weight on glucose concentrations. This study offers normative values for cord glucose concentrations. Higher cord glucose concentrations have been reported in infants delivered vaginally compared to by elective CS, with the labour-induced catecholamine surge likely explaining the rise. Our study found no difference between infants delivered vaginally or by emergency CS, suggesting that infants exposed to labour experience this surge regardless of delivery method. Lower glucose concentrations associated with epidurals and artificial membrane rupture suggest that interruption of physiological labour diminishes this phenomenon.

**P82 Case Series; Experience of the Management of 2 Patients with Severe Anorexia Nervosa in Sligo University Hospital using the MARSIPAN protocol.**

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Anorexia nervosa has the highest mortality of all psychiatric conditions. Sligo University Hospital (SUH) uses the MARSIPAN protocol for the (Management of Really Sick Patients with Anorexia Nervosa)1for inpatient treatment.

Case 1; 22-year-old lady with a BMI of 12.06kg/m2, admitted voluntarily and reported food and bowels dominated her life, did not leave the house, consuming only nutritional “supplements, laxatives. She was commenced on a naso-gastric feed at 10/kcal/kg/day, 1 litre fluid restriction, cardiac monitoring, confined to bed (commode for toileting), nursed one-to-one in an observation bay on a general medical ward. Electrolyte supplementation was required for refeeding syndrome. Although weak she displayed significant sabotaging behaviour, micro-exercising in bed, on her phone/computer. She continued to hold bowel and bladder for weighing. She remained in hospital for 63 days with gradual reintroduction of oral diet and exercise. 9 months post discharge she has a BMI 18.5 kgs/m2 and a part-time job.

Case 2; 27 year old lady with 10 Ibs weight loss in 3 weeks eating only celery, BMI 13.0 kgs/m2. The MARSIPAN protocol was commenced as above, allowing only vitamin supplementation orally. However she aspirated, developed pneumonia and respiratory failure requiring and mechanical ventilation and inotropic support and electrolyte supplementation for refeeding syndrome. Upon weaning sedation she commenced micro-exercising with limb movements, animated conversations, requests for opening of windows to shiver and lose calories. She remained in hospital for 83 days. 7 months post discharge she has a BMI of 16kg/m2 and is living independently.

As one of only 2 Specialist Eating Disorder Units in Ireland a protracted coordinated multidisciplinary approach has been successful in 14 such patients to date.

**P83 A Review of Histology Reports Of 675 Thyroid Cancer Cases In A Single Centre Over Ten Years**

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The recently (2015) revised American Thyroid Association guidelines for the management of differentiated thyroid cancer recognise the importance of histological subtype in risk stratification. The prevalence of thyroid cancer subtypes in an Irish population is unknown. We reviewed all histology reports of thyroid carcinoma from a quaternary referral centre over a 10 year period, 2005 to 2015. 675 reports were reviewed. Of these, 87% were reported as papillary thyroid cancer (PTC), 7% follicular, 2.5% medullary, 2.5% anaplastic, 1% mixed. Absolute case numbers of thyroid carcinoma reports increased from 32 in 2005 to 111 in 2014. We then examined the annual incidence of each histological subtype (follicular variant, papillary, mixed, tall cell, insular and diffuse sclerosing) of PTC. Follicular variant PTC increased from 7/23 (30%) in 2006 to 36/90 (40%) in 2014, while other variants remained unchanged. The histological subtypes associated with higher risk, tall cell, insular and diffuse sclerosing variants all remained uncommon (<5%). The apparent increase in follicular variant PTC might reflect a change in reporting methods but also raises the possibility of a changing disease pattern over time. Re-analysis of the original histology specimens is required to answer this question. This data examination is the first review of characteristics of thyroid cancer in an Irish population. It can be used in informing future planning of services and ensure that treatment outcomes are as good as internationally predicted outcomes based on initial risk stratification.

**P84 Effects of Canagliflozin on Weight, Glycaemic control and Systolic Blood Pressure in patients registered at our service.**

***A Retrospective Study***

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A wide variety of drugs is available to manage type 2 DM. But drugs that provide good glycaemic control, such as Sulphonylureas, Insulin and Glitazones, tend to induce weight gain, while drugs that reduce weight gain do not provide optimum blood glucose control (GLP- 1 Analogue, DPP- 4 inhibitors). The concept of introducing non-insulin dependent compounds led to the idea of developing drugs with primary effect on organs other than liver, pancreas and gut. SGLT- 2 inhibitors, selectively inhibits the SGLT-2 receptors in kidneys and prevent the reabsorption of glucose. With their unique mechanism of action SGLT-2 inhibitors not only improve the blood glucose levels but also aid in weight reduction and blood pressure control

We did a retrospective study on Type 2 DM patients in Letterkenny University Hospital to investigate the effects Of Cannagliflozin.

50 patients were selected for study after matching the inclusion criteria. All had received Canagliflozin 300 mg once daily and had normal baseline renal function with a GFR of > 60. Weight, Systolic BP and HbA1c were checked at baseline and after six months of receiving Canagliflozin. The Mean HbA1c at baseline was 9.1 % which improved to 8.2 % with the standard deviation of 1.56 and a p value 0.000179. The Mean baseline weight reduced from 104.6 kg to 98.43 kg with the standard deviation of 5.22 and p value of 2.39 x 10-11. The Mean SBP at baseline was 145.86, which reduced to 136.30. This study shows that SGLT-2 inhibitors can be useful option in the management of obese diabetes patients.

**P85 Adherence rates of women with gestational diabetes with post partum glucose screening/testing protocols for ongoing diabetes in Sligo University Hospital in 2015.**

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Numbers of women presenting to the diabetes clinics in Ireland with Gestational Diabetes is increasing dramatically with a 50% likelihood of developing diabetes later in life outside of pregnancy. The American Diabetes Association guidelines are that all such individuals be requested to attend post partum for an 75 gram oral glucose tolerance test (OGTT). NICE (National Institute of Clinical Excellence) guidance 2015 recommends a fasting glucose between 6-13 weeks post partum and do not routinely recommend an OGTT. We looked at how many of the women with gestational diabetes in our service attended for this or any follow up. 72 women attended SUH diabetes clinic with a diagnosis of gestational diabetes in 2015. 24 has a history of previous gestational diabetes. 22 had a fasting glucose post partum, 11 within the recommended 12 week period. 21 of these were normal and 1 was abnormal. Only 12 of the 72 patients had an OGTT performed, and 2 were abnormal. All positive tests were referred to the hospital diabetes service. Few women with gestational diabetes are uptaking this follow up service despite advice to do so and leaflets been given on discharge. Postulated reasons for low adherence include the cost of this GP visit, time constraints, perceived lack of importance upon completion of the pregnancy. Potential solutions include appointment of a dedicated diabetes nurse midwife to follow up individuals post partum. The new guidelines for a fasting sugar/Hba1c instead of OGTT will also assist compliance.

**P86 Effectiveness of neonatal screening for hypothyroidism, born to hypothyroid mothers positive for thyroid autoantibodies.**

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Introduction: Neonatal hypothyroidism can be related to the transmission of maternal thyroid antibody and can persist for some weeks post partum. In this hospital we monitor neonatal serum TSH testing at day 10 in addition to heel-prick testing in babies whose mothers are thyroid antibody positive. This study looks at TSH results in these neonates and maternal thyroid antibody status.

Method: This study involved a review of all patients with hypothyroidism in pregnancy attending endocrinology OPD in 2015 and 2016 and correlating with the TSH levels of the newborn babies. Results: In the year 2015-16 there were total 66 such pregnant patients who were on treatment with exogenous thyroxine supplementation. Out of 66 pregnant hypothyroid females we found 56% positive and 30% negative for thyroperoxidase antibodies. With 13% patients having unknown antibody status. Out of all pregnant hypothyroid females with positive TPO we found that TSH was checked for 45% neonates and not for 51%. Abnormal TFTs in babies born to TPO positive vs TPO negative mothers was 17.6% vs 20% respectively. Conclusion: Current results suggest that the incidence of neonatal hypothyroidism might not be associated with maternal thyroid autoantibodies. Is there any other factor responsible for neonatal hypothyroidism in such cases? There is need for further research in this respect. There is lack of adherence to local guidelines.

We are extending the time span for the study to include years from 2008 onwards effectively making it a 9 year study, which will add confidence to the results.

**P87 Iodine status on the Island of Ireland**

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Iodine is a trace element required for thyroid hormone production. Requirements increase in pregnancy, when even mild deficiency may affect offspring neurocognitive development. The gold standard for assessing iodine status is population surveys of urinary iodine concentration (UIC). The WHO also suggests a population prevalence of >3% of TSH values > 5mIU/L indicates deficiency. A recent UK survey of 700 teenage girls demonstrated mild iodine deficiency (median UIC 80 µg/L; sufficiency > 100) with seasonal variation. We recently demonstrated iodine deficiency in 240 pregnant women in Belfast associated with poor dairy intake. We surveyed 903 girls aged 14-15 years in seven sites across Ireland. The median urinary iodine concentration (UIC) was 111 µg/L. All areas were sufficient except Galway (98µg/L). A positive correlation was found between UIC and milk consumption estimated from iodine specific food frequency questionnaires (p<0.001). In the two sample sites surveyed twice UIC levels were lower in summer vs winter months (p=0.005). Milk samples collected from Galway and Roscommon had a lower mean iodine concentration compared to those from Derry/Londonderry (p<0.05). Neonatal blood spot TSH results of all 354,403 infants born in NI between 2000-2014 were also reviewed and 0.5% of neonates had a TSH > 5mIU/L. Higher TSH levels were found in babies born during summer months. These analyses suggest iodine sufficiency in Ireland, although of borderline degree. Altered eating habits in pregnancy, along with seasonal and geographical factors may combine to increase the risk of iodine deficiency. Continued population monitoring and pre-pregnancy education is required.

**P88 Identification of protocols to reduce the burden and cost of hospital visits in patients with differentiated thyroid carcinoma**

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Management of differentiated thyroid carcinoma patients is challenging because of the variable impact of the diagnosis on morbidity and mortality in this patient cohort. Decision making has been streamlined by the publication of the British Thyroid Association guidelines in 2014. This audit was conducted to assess the impact of the BTA guidelines and establishment of a multidisciplinary team on patient management and to identify whether the number of hospital attendances could be safely rationalized using the guidelines. 101 patients (80 papillary, 21 follicular carcinoma) were identified from a database of those who had undergone a surgical resection with an indication of differentiated thyroid carcinoma. 67.7% underwent total thyroidectomy and there was no difference in use of radioiodine therapy before and after the 2014 guidelines (63% vs 79% p 0.2). Patients attended an average of 4.3 hospital appointments per year, not including radiation oncology appointments for which data were not available, consisting of one endocrine and one radiology appointment and two or more surgical appointments. Seventy six percent of patients had management which met all the relevant BTA guidelines; the criteria which were not met in the remaining patients included missing thyroglobulin measurements and difficulty achieving TSH suppression according to MDT recommendations. These data suggest that a shared endocrinology-endocrine surgery protocol co-ordinated by a nurse specialist would avoid replication of tests, could reduce visit burden and improve achievement of MDT-recommended management.

**P89 A qualitative study on the perception of diabetes-related osteopathy in individuals living with type 1 diabetes mellitus**

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Patients with type 1 diabetes mellitus (T1DM) can develop early onset osteopenia or osteoporosis and are therefore exposed to increased risk of fracture. Individuals living with diabetes can directly influence their skeletal health with lifestyle measures. However, diabetes-related osteoporosis is not emphasized as part of the public information campaigns on most patient advocacy websites. This study aimed to determine the association of osteopathy and DM with a view to designing strategies for patient outreach programmes. At Galway University Hospital, a voluntary 20 question survey was administered to 102 consenting individuals living with T1DM. The participants were asked to identify diabetes-associated complications, noting those of greatest concern, and to describe the impact DM may have on bone health. Nearly half (49%) of participants did not associate osteopathy with T1DM while 28% of respondents linked diabetes with bone thinning and bone fracture. While 52% indicated the onset of blindness as their primary concern, less than 1% identified bone health. When asked how diabetes could impact bone health, respondents presented hypotheses of diabetes-associated delayed healing, increased infection or poor circulation. The study demonstrates low-level awareness of the impact living with T1DM may have on bone health and injury repair. Therefore, the deployment of patient interactive activities or educational modules may enhance the health and quality of life of individuals living with T1DM. As respondents identified their endocrinologist or websites as their primary sources for information, these outlets need to be our targeted mechanism for outreach activities.

**P90 High Incidence of Advanced Liver disease in patients with Non-alcoholic Fatty Liver Disease: A single center Irish study**

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With rising rates of obesity and metabolic syndrome, non-alcoholic fatty liver disease (NAFLD) has become the leading cause of liver related morbidity and mortality in the western world. Despite concerning national obesity statistics, there is a paucity of data on the baseline characteristics and natural history of NAFLD amongst the Irish population. Electronic records were used to conduct a retrospective review of patients attending the Hepatology Department in St. James’ Hospital with a diagnosis of NAFLD from 2006 to 2016.N = 513 patientsattended with a diagnosis of NAFLD over the 10- year period: 274 (53.4%) were male, and 239 (46.5%) were female. Median age was 57 years (19-97), with a median BMI of 31.7 (21.9-60.9). 164 (32.0%) patients had diabetes, 203 (39.6%) had dyslipidaemia and 178 (34.7%) were hypertensive. 99 patients had liver biopsies of those 39 (39.4%) had advanced hepatic fibrosis and a further 71 (33.3%) had advanced fibrosis scores. 6 patients were diagnosed with hepatocellular carcinoma, 5 developed decompensated liver disease and 1 proceeded to orthotopic liver transplantation. Man-Whitney U tests showed Fibroscan scores were higher in individuals with IGT/diabetes (U= 10,397, z= 5.3, p<0.0005) and hypertension (U=8,398, z=2.78, p=0.006). Multivariate logistic-regression identified IGT/diabetes as the most significant factor associated with advanced fibrosis scores (OR:2.53, p = 0.01, CI: 1.49-4.27).At least one third of NAFLD patients attending the Hepatology center had advanced fibrosis identified on biopsy or Fibroscan criteria. Patients with IGT/Diabetes are at significantly increased risk of advanced liver disease and should be screened.

**P91 Analysis of the Haemoglobin A1c and weight changes seen in patients commenced on Sodium-Glucose Co-Transporter 2 Inhibitors.**

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Sodium-glucose co-transporter 2 (SGLT2) inhibitors are gaining more wide-spread use in Diabetic populations based on evidence showing their effects in weight reduction and glycaemic control. The aim of this study was to analyse these effects over a three, six and twelve month period. Data was collected on patients attending the diabetic clinic in a level three hospital. All patient were on three or more agents, with sub-optimal glycaemic control, and had declined, or were unable to administer injectable agents. Data was analysed on 30 patients in total. Two patients were lost to follow up and a further 2 stopped therapy due to side effects. Twenty-one patients (average age 60.6 years) were followed up for three months. Their mean weight loss was 4.82+5.23 kilograms, and mean improvement in Haemoglobin A1c (HbA1c) was 18.55+16.83 mmol/mol. Data from 15 patients collected at six months shows that weight and HbA1c reduction were sustained with a reduction in weight and HbA1c of 6.98+6.94 kilograms and 21+18.66 mol/mol (respectively) from baseline measurements. Twelve month data was available for 7 patients. This showed that while weight reduction continue with an average loss of 12.46 kilograms from baseline, there was a very modest reduction in HbA1c from baseline (1.43 mmol/mol), and an actual increase of 19.57 mmol/mol from 6 month data. In summary, in a standard out-patient population, not subject to controlled study environments, improvements in weight and HbA1c were seen. This trend did not follow on at twelve months. Follow up of these patients continues.

**P92 A Review of the Side Effect Profile of Sodium- Glucose Co-Transporter 2 Inhinitors in an Elderly Population**

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Recent studies show Sodium-Glucose Co-Transporter (SGLT) 2 Inhibitors offer reduced mortality in Diabetic patients. Given the rising prevalence of Type 2 Diabetes Mellitus in elderly populations it is important to review the side effect profile of these medications in older patients. Data was analysed on 30 patients attending out-patient Diabetic services in a level 3 hospital. All had sub-optimal glycaemic control despite 3 or more agents, and had rejected or were unsuitable for injectable agents. Data was expressed as mean+standard deviation. Hypoglycaemia was defined as a blood sugar below 4.0 mmol/mol. Infection was defined as 2 or more episodes in females, and one or more in males. Twelve patients (40%) were over 65 years old. Seven patients (23%) experienced either hypoglycaemia or infection (three patients experienced both). Two patients suffered fractures. Of the four patients with documented hypoglycaemia, three were on other medications known to cause hypoglycaemia. The average age of these patients was 65+9.6 years. The mean age of patients experiencing infections was 66.5+2.12 years. Males and females were equally affected. The mean age of the total population was 61.83+8.5 years. There was no statistical significance in the difference between the mean ages of the general population versus the population experiencing adverse effects (p 0.85). There were no cases diabetic ketoacidosis.In summary there was no statistically significant increase in side effects in patients over 65. Given the other benefits of SGLT2 Inhibitors, this data provides reassurance regarding their safety profile in an often under-studied population.

## **P93 A standardised approach to Adrenal Venous Sampling (AVS) including CT adrenal venogram improves cannulation success**

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Introduction: Adrenal venous sampling (AVS) is the gold-standard test to distinguish between unilateral and bilateral primary aldosteronism (PA). Successful lateralization requires cannulation of both adrenal veins which fails in up to 50% of procedures due to technically challenges in cannulating the Right Adrenal Vein (RAV). Objective: To evaluate outcomes of AVS following the introduction of a standardised, single operator approach which included CT adrenal venogram. Methodology: PA was diagnosed according to Endocrine Society Guidelines using the aldosterone renin ratio (ARR) as a screening test followed confirmatory testing using the seated saline infusion test. Validated local reference ranges established using an iDS/iSYS® chemilluminescence assay for aldosterone and renin were used. AVS was performed by a single operator with adrenal CT venogram and anatomical reconstruction of the adrenal venous anatomy. Results: Between 2008 and 2012, 17 AVS were performed. Full diagnostic work-up for PA was carried out in 9/17 patients. Cannulation of the Left Adrenal Vein (LAV) was successful in 6/17 (35%) and of the right 1/17 (6%). Successful cannulation of both adrenal veins occurred in 0/17. From 2014 onwards, 15/17 (88%) AVS procedures successfully cannulated both adrenal veins. Cannulation of RAV failed in 2/17 and all procedures successfully cannulated the LAV. PA lateralised to one adrenal gland in 10/15 and 5/15 demonstrated bilateral disease. Conclusion:

Standardised, single-operator AVS improves procedural outcomes for lateralization of PA in hypertension. RAV cannulation is aided by pre-procedural radiological-assisted reconstruction of adrenal venous anatomy.

## **P94 11C Metomidate PET/CT successfully lateralises unilateral Aldosterone Producing Adenomas (APA) in individuals with equivocal adrenal venous sampling results**

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Introduction: Effective lateralisation of unilateral aldosterone producing adenomas (APA) in primary aldosteronism (PA) offers the potential for cure or improvement of hypertension in 90% of patients, allowing them to avoid the adverse effects of long-term mineralocorticoid receptor antagonist therapy. Functional imaging using 11C-Metomidate PET/CT represents a novel, non-invasive option for lateralization of APAs**.** Objective: To evaluate treatment decisions and outcomes for patients undergoing 11C Metomidate PET/CT for lateralisation of PA. Methodology: PA was diagnosed according to Endocrine Society Guidelines using the aldosterone renin ratio (ARR) as a screening test followed confirmatory testing using the seated saline infusion test. Validated local reference ranges established using an iDS/iSYS® chemilluminescence assay for aldosterone and renin were used. Patients (i) unsuitable for adrenal vein sampling (AVS), (ii) with equivocal AVS results or (iii) unsuccessful cannulation of the right adrenal vein (RAV) underwent 11C-Metomidate PET/CT following pre-procedural dexamethasone suppression (0.5mg qds for 3 days) of ACTH. Results: Ten patients underwent 11C Metomidate PET/CT for the following indications: 3/10 failed cannulation of RAV, 6/10 equivocal AVS results and 1/10 unsuitable for AVS. 11C-Metomidate lateralised 3/6 individuals with equivocal AVS results. Unilateral APA were diagnosed in 2 patients, and bilateral disease in 1 patient, with failed RAV cannulation. On the basis of PET/CT imaging, adrenalectomy was performed in 5/10 patients with unilateral APA not lateralising on AVS alone, with 100% biochemical cure rate. Conclusion: 11C-Metomidate PET/CT provides complimentary or alternative lateralization imaging for APA in whom AVS alone has been inadequate.

P95 NIFTP - cases for reclassification – a 10 year review and workload assessment

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**Background:**In March 2016, after conducting an international retrospective study on encapsulated follicular variant of papillary thyroid carcinoma (EFVPTC), the case was made for reclassifying some EFVPTC as non-invasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP), changing nomenclature from malignant to non-malignant entity. Following publication of the JAMA paper, requests to review cases for re- classification were received prompting this review. We also assessed workload. **Design:** All histology reports of papillary thyroid carcinomas (PTC)2007-2016 were identified. Potential NIFTP candidates were selected based on report review alone. Following initial triage, slides of remaining cases were reviewed independently by two consultant histopathologists. Once a single exclusion criterion was met, no further slides were reviewed.  
**Results:**Of 545 reports reviewed, 71 of 545 cases were identified as potential NIFTP. 49 were external cases with no histology available. Of the remaining 22, 5 (22.7%) met the criteria for reclassification as NIFTP. 17 were excluded based on the histologic criteria. The 17 non NIFTP cases required review of 114 slides, median 5.5 slides per case; 5 NIFTP cases where all slides were reviewed required review of 58 slides, median 12 slides per case **Conclusion:**NIFTP accounted for 0.9% of all PTCS over this 10 year period. Review of reports only was sufficient to exclude NIFTP in the majority of cases; in those that required slide review, exclusion criteria were identified after review of an average 5.7 slides per case. The issue of availability of external material is a limitation in a tertiary referral centre.

**P96** **Using a Standardized Diabetes Ketoacidosis Management Protocol Reduces Critical Care Admissions for Patients**

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In 2010, University Hospital Galway (UHG) carried out a 2-year retrospective audit of DKA admissions to the emergency department (46 cases representing 42 patients). At that time there was no standardised DKA protocol for admitting physicians. Of note the audit demonstrated that 85% of DKA patients were transferred to the HDU/ICU. Based on that audit a standardised DKA protocol was introduced into UHG in 2012. Thereafter we performed a 3-year retrospective audit of all patients with DKA admitted to UHG between January 1 2013 - Jan 1 2016. Our audit identified 109 DKA admissions in 3 years (2013-28, 2014-45, 2015-36) and we reviewed 74 of these cases in detail (68%). Our analysis revealed that 54 patients had 74 episodes of DKA (10 patients had 30 episodes). 89% of patients were correctly started on the DKA protocol and the Diabetes team were contacted in 96% of admissions. Of note 64% of patients were managed on the ward with the DKA protocol, while 14% required HDU and 22% required ICU admission. Our audit clearly demonstrates a significant reduction (36% vs 85%) in the amount of patients requiring HDU/ICU admission since the standardised DKA protocol was introduced at UHG in 2012. In addition we have now highlighted patients who have had multiple DKA admissions as a high risk group and have started targeted interventions to prevent this.

**P97 Safety concerns about cessation of insulin for use of Dulaglutide.**

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We present 2 patients with serious adverse outcomes after commencing on dulaglutide; Hyperosmolar Hyperglycaemia Syndrome (HHS) and Diabetic Ketoacidosis (DKA) raising concerns about the safety of this agent and use of concomitant insulin. Case 1 is a 65 year old lady with longstanding diabetes, BMI of 29.8, Hba1c of 94mmol/mol commenced on dulaglutide.  She was on insulin which was stopped, but previously been treated liraglutide and insulin, which was stopped due to poor efficacy.  She developed vomiting and presented with acute kidney injury and HHS treated, was recommenced on insulin and made a full recovery.  There were no other precipitants found for her HHS and her c peptide was low.   Case 2 is a 73 year man, BMI 34.9, Hba1c 90 mmol/mol with long standing poorly controlled type 2 diabetes, stopped insulin and commenced on dulaglutide.  He presented with a DKA, no other precipitants found, low c peptide.  He was recommenced on insulin and made a full recovery. Discussion: These cases raise concerns for insulin omission after commencing dulaglutide.  There is intrinsic GLP-1 resistance in the community, seem frequently in those with chronic hyperinsulinaemia.  There is also a lag time of efficacy wherein patients are vulnerable for hyperglycaemia as well as the possibility of GI side effects in early GLP-1 treatments.  Thus there needs to be some research and advice to clinicians as to who is at risk, whether to stop insulin or wean it off to ensure patient safety on these new agents.

**P98 Ipilimumab induced hypophysitis, pathogenesis and review of current literatures**

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Ipilimumab is an anti-CTLA-4 monoclonal antibody licensed for metastatic melanoma, inhibiting CTLA-4 receptors on T-cells, enhancing immune response. Ipilimumab has been associated with immune related adverse events (irAEs). Hypophysitis accounts for 1 – 6% of Ipilimumab associated irAEs. A 70-year-old female with metastatic malignant melanoma presented with anorexia, malaise and confusion two weeks after her fourth dose of ipilimumab. She had a serum sodium of 124 mmol/L on PPI and SSRI which were stopped and she was fluid restricted to 1.5 litres. Her urinary sodium was 65. Serum cortisol was 19nmol/L with no history of steroid use. A short synacthen test demonstrated a cortisol rise from 18nmol/L at baseline to 176nmol/L at 90 minutes. But a glucagon stimulation test showed a baseline cortisol of19nmol/L which rose to 20nmol/L at 120 minutes, GH rose to maximum <0.3mIU/L during the test. Her FSH and LH were low at 5.8 mIU/ml /0.4 mIU/ml respectively, oestradiol undetectable, TSH inappropriately low at 0.5 for T4 of 6.1. ACTH was relatively low at 3.2 pmol/L (1.1- 13.2). MRI pituitary was normal. She was commenced on dexamethasone 0.75 mgs od pending glucagon test and is currently well and continues on 0.75 mgs to date. 6 months later TSH has returned to normal 0.71uIU/ml (T4 19.2 pmol/L), Na 137pmol/L, and repeat glucagon test is pending. The pathogenesis of ipilimumab induced hypophysitis (IIH) is not clearly understood. Studies have suggested checking anti-CTLA-4 antibodies which seem to be predictive in small studies but this is not currently routinely available. A high index of suspicion is important.

**P99 Diabetic Foot Osteomyelitis (DFO) in Connolly Hospital Diabetic Foot Care Service**

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Diabetic Foot Osteomyelitis (DFO) is a significant cause of morbidity for patients with diabetic foot disease. We reviewed cases of DFO in patients attending the diabetic foot care services in Connolly Hospital, aiming to examine diagnostic modalities, treatment regimes and outcomes. Data are expressed in mean±standard error of the mean. 21 patients with a recent episode of DFO were included in the study. 12 of 21 patients had had a prior history of DFO which had resolved (following amputation in 4 patients) and 7 patients had had a prior history of foot ulceration which had resolved. All patients had a history of vasculopathy, neuropathy, or both. All patients had had an annual foot examination with the senior podiatrist except one patient who had only recently entered our diabetes services. For patients admitted to hospital, the average wait to see a vascular surgeon was 6.8±2.6 days and the average length of stay was 30.4±7.7 days. X-Ray was suggestive of DFO in all cases and probe-to-bone-test was positive in 57%. MRI was performed in 62% of cases. Average antibiotic treatment course was 54.6±7.5 days.

DFO healed in 62% of patients with conservative treatment, 28% of patients required surgical intervention, and 10% have ongoing DFO managed conservatively. We conclude that DFO is a significant cause of morbidity in our population and frequently occurs in patients with a prior history of DFO. Non-operative conservative management was successful in healing DFO in the majority of patients, but there is a high rate of recurrent DFO.

**P100 Screening for Obstructive Sleep Apnoea Syndrome in Bariatric Patients: Audit of Clinical Practice at a Bariatric Referral Centre**

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Aims or Objectives: Clinical guidelines around screening for OSAS (Obstructive Sleep Apnoea Syndrome) in bariatric patients vary and condition is under-diagnosed. We sought to determine the extent to which a clinical assessment of OSAS risk was made in bariatric patients attending our centre. Methods: We reviewed the medical records of 29 patients. We sought documentation of symptoms of OSAS, STOPBANG, Epworth and Mallampati Scores and whether or not consideration of referral for formal sleep studies was made. Initial audit was presented at our hospital conference and standard questionnaire was introduced in all bariatric patients’ charts. Results: On initial assessment, of 29 patients, five(17%) had prevalent OSAS. Two had formal sleep studies to exclude OSAS. Of the remaining 22, only one(4.6%) had assessment of sleep health with a questionnaire, while 12 of 21(57%) had presence or absence of symptoms of OSAS documented. On re-audit of 32 patients, three(9.3%) were known with OSAS. Out of the 29 patients non-OSAS, 7(24.1%) had high risk on Mallampati score and 28(96.5%) had high risk using STOPBANG and two(6.89%) had high risk applying Epworth sleep scale. Therefore in our cohort, 9 patient (31.03%) were further identified as having high risk for OSAS.Conclusion and summary: Given the reported prevalence of OSAS in obese patients of up to 45% is likely to be even higher in bariatric patients, it seems probable that we are underestimating the prevalence in our cohort. Raising awareness in the bariatric clinic seemed to increase prevalence of detection of OSAS and improve clinical management.

**P101 Early Responses to Sleeve Gastrectomy in a Cohort of Severely Obese Diabetic Adults: Successful Implementation of a National Metabolic Surgery Pilot Programme.**

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In 2016, the National Diabetes Programme funded 22 bariatric surgeries for severely obese adults (BMI>35 kgm-2) with type 2 diabetes, on a pilot basis to determine feasibility and capability of currently established bariatric MDTs to deliver this care. We identified 22 severely obese diabetic patients through our bariatric MDT for sleeve gastrectomy. Baseline and early (3-month) follow-up data are presented here, compared using the paired t-test.

Of 22 patients, one developed cholelithiasis on the second post-operative day, otherwise there was no perioperative morbidity or mortality. Mean age was 54±9 years, 7(32%) were male. Results are presented in the table. There were large and immediate reductions in body weight, with a non-significant trend to improved HbA1c, but an unanticipated deterioration in lipid profiles, possibly due to statin cessation. Delivery of a nationally funded pilot programme of metabolic surgery was achievable, safe and effective. Further resourcing of this initiative seems justified.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Pre-surgery | Post-surgery | P |
| Weight (Kg) | 130.2±29.5 | 107.3±25.5 | <0.001 |
| BMI (Kg m-2) | 47.2±7.9 | 39.4±7.9 | <0.001 |
| Excess weight (%) | 88.7±31.5 | 57.5±30.8 | <0.001 |
| HbA1c (mmol/ mol) | 52.4±15.3 | 47.1±18.3 | 0.112 |

**P102 Reviewing Cystic Fibrosis Related Diabetes (CFRD) Patients; an Audit of Service in Northern Ireland**

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Cystic fibrosis (CF) is a complex multisystem disease, previously a fatal disease of childhood. This has changed and we now see a more stable ageing population developing multiple long term complications; including CFRD. Poorly controlled CFRD impacts negatively on patients and is associated with higher pulmonary exacerbation rates. It is crucial that these patients receive input from specialist diabetic services. This audit aimed to assess the contact CFRD patients in Northern Ireland have with diabetic services Using the CF Database, the Diamond system and the Northern Ireland Electronic Care Record, we searched for adult patients with CFRD. To capture patients not referred to specialist diabetic services we searched for HbA1c and oral glucose tolerance results consistent with CFRD. This was correlated with appointments offered and attended between Jan 2015 – April 2017. We found that32 of 292 patients with CF have CFRD and a further 5 attend diabetic services with impaired glucose tolerance. 25/32 were reviewed at the specialist CFRD clinic (mean appointments attended =3). 2 await first review. 4 had no recorded contact with services since Jan 2015 and 1 was identified as missed CFRD. These 5 patients were known to the team and had been seen and/or discussed informally elsewhere. Achieving and recording regular review of CFRD patients is challenging for many reasons including; recurrent hospital admissions, infection control limitations and complex psychology. This audit has changed practice; all reviews of CFRD patients, whether inpatient, at CFRD clinics or other appointments, now logged electronically on the Diamond system.

**P103 TSH receptor antibody in unselected patients with recently diagnosed hyperthyroidism.**

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TSH receptor antibody (TRA) has been reported to have a high sensitivity and specificity for Graves’s hyperthyroidism. However routine measurement in all hyperthyroid patients may not be cost effective and prior antithyroid therapy may affect the result. We reviewed the utility of routine TRA measurement in 128 consecutive, unselected, new patients (29 male, 99 female, mean age 46 ± 17 years, range 16 – 86 years). TRA was positive (17.1 IU/L, range 1.6 – 140 IU/L) in 63 (49%) patients. There was no difference in TRA positivity among males (48%) and females (52%). However TRA was commoner among patients aged less than 60 years (53% vs 33.3 %, Fisher’s exact test p< 0.05) and among patients with a clinical goitre (71% vs 29%, p< 0.001) but not among patients with clinically evident proptosis or among those who were antithyroid drug naïve. TRA was negative in all 4 patients with amiodarone induced thyrotoxicosis and 18 with transient thyroiditis. In positive patients there was a significant correlation between TRA titre and free T4 level (Pearson correlation, r = 0.44, p< 0.01) but not with anti-thyroidal peroxidase titre (r = 0.20, p> 0.05) or TSH level (r = - 0.12, p> 0.05). In summary a positive TRA titre is significantly more likely in younger hyperthyroid patients with goitre, regardless of gender. Measurement would be useful in recently diagnosed patients, with no clinically evident proptosis and clinical uncertainty, whether or not antithyroid therapy has already been started.

**P104 An adolescent presentation of a macroprolactinoma.**

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A 14-year-old girl was referred to the endocrinology department with an incidental pituitary mass on computed tomography(CT) of the sinuses; performed for investigation of recurrent sinus infections. She complained of intermittent frontal headaches, primary amenorrhoea but denied galactorrhoea. She had type 1 diabetes mellitus diagnosed at age 9-years. She was adopted at birth and was unaware of her family history. Her medications included insulin aspart and glargine. Clinical examination and visual field testing were normal. Laboratory results showed an elevated corrected prolactin, 14,790(102-496)mIU/L and normal anterior pituitary function. Magnetic resonance imaging(MRI) of the pituitary showed a mass measuring 2.0x1.9x1.6cm abutting but not invading the optic chiasm. These findings were consistent with a macroprolactinoma. Low dose cabergoline (0.5mg twice weekly) was commenced, which was slowly titrated to 8mg per week, a notably high dose. Prolactin levels eventually decreased to <1000mIU/L, with evidence of tumour size reduction on MRI. Menarche occurred at 16-years with regular menstrual cycles thereafter. Her most recent MRI pituitary confirmed a decrease in size(1.5x1.5x1.1cm) of the mass which still abuts the optic chiasm. A prolactinoma of this size and resistance in an adolescent is rare suggesting a possible genetic predisposition. Genetic testing for familial isolated pituitary adenoma(FIPA), multiple endocrine neoplasia type 1(MEN1) and type 4(MEN4) was negative. Going forward, it will be important to consider new genetic conditions as they are identified. Although prolactinomas are usually medically managed, surgery is now being considered for this patient due to the resistance of the tumour to high dose medical therapy.

**P105 Prospective Survey of Diabetes Patients Treated with Insulin Degludec**

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Insulin degludec was launched in the Republic of Ireland in February 2016. Our first experience of using degludec was in an elderly patient with type 1 diabetes (T1D), who cognitive impairment, lived alone and had frequent admissions with diabetic ketoacidosis. Using degludec enabled the patient to be discharged home with public health nurses visiting twice daily in order to administer insulin. Given the positive outcome, we sought to evaluate prospectively the use of degludec especially targeting frail elderly with T1D using standard strength (100 u/ml) and poorly controlled insulin-requiring T2D using higher strength (200 u/ml). A record was kept of all patients starting degludec since February 2016. Information was collated on anthropometric measures, glycohaemoglobin (HbA1c), and prior total daily insulin dose. Up to October 2016, 22 patients had started degludec: 12 (55%) were men, and 13 (59%) had T1D. Before starting degludec, mean (SD) for BMI was 30.4 (6.9) kg/m2, for duration of diabetes was 26.7 (15.5) years, for HbA1C was 77.5 (16.2) mmol/mol, and for total dose of insulin of 76.0 (51.7) units. The mean (SD) reduction in daily insulin dose was 16.1 (15.8)%; all but one patient had a reduction in insulin dose with the one exception having very poor control as judged by HbA1c at 124 mmol/mol. Degludec represented 53.1 (8.2)% of the new total daily dose. We have continued to target the use of degludec in T1D with cognitive impairment and T2D with chronic poor control.

**P106 Understanding of Foot Ulcer Prevention and Diabetes Foot Care in patients attending the Diabetes Foot Service at Connolly Hospital**

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Foot disease is a leading cause of morbidity and mortality in diabetes patients. Preventing foot ulceration is a priority for diabetic foot services, and patient education regarding adequate foot care is a key component in this.

We examined patient knowledge of diabetic foot care and ulcer prevention in high-risk patients attending a specialist diabetic foot service. A questionnaire examining knowledge of foot care and ulcer prevention was completed when patients attended for routine podiatry appointment.

38 patients attended the clinic over the 4 week time period of the study (Male N = 32, mean age 62 years, Type 2 DM N = 30). 24 patients (63%) had an active ulcer, 14 patients (37%) a prior ulcer, 14 had a prior amputation.

76% of patients demonstrated good knowledge of diabetic foot care, scoring 9 or more/15 questions. Patients with prior amputation had higher knowledge scores than those without prior amputation (p <0.05). Patient scores varied with educational status: 90%, 75% and 68% of patients achieving good knowledge scores in patients completing 3rd level, 2nd level and 1st level education respectively, but the difference was not statistically significant.

Most patients attending diabetic foot services demonstrated a good knowledge of foot care, but knowledge varied based on clinical factors and education levels. Further studies will be required to demonstrate a link between future foot ulceration and poor scores on our questionnaire and to explore methods to improve understanding in patients with poor knowledge despite foot clinic attendance.

**P107 Pituitary Metastases- A case series.**

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Pituitary metastases are very rare causes of hypopituitarism. Common primaries are lung and breast. The lack of specific clinical and radiological diagnostic criteria can often delay the diagnosis and metastases can be misinterpreted as other sellar lesions such as pituitary adenomas. Moreover, there are no standardised treatment guidelines to help defining a clear management plan. We report a case series of 3 patients who had pituitary metastasis with different presentations and underlying primaries. An overview of their presentation, diagnoses and management is given below (Table-1).

Table-1 Overview of Cases of Pituitary Metastasis

|  |  |  |  |
| --- | --- | --- | --- |
|  | Case1- 73 Year Female | Case2- 82 Year Male | Case3- 64 Year Male |
| Presentation | Fatigue, Hyponatraemia | Confusion,  Weight loss, Diabetes Insipidus | Headaches, Diplopia, Right 3rd cranial nerve palsy |
| MRI Pituitary | Infundibular abnormality | Significantly enlarged Pituitary stalk and loss of T1 bright spot | Large Sellar/Suprasellar mass with cavernous sinus invasion |
| Underlying Primary  Pituitary deficit | Invasive lobular breast cancer  Pan-hypopituitarism  ACTH, TSH deficiency and Hypogonadism | Lung Adenocarcinoma  Pan-hypopituitarism  ACTH, TSH deficiency and Diabetes Insipidus | Gastrointestinal Stroma Tumor (GIST)  Pan-hypopituitarism  ACTH, TSH, GH deficiency and Hypogonadism |
| Treatment | Neoadjuvant chemotherapy, whole brain radiation | Stereotactic Radiotherapy and Palliative treatment | Transphenoidal resection of pituitary tumour , imatinib  and radiotherapy |

While pituitary metastases remain rare, they should be suspected in patients with an unusual looking sellar or stalk mass, those with established primary cancers and those with a pituitary mass and DI. The incidence is likely to rise due to increased life expectancy.

**P108 Prevalence 25-OH Vitamin D deficiency in an acute hospital setting.**

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25-Hydroxy Vitamin D(25(OH)D) deficiency is common in Ireland but given its putative beneficial role in several chronic medical conditions, the routine use of vitamin-D supplementation has increased. We investigated the prevalence of 25(OH)D deficiency in 243 acutely ill medical patients admitted via the ED department to 2 general medical wards between January to April 2017. We quantified the number of patients on vitamin-D supplements prior to admission and observed whether there was an association between 25(OH)D deficiency and their admission diagnosis, medical co-morbidities and bone health. 25(OH)D levels were measured by a total immunoassay(Roche-Cobas E601analyser). Data was analysed using SPSS. 194 patients(51% female), of mean age 75.78±14.1 with a complete dataset were included for analysis and categorised into three groups according to their 25(OH)D levels; deficient (<25nmol/L), insufficient (25-50nmol/L) and sufficient (>50nmol/L). 28% (15.3±6.1nmol/l), 24% (36.1±7.7) and 48% (79.9±23.9) were deficient, insufficient and sufficient respectively. Of those taking vitamin-D supplements prior to admission (42% n=82); 77% (n=63) were sufficient, 15% (n=13) were insufficient and 7.3% (n=6) were deficient. Past history of osteoporosis correlated negatively with both serum 25(OH)D and use of vitamin D supplementation (P<0.0001). 25(OH)D did not correlate with other parameters including length of medical stay or reason for medical admission for which the 3 most common reasons were lower respiratory tract infection, collapse or fall and confusion. 25(OH)D insufficiency is highly prevalent in acute medical admissions. Whether vitamin D replacement should become routine in acutely ill medical patients with vitamin D insufficiency remains unclear.

**P109 Integrated Care in Diabetes: Impact of Email Decision Support on Community Type 2 Diabetes Service in the Midlands in Ireland**

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The primary care Structured Diabetes Programme has been in existence since 1998 in the midland area. As per model of chronic disease management, email decision support was introduced by a diabetes specialist service in 2011 to assist management of more complex type 2 diabetic patients in the community. A retrospective review of emails sent by community diabetes nurses in Westmeath and Longford to specialist endocrinology service in Regional Hospital Mullingar, focusing on improving glycaemic control of patients attending GP practices enrolled in Structured Care Programme. Data was collected for cases between 2011 and 2016.

Mean (SD) age: 65(12.6) years. Gender: 34 Male 26 Female.15.0 % (n=9) of patients had chronic kidney disease.10.0 % (n=6) had previous stroke or TIA.16.7% (n=10) had ischaemic heart disease. 21/60 patients did not require a visit to the diabetes day centre**.** Mean baseline HbA1c at referral was 61.3(15.4)mmol/mol, [n=44]; year 1, 59.1(13.3)mmol/mol [n=25]; year 2, 62.5(13.2)mmol/mol [n=21]; year 3, 62.2(15.9)mmol/mol [n=17] ; year 4, 63.0(12.3)mmol/mol [n=20].Proportion of patients with improved glycaemic control in 1 year after the advice was 48% (n=12/25); year 2, 52% (n=11/21) and year 3, 47% (n=8/17).To conclude, specialist email decision support for community healthcare professionals managing patients with complex type 2 diabetes assists in improving glycaemic control and majority of such patients did not require a hospital visit. This model can potentially be applied to the new ‘Cycle of Care’ system within the Irish healthcare context.

**P110 Pregnancy Outcome using Flash Glucose Monitoring in a Patient with Type 1 Diabetes – a Case Report**

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Pregnancy in type 1 diabetic women is a major physiological stress and outcome for both foetus and the mother remain suboptimal, especially in unplanned pregnancy. We report a case of unplanned pregnancy in a 28 years old type 1 diabetic primigravid woman who relied on flash glucose monitoring (Freestyle Libre) to guide insulin dosing throughout pregnancy with advice from specialist diabetes unit. Retrospective review of glucose control using flash glucose monitoring 2 months prior to pregnancy and continued its use having presented at 8 weeks of gestation. She had completed the Dose Adjustment for Normal Eating (DAFNE) programme in 2010. Weight (kg). Baseline weight:80, week 8: 84.3, week 25: 92, week 35: 103.5. HbA1c (mmol/mol) Baseline: 71, week 8: 55, week 25: 40, week 35: 41. Carbohydrate: insulin ratio: (breakfast/lunch/dinner) Baseline: 1.5:1/1.5:1/1.5:1; week 8: 1:1/1:1/1:1/1:1; week 25: 3:1/2:1/2:1/1:1; week 35: 10:1/2:1/2:1/1:1. Background insulin dose (morning/night units)

Baseline: levemir 24/22; week 8: levemir 28/26; week 25: levemir 22/10; week 35: levemir 21/17. Daytime hypoglycaemia averaged 8 episodes/week.   
Nocturnal hypoglycaemia averaged 3 episodes/week. No severe hypoglycaemia requiring assistance. Foetus: Normal anomaly scan at 23 weeks.Delivery: Instrumental, due to prolonged labour at 39 weeks. Birth weight: 3420g. No complications. To conclude, flash glucose monitoring in this pregnancy assisted in achieving guideline targets in glycaemic control during pregnancy and uncovered asymptomatic nocturnal hypoglycaemia. Whilst unlicensed for use in pregnancy, it is a potential useful alternative to capillary blood glucose monitoring.

**P111 Hypertensive crisis with cardiomyopathy secondary to a combination of cocaine use and phaeochromocytoma.**

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A 27y/o old male patient presented to the emergency department with a four month history of weight loss, night sweats, abdominal pain, headaches, shortness of breath and palpitations. His symptoms had been previously attributed to cocaine use. On examination, BP was 177/132 mmHg and HR was108 bpm. His liver function tests were deranged. His CXR revealed cardiomegaly and a transthoracic echocardiogram showed dilated cardiomyopathy with global hypokinesis and an ejection fraction of 15%. Initially a diagnosis of cocaine induced cardiomyopathy was made, however, a liver ultrasound showed an incidental 5.6cm right adrenal mass confirmed on CT as a 5.6x3.9cm suprarenal mass.  Urine normetanephrines were 63440nmol/24hrs (0-2800nmol/24hrs), urine noradrenaline was 46066nmol/24hrs (0-900nmol/24hrs), and plasma normetanephrines were 25000pmol/L, all significantly elevated. Metaiodobenzylguanidine scan confirmed a right pheochromocytoma with no metastasis. He was admitted to CCU and preoperatively treated for 30 days with dose titration to phenoxybenzamine 50 mg tds and propranolol 60 mg tds. In theatre, at induction of anesthesia, he suffered a cardiac arrest, requiring cardiopulmonary resuscitation and subsequently extracorporeal membrane oxygenation (ECMO) support. Resection of the phaeochromocytoma was completed with ECMO the following day. He remained in ICU for 5 days postoperatively requiring pressor support. Histology revealed a 75x40x50mm, 92 g lesion with a MIB proliferative index of <1 %. Genetic testing was negative. A repeat outpatient echocardiogram 3 months later demonstrated good cardiac recovery with an EF of 50%.  Our case highlights the unusual combination of hypertension and cardiomyopathy in a patient with a sporadic phaeochromocytoma and cocaine use.

**P112 Accuracy of urinary metanephrines in screening for phaeochromocytoma**

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The Endocrine Society recommends urinary or plasma metanephrines as first choice screening tests for phaeochromocytoma due to their high sensitivity. Test specificity is limited by the influence of many commonly prescribed medications resulting in false positive results and additional investigations. The aims of this retrospective study were to (1) Determine the diagnostic accuracy of urinary metanephrines using current cut-off values and (2) Evaluate if alternative diagnostic thresholds would improve test performance.

Patients who underwent a clonidine suppression test, or had confirmed phaeochromocytoma on histology or imaging were included. All pre-operative urinary metanephrine (MAO) and normetanephrine (NMAO) results were obtained. 168 cases were identified (148 normal, 18 phaeochromocytoma (11 NMAO raised, 7 NMAO + MAO raised). In those with no phaeochromocytoma, MAO was elevated in 15.5% and NMAO in 57.4%. 119 (71.7%) were known to be taking interfering medications. Sensitivity + specificity for MAO at the upper level of normal (ULN) and two-fold elevation beyond ULN were 100% + 84.8% and 100% and 97.9% respectively. Sensitivity + specificity for NMAO at ULN and two-fold elevation beyond ULN were 100% + 41.8% and 66.7% + 95.2% respectively. ROC curve analysis of NMAO results (Area under curve- 0.908 (p<0.001)) identified an alternative higher cut-off with sensitivity + specificity 100% + 62.3% respectively.

Our data demonstrate excellent diagnostic accuracy of MAO using our current reference range but less accuracy in the more commonly elevated NMAO. Application of a higher diagnostic threshold will help reduce excessive investigation attributed to false positive results.

**P113 Prevalence and severity of in-patient hyponatraemia in an Irish private healthcare setting**

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Hyponatraemia is the commonest in-patient electrolyte abnormality, with rates of up to 30% described. Published data for Irish hospitals is limited and there is no available data for private healthcare institutions. The aims of our study were to describe the prevalence and severity of hyponatraemia in a cohort of acute admissions to a private healthcare institute and to compare with published data. All plasma sodium measurements performed on in-patients in the Bon Secours Hospital Cork, between 1st January and 31st March 2015, were identified and those less than 135mmol/l were extracted. Severity of hyponatraemia was defined as mild (130-135mmol/l), moderate (125-130mmol/l) or severe (<125mmol/l). A total of 8537 sodium samples performed on 4537 individuals (mean±SD age 73±13.2 years; 53.9% female) were identified. Of these, 837 (18.5%) were <135mmol/l. 703 (84%) had mild, 100 (12%) had moderate and 34 (12%) had severe hyponatraemia. In the over 70 age range, 24.9% (432 out of 1736) had hyponatraemia.

We have demonstrated rates of hyponatraemia comparable to previously published international studies and provided the first such data, to our knowledge, in a fully private healthcare institute. Future studies are planned to evaluate aetiology and management of hyponatraemia in this setting.

**P114 The timing of basal insulin administration during DKA management.**

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Basal insulin administration during the management of diabetic ketoacidosis

(DKA) is recommended because it prevents rebound hyperglycemia when IV insulin is stopped and reduces the length of stay.

We performed an audit in St Vincent’s University Hospital to assess the timing of basal insulin administration in DKA management compared to the standard (Joint British Diabetes Societies (JBDS) guidelines in DKA). We conducted a retrospective audit of all patients admitted to St Vincent’s university Hospital between 1/1/2015 and 31/12/2015 treated using the DKA protocol. Patients were identified from HIPE coding. 65 DKAs were identified in 59 patients, 12 excluded, 53 DKAs analysed. Data were collected from patients’ medical notes. 32% of the patients were given basal insulin within the first 6 hours of DKA management,47% between 6 and 24h, and 21% >24h after starting DKA protocol. The percentage of patients in whom DKA resolved within the first 24h was higher in those who received their basal insulin in the first 24h than who received it after 24h (55% vs 10%, p <0.05), and in fact 60% of the patients who received basal insulin >24h after admission needed more than 48h on IV insulin. The percentage of patients discharged within 48h was higher in those who received their first basal insulin dose in <24h compared to those who received it after 24h (42.8% vs 0%, p <0.001). Early administration of basal insulin during DKA management shortens the duration of IV insulin requirement and reduces the length of hospital stay.

**P115 Clinical, biochemical and radiological variability in patients with**

**Hepatocyte Nuclear Factor-1βeta (HNF1β) Mutations**

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Background.HNF1β mutations are one of the common causes of renal malformations, but one of the less common forms of MODY. HNF1β is involved in the development of kidneys, liver, pancreas and urogenital tract. Patients can present with a distinctive but highly variable phenotype. The aim of this study is to evaluate the clinical, biochemical and radiological variability in subjects with HNF1β variants.Methods**.** 8 HNF1β mutation positive subjects underwent phenotyping with a 2-hr OGTT to determine their degree of glucose tolerance and insulin secretory response. Biochemical testing included magnesium, liver function test(LFT´s), urate, faecal elastase(FE). Abdominal and pelvic(female) ultrasound(US), magnetic resonance imaging(MRI) of pancreas and liver were performed. Statistical methods: mean±standard deviation.Results**.**Diabetes was present 6/8 patients. 2/8 on insulin, 4/8 on oral hypoglycaemic agents(OHAs)+insulin. Diabetes was diagnosed at 22±12 years of age, BMI 23.8±2.8Kg/m², mean HbA1c was 70.8±8.8mmol/mol. The insulin secretory response to glucose was variable but present in all the patients. Glucose(mmol/L) and C-peptide(µg/L) mean at 0min/120min was 8.9(±4.3)/18.6(±8.3) and 388.7(±227.1)/1585.6(±1113.5) respectively. 3/8 patients had mild hypomagnesaemia 0.57±0.07mmol/L. 1/8 had early onset gout and all patients had normal serum urate levels. 5/8 had deranged LFT’s. 4/8 had sub-clinical pancreas exocrine insufficiency (FE 52±40µg/g). 5/8 patients have undergone for MRI demonstrating pancreas malformation in 3 subjects and female genital tract abnormalities in 2 cases. 4/8 had renal cysts. Conclusion.This case series highlights the spectrum of clinical manifestations of HNF1β variants. Genetic diagnosis enables the physician to screen for hypomagnesaemia, gout, pancreatic insufficiency and pancreatic/hepatic/genital malformations. Therapeutic options include OHA+insulin.

**P116 Case series of mitochondrial diabetes**

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Introduction: Mitochondrial diabetes is a rare form of diabetes, is maternally inherited and associated with deafness, CNS disease, macular retinal dystrophy, myopathy, left ventricular hypertrophy and renal disease. We present 2 cases of mitochondrial diabetes with a mutation in 3243A>G gene that were treated as type 2 diabetes in the general diabetes out-patient clinic for years**.** Case Presentations: 63 year old female with a family history of diabetes in her father, mother and two siblings presented at the age of 40 years with deafness due to bilateral sensorineural deafness and required a cochlear transplant. Subsequently she developed bilateral central foveal atrophy, lacunar stroke at age 63 years and diabetes at age 53. Diabetes is well controlled on linagliptin only with a glycated hemoglobin of 52mmol/mol.

52 year old male with no known family history of diabetes was diagnosed with saggital sinus thrombosis and diabetes at age 42 years. Two years later he required hearing aids for sensorineural deafness and developed unexplained left temporal lobe infarcts with seizures. Muscle biopsy showed abnormality of the Cox enzyme which raised the possibility of mitochondrial disorder. Genetic testing confirmed the mutation in 3243 A>G. Currently his diabetes is managed with linagliptin, gliclazide and insulin glargine with glycated haemoglobin of 64mmol/mol. Conclusion: Mitochondrial diabetes is a rare cause of diabetes that should be suspected if there is strong maternal history of diabetes with other features of mitochondrial disease.

**P117 The Utility of the high dose Short Synacthen test in pituitary patients who failed the ITT but have a low pre-test likelihood of ACTH deficiency**

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The Insulin tolerance test (ITT) is regarded as the gold-standard for diagnosing ACTH deficiency but some normal subjects do not exhibit an adequate cortisol response to hypoglycaemia. Identification of false fail cases in pituitary patients is important so as to avoid unnecessary treatment with glucocorticoids. 200 consecutive ITTs in pituitary patients were analysed. Twenty six patients (13 males) failed the ITT but were deemed to have a low likelihood of ACTH deficiency (basal am cortisol > 200 nmol/l or peak cortisol response to ITT > 400 nmol/l, or otherwise normal remaining pituitary axes) and were retested using the Short Synacthen Test (SST). Using modern cortisol immunoassays, a cut-off of 450 nmol/l was regarded as a normal response to both ITT and SST. 17/26 patients (65%) failed the ITT but passed the SST. The positive predictive value (PPV) for passing the SST when the patient had an am cortisol of > 200 nmol/l or a peak cortisol response to ITT of > 400 nmol/l was 70% (95% CI 58-80%) and 83% (95 % CI 58-95%) respectively. Patients with a normal SST were taken off hydrocortisone and none developed an adrenal crisis or convincing hypoadrenal symptoms (median follow-up 27 months, IQR 5-37). A high percentage of patients who fail the ITT but have an am cortisol of > 200 nmol/l or peak response to hypoglycaemia of > 400 nmol/l will pass the SST. These patients should be retested using the SST before committing them to life-long treatment with glucocorticoids.

**P118 Pituitary tuberculosis**

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**I**ntroduction**:** Pituitary tuberculosis is an uncommon cause of sellar mass; the estimated prevalence worldwide is not known, and there have been no reports of the condition occurring in Ireland. Tuberculosis of the pituitary gland may present as a sellar mass or with symptoms of hypopituitarism;

Case Presentation: A 41 year old woman, with a short prodromal history, without endocrine symptoms, was found to have pituitary tuberculosis after the demonstration of a sellar mass on MRI, and lumbar puncture findings consistent with lymphocytic meningitis. She got transphenoidal debulking of sellar mass followed by antituberculosis therapy for 10 months. She also developed panhypopituitarism with cortisol, growth hormone and thyroid hormone deficiency. She did not require growth hormone therapy and is doing fine on hydrocortisone and Thyroid hormone replacement. Our case is the only instance of pituitary tuberculosis out of over 3000 patients with pituitary disease whom we have managed in Beaumont Hospital, which reflects the lower endemic prevalence of tuberculosis in Ireland. Conclusion:

To our knowledge, this is the first published case of pituitary tuberculoma in Ireland.

**P119 Health Literacy Levels in Women at Risk of Gestational Diabetes Mellitus**

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A recent population survey found that 40% of the Irish population had inadequate health literacy. This research explores health literacy levels in pregnant women at risk of gestational diabetes (GDM). Pregnant women were interviewed on the day of their oral glucose tolerance test (OGTT) at University Hospital Galway. Health literacy was measured using them Newest Vital Sign. Socio-demographic, clinical and laboratory data were collected

from participant questionnaires and hospital databases. Statistical analysis was conducted using SPSS (22.0) for descriptive data, Chi square test for categorical data and multiple regression analysis to test for determinants of limited health literacy. Limited health literacy was found in 75 participants (25.3%). Household income, parental ethnic background and education were predictors of health literacy (p<0.05). Pre-pregnancy folic acid was taken by 67.8% of those with adequate health literacy compared with 53.5% with limited health literacy (p=0.04). GDM was diagnosed in 16.7% (12 of 75) with limited health literacy and in 6.2% (18 of 222) with adequate health literacy (p = 0.06). Following adjustment for confounders health literacy was no longer significantly associated with pre-pregnancy folic acid. A significant proportion of pregnant women at risk of GDM have limited health literacy. Further studies are required to explore health literacy in this cohort and the role of confounders.

**P120 Difficulties in coordinating management of patients with diabetes receiving maintenance haemodialysis: patients wish for a “mobile” diabetes clinic.**

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Patients with diabetes undergoing dialysis are a frail group with multiple co-morbidities, whose care often requires multiple clinical teams. Coordinating care can be difficult for both patients and current systems. We performed an audit of patients with diabetes attending for maintenance haemodialysis (n=56, mean age 68.7 years), and aimed to define this cohort, and, with patient input, how to improve the coordination of diabetes care. 89% (n=50) had type 2 DM, 9% (n=2) had type 1 DM and 2% (n=1) had DM secondary to pancreatitis. 63% (n=35) had diabetic nephropathy. Mean HbA1c 60.5 mmol/mol (range 30 – 99 mmol/mol). We also identified a number of patients 7% (n=4) who were experiencing troublesome hypoglycaemic episodes. 16% (n=9) were not receiving regular diabetes review, 30% (n=17) were attending GP, 48% (n=27) were attending a hospital clinic and 6% (n=3) were receiving visits from community DSN. 46% (n=26) had known eye complications, and 43% (n=24) had foot disease (2 patients had active foot ulcers). Only 70% (n=39) had attended retinal screening and 80% (n=45) had received a foot check in the last year. 60% (n=34) required assistance with transport to appointments and 38% (n=21) required assistance to administer medications.

On questioning, patients stated they had difficulty attending and coordinating appointments for other services with their haemodialysis. Patients’ preference was for a mobile diabetes clinic. Our audit demonstrates a frail cohort with multiple complications who require coordinated multidisciplinary care. As a result of these findings, we are piloting a mobile multidisciplinary diabetes clinic at the bedside in the dialysis unit.