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Disclosure Statement

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	HADDEN Lecture	**McKenna Lecture**
2016	David M. Nathan	Amar Agha
2017	Marta Korbonits	Aine McKillop

IES Lifetime Achievement Award
2012 Professor David Hadden
2013 Professor TJ McKenna
2014 Professor GH Tomkin
2016 Professor AB Atkinson
2017 Professor J Devlin

Friday 19th of October 2018

12.00 pm: IES Paediatric Symposium

12.05 pm: Welcome and Introduction
Professor Colm Costigan

12.10 pm: Growth disorders in puberty – lessons to be learnt from ACAN deficiency and other genetic growth disorders.
Professor Ola Nilsson, Professor of Endocrinology, Karolinska Institute and University Hospital Stockholm, Sweden

12.50 pm OC1. Childhood obesity causes dysregulation of MAIT cells and monocytes driving production of cytokines linked to insulin resistance
Kinlen D[1,2,3], O'Shea D[1], Hogan AE[1,2,4], Cody D[2,3]
Obesity Immunology Group, Education and Research Centre, St Vincent's University Hospital, University College Dublin[1]. National Children's Research Centre, Crumlin, Dublin[2]. Department of Diabetes & Endocrinology, Our Lady's Children's Hospital Crumlin[3] Institute of Immunology, Department of Biology, Maynooth University, Maynooth[4]

1.05 pm OC2. Optimal timing of repeat newborn screening for congenital hypothyroidism in preterm infants to detect delayed TSH elevation and decompensated congenital hypothyroidism
McGrath N[1,2], Hawkes CP[3], Mayne P[4,5], Murphy NP[1,2]
Department of Paediatric Endocrinology, Children's University Hospital, Temple St, Dublin[1]Department of Paediatrics, School of Medicine, University College Dublin[2], Division of Endocrinology and Diabetes, The Children's Hospital of Philadelphia, Philadelphia, USA[3], National Newborn Screening Laboratory, Children's University Hospital, Temple St, Dublin[4], Department of Paediatrics and Biochemistry, Royal College of Surgeons in Ireland, Dublin[5].

1.20 pm OC3. Permanent decompensated congenital hypothyroidism in newborns with wholeblood TSH concentrations between 8 and 10 mU/L-the case for lowering the threshold
McGrath N[1,2], Hawkes CP[3], Mayne P[4,5], Murphy NP[1,2]
Department of Paediatric Endocrinology, Children's University Hospital, Temple St, Dublin[1], UCD School of Medicine, University College Dublin[2], Division of Endocrinology and Diabetes, The Children's Hospital of Philadelphia, USA[3], National Newborn Screening Laboratory, Children's University Hospital, Temple St, Dublin[4] Department of Paediatrics and Biochemistry, Royal College of Surgeons in Ireland, Dublin[5]

1.35 pm OC4. The Use of Stimulated Gonadotrophin Measurements to Assess the Response to GnRH Analog Therapy in Children with Central Precocious Puberty Attending Endocrine Service in Our Lady's Children Hospital in Crumlin
Al Qanoobi M.J, Cody D.
Diabetes and Endocrine Centre, Our Lady's Children Hospital Crumlin, Dublin

IES ANNUAL RESEARCH MEETING

1.50 pm Welcome and Introduction
Professor FPM O'Harte
President, Irish Endocrine Society

2.00 pm OC5. Gestational diabetes (GDM<24 weeks) is associated with worse pregnancy outcomes despite early treatment, when compared with GDM diagnosed at 24-28 weeks gestation
M. Mustafa, A. Khattak, D. Bogdanet, L. McKnenna, L.A. Carmody, B. Kirwan, G. Gaffney, P. O'Shea, F. Dunne
Galway Diabetes Research Centre, National University of Ireland Galway, Galway, Ireland.

2.15 pm OC6. Predictor Factors of Hypertension Induced in Pregnancy in Women with Gestational Diabetes Mellitus.
Sánchez-Lechuga B[1], Campos Caro A[2], De la Varga Martín R[2], Byrne M[3], Aguilar Diosdado, M[1], López-Tinoco C[1]
Endocrinology and Nutrition Department, Puerta del Mar University Hospital Cadiz, Spain, Investigation Unit Department, Puerta del Mar University Hospital, Cadiz, Spain[2], Endocrinology Department, Mater Misericordiae University Hospital Dublin, Ireland [3]

2.30 pm OC7. Cardio-metabolic complications in acromegaly patients with elevated plasma IGF-1 concentrations
AM Hannon[1], A Garrahy[1], P Fitzgerald[2], B McAdam[3], A Stanton[4], C Collins[2], M Sherlock[1], CJ Thompson[1]
Departments of Diabetes and Endocrinology[1], Vascular Ultrasound[2], Cardiology Beaumont Hospital, Dublin[3], Department of

Clinical Pharmacology, Royal College of Surgeons, Ireland[4]

2.45 pm OC8. Impact of circulating cortisone on bone turnover markers in male patients with hypopituitarism

R. Dineen[1*], L.A. Behan[1*], G.K[3], M.J. Hannon[2], J.J. Brady[4], B.Rogers[2], B.G. Keevil [6,7],W.Tormey[3], D. Smith[2], C.J. Thompson[2], M.J McKenna[4,5], W.Arlt [8], P.M. Stewart[9], A.Agha[2^], M. Sherlock[2^]
Department of Endocrinology, Adelaide & Meath Hospital, Tallaght, Dublin[1] Department of Endocrinology, Beaumont Hospital and Royal College of Surgeons in Ireland, Dublin[2], Department of Chemical Pathology, Beaumont Hospital[3], Metabolism Laboratory, St Vincent's University Hospital, Dublin[4] School of Medicine and Medical Science, University College Dublin, Dublin[5] Manchester Academic Health Science Centre, University Hospital of South Manchester, The University of Manchester, Manchester, UK[6], Biochemistry Department, University Hospital of South Manchester, Manchester, UK[7]. Institute of Metabolism and Systems Research, University of Birmingham, Birmingham, UK[8], Department of Medicine, University of Leeds, Leeds, UK[9] (* and ^ denotes equal contribution to manuscript)

3.00 pm OC9. The in vivo and in vitro effects of kisspeptin on human ovarian function

L Owens[1], Ali Abbara[2], A Lerner[1], S O'Floinn[1], G Christopoulos[3], S Khanjani[3], R Islam[3], M Liyanage[3], Kate Hardy[1], Stuart Lavery[3], Aylin Hanyaloglu[1], Waljit Dhillo[2], Stephen Franks[1]
Institute of Developmental and Reproductive Biology, Imperial College London[1], Department of Investigative Medicine, Imperial College London, London[2], The Wolfson Fertility Centre, Hammersmith hospital, London, United Kingdom[3]

3.15 pm OC10. Effect of Sodium Glucose Co-Transporter-2 Inhibition on the Aldosterone/Renin Ratio in Type 2 Diabetes Mellitus.

Griffin TP[1,2], Islam MN[2,3], Blake L[3], Bell M[1], Griffin MD[2,4], O'Shea PM[3]
Centre for Diabetes, Endocrinology and Metabolism, Saolta University Health Care Group (SUHCG), Galway University Hospitals, Galway[1], Regenerative Medicine Institute at CÚRAM SFI Research Centre, School of Medicine, National University of Ireland Galway (NUIG), Galway[2], Department of Clinical Biochemistry, Saolta University Health Care Group (SUHCG), Galway University Hospitals, Galway[3], Department of Nephrology, Saolta University Health Care Group (SUHCG), Galway University Hospitals, Galway, Ireland[4].

3.30 – 4.25pm Coffee and Poster Viewing Session

4.30 pm OC11. Investigating the role of the Liver X Receptor in Potentiating Mitotane Therapy in Adrenocortical Carcinoma

K Warde[1], PT Donlon[1], E. Schoenmakers[2], M Gurnell[2], MC Dennedy[3].
Discipline of Pharmacology & Therapeutics, Lambe Institute for Translational Research[1]. Institute of Metabolic Science, Addenbrooke's Hospital, University of Cambridge, Cambridge, UK[2]. School of Medicine, NUI, Galway, Costello Road, Galway[3].

4.45 pm OC12. Microwave ablation of the adrenal gland for treatment of functioning adrenocortical tumours: Porcine *in vivo* study

PT Donlon[1], P Prakash[2], W Cox[2], H Fallahi[2], L Heflin[3], B Bloomberg[3], J Lillich[3], C Ganta[3], W Beard[3], Shazad A[4] PM O'Shea[5], M O'Halloran[4], MC Dennedy[1]
Discipline of Pharmacology and Therapeutics, Lambe Institute, National University of Ireland Galway[1], Department of Electrical and Computer Engineering, Kansas State University, USA[2], College of Veterinary Medicine, Kansas State University, USA[3], Translational Medical Device Laboratory, Lambe Institute, National University of Ireland Galway[4], Department of Clinical Biochemistry, Galway University Hospitals, Galway[5]

5.00 pm IES Hadden Lecture

The impact of recent CVOT on the management of T2DM: Are we ready for a paradigm shift?
Professor Bernard Zinman
Mount Sinai Hospital and the University of Toronto, Canada

Saturday 20th of October 2018

8.00 – 9.00 am IES Annual General Meeting

Oral Presentations

9.15 am OC13. Defining reference intervals for a plasma dephosphorylated-uncarboxylated form of Matrix Gla-Protein assay in a Caucasian population and its utility in Diabetic Kidney Disease (DKD).

Griffin TP[1,2], Islam MN[2,3], Griffin MD[2,4], O'Shea PM[3]
Centre for Endocrinology, Diabetes and Metabolism, Saolta University Health Care Group, Galway University Hospitals, Galway[1], Regenerative Medicine Institute at CÚRAM SFI Research Centre, School of Medicine, National University of Ireland Galway (NUIG), Galway[2], Department of Clinical Biochemistry, Saolta University Health Care Group, Galway University Hospitals, Galway[3], Department of Nephrology, Saolta University Health Care Group, Galway University Hospitals, Galway, Ireland[4].

9.30 am OC14. Acute metabolic effects and specificity of putative GPR55 agonists using CRISPR/Cas9 gene editing and diabetic mice.

A.G. McCloskey, M.G. Miskelly, M. MacDonald, P.R. Flatt, A.M. McKillop.
Biomedical Sciences Research Institute, Ulster University, Coleraine, Northern Ireland.

9.45 am **OC15. Examining Galectin-3 levels in lean and obese adults and children**

Mat A[1], Kinlen D[1,2,3], Tobin LM[1], Hogan AE[1,2,4], Cody D[2,3] & O'Shea D[1]
Obesity Immunology Group, Education and Research Centre, St Vincent's University Hospital, University College Dublin[1]. National Children's Research Centre, Crumlin, Dublin[2]. Department of Diabetes & Endocrinology, Our Lady's Children's Hospital Crumlin[3]. Institute of Immunology, Department of Biology, Maynooth University, Maynooth[4].

10.00 am **OC16. Influence of Sleeve Gastrectomy on Leptin to Adiponectin Ratio in Severely Obese Adults: A Prospective Cohort study**

M.F. Rafey[1], C E H Fang[1], J. Ioana[1], H. Griffin[1], M. Hynes[1], T. O'Brien[1,2], O. McAnena[3], P. Oshea[1], C. Collins[3], F.M. Finucane[1,2].
Bariatric Medicine Service, Centre of Diabetes, Endocrinology and Metabolism, Galway University Hospitals and HRB Clinical Research Facility, Galway[1]. Department of Medicine, National University of Ireland Galway[2]. Department of Surgery, National University of Ireland Galway[3].

10.15 am **OC17. Can sCD163 Predict Outcomes of Liraglutide Treatment in Metabolically Unhealthy Obese**

A Mat[1], L Tobin[1], A Hogan[1,2], & D O'Shea[1,3]
Education & Research Centre, St Vincent's University Hospital, Dublin 4, Ireland[1]. Institute of Immunology, Dept of Biology, Maynooth University, Maynooth, Ireland[2]. Department of Endocrinology, St Vincent's University Hospital, Dublin, Ireland[3].

10.30 am **IES McKenna Lecture**

Triumph in Testing Times
Dr Paula O'Shea, Consultant Clinical Biochemist, University College Hospital, Galway

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

11.30 am **OC18. TRAIL protects from RANKL-induced calcification in the aortic endothelium via an anti-oxidant mechanism**

E Harper[1], KD Rochfort[1], D Smith[2], PM Cummins[1]
School of Biotechnology, Dublin City University, Glasnevin, Dublin[1]. Department of Academic Endocrinology, Beaumont Hospital, Dublin[2].

11.45 am **OC19. Dominant negative variants in PPAR alpha have a metabolic fingerprint**

A Melvin[1], B Lam[1], C Langenberg[2], J Luan[2], K Rainbow[1], GS Yeo[1], N Wareham[2], DB Savage[1] and S O'Rahilly[1]
Metabolic Research Laboratories, Wellcome Trust-MRC Institute of Metabolic Science, University of Cambridge, United Kingdom[1], MRC- Epidemiology Unit, University of Cambridge, United Kingdom[2].

12.00 pm **OC20. Metformin and a DPP-4-inhibitor differentially modulate the microbiome and metabolome of Metabolic Syndrome mice**

Paul M Ryan[1], Elaine Patterson[2], Ilaria Carafa[3], Rupasri Maadal[4], David S WIshart[4,5,6], Timothy G Dinan[2,8], John F Cryan[2,7], Kieran M Tuohy[3], R Paul Ross [2], Catherine Stanton[1]
School of Medicine, University College Cork, Co. Cork, Ireland[1] APC Microbiome Ireland, University College Cork, Co. Cork, Ireland[2], Fondazione Edmund Mach - Istituto Agrario San Michele All'adige[3], Department of Biological Sciences, University of Alberta, Edmonton, Alberta, Canada[4], Department of Computing Science, University of Alberta, Edmonton, Alberta, Canada[5], National Institute for Nanotechnology, Edmonton, Alberta, Canada[6], Department of Neuroscience, University College Cork, Co. Cork, Ireland[7], Department of Psychiatry, University College Cork, Co. Cork, Ireland[8], Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork, Ireland[9]

12.15 pm **OC21. HDL particle size is increased and HDL-cholesterol efflux enhanced in subjects with type 1 diabetes compared to age, sex and BMI-matched non-diabetic subjects**

M Ahmed [1], R Byrne[2], W Guo[2], A Gunness[1], KS Ahmed[1], A McGowan[1], K Moore[1], FC McGillicuddy[2] , J Gibney[1]
Department of Endocrinology, The Adelaide and Meath Hospital, Incorporating the National Children's Hospital, Tallaght, Dublin 24[1]; Diabetes Complications Research Centre, School of Medicine, University College Dublin, Belfield, Dublin 4[2].

12.30 pm **OC22. LRG1: a novel predictive biomarker for pre-eclampsia in pregnant women with diabetes.**

AH. Cheung[1], A Jenkins[2], K Hanssen[3,4] , S Garg[5], J Yu[6], C Aston[7], CB Kelly[1], TJ Lyons [1], CJ Watson[1]
Centre for Experimental Medicine, Queen's University Belfast, Northern Ireland[1], University of Sydney, NHMRC Clinical Trials Centre, Australia[2], Department of Endocrinology, Oslo University Hospital, Norway[3], Institute of Clinical Medicine, University of Oslo, Norway[4], Barbara Davis Center for Childhood Diabetes, USA[5], Division of Endocrinology, MUSC, USA[6], Department of Pediatrics, University of Oklahoma Health Sciences Center, USA[7].

12.45 pm **OC23. Promising therapeutic efficacy of chronic apelin analogue administration in comparative study with incretin mimetics in diabetic *db/db* mice**

FPM O'Harte, V Parthsarathy & PR Flatt
Diabetes Research Group, Institute of Biomedical Sciences, Ulster University, Coleraine, Co. Derry, N. Ireland

1.00 pm **IES Summer Student Award Presentations**

The impact of Diabetes Mellitus on Bone Marrow progenitor cell number and proliferative capacity
Alan Keane, UCHG

Does Diabetic Ketoacidosis at diagnosis of T1DM predict poor long term glycaemic control?
Louise Kelly, UCC

Phenotype, genotype and glycaemic variability in subjects with activating mutations in the ABCC8 gene
Fionnula Reilly, UCD

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

Oral Presentations

OC1 Childhood obesity causes dysregulation of MAIT cells and monocytes driving production of cytokines linked to insulin resistance

Kinlen D[1,2,3], O'Shea D[1], Hogan AE[1,2,4], Cody D[2,3]

Obesity Immunology Group, Education and Research Centre, St Vincent's University Hospital, University College Dublin[1]. National Children's Research Centre, Crumlin, Dublin[2]. Department of Diabetes & Endocrinology, Our Lady's Children's Hospital Crumlin[3] Institute of Immunology, Department of Biology, Maynooth University, Maynooth[4]

Childhood obesity is a major societal challenge in Ireland with 1 in 4 children now overweight or obese. These children are at risk of developing insulin resistance and, in time, type 2 diabetes. Inflammation and immune dysregulation are thought to be key players in this process. Our group previously showed that childhood obesity negatively alters mucosal associated invariant T (MAIT) cells, a population of innate T cells. We found that these cells produce elevated IL-17A, a pro-inflammatory cytokine implicated in insulin resistance, but the mechanism underpinning this was not elucidated. In this project, we aimed to further examine this dysregulation. We collected blood samples from 33 lean and 51 obese children and confirmed that IL-17A-producing MAIT cells are more abundant in obese children (lean: 0.57±0.09%, obese: 1.25 ±0.20%, p=0.008). We then investigated serum factors associated with increased IL-17A, and found that soluble CD163, a marker of inflammatory myeloid cells, was increased in the obese cohort (lean: 328±11ng/ml, obese: 366±11ng/ml, p=0.03). This encouraged us to examine myeloid cytokine production and we found that IL-1β, another cytokine implicated in insulin resistance, was also elevated in obese children (figures pending). Finally, by selectively removing monocytes, we showed that MAIT cell IL-17A production is dependent on monocyte cross-talk (all cells present: 1.25 ±0.20%, monocyte depleted: 0.48±0.16% p=0.02). Collectively our data suggests that childhood obesity drives dysregulation in monocytes which then contributes to MAIT cell dysregulation. This cascade results in elevated production of two cytokines linked to insulin resistance.

OC2 Optimal timing of repeat newborn screening for congenital hypothyroidism in preterm infants to detect delayed TSH elevation and decompensated congenital hypothyroidism

McGrath N[1,2], Hawkes CP[3], Mayne P[4,5], Murphy NP[1,2]

Department of Paediatric Endocrinology, Children's University Hospital, Temple St, Dublin[1]Department of Paediatrics, School of Medicine, University College Dublin[2], Division of Endocrinology and Diabetes, The Children's Hospital of Philadelphia, Philadelphia, USA[3], National Newborn Screening Laboratory, Children's University Hospital, Temple St, Dublin[4], Department of Paediatrics and Biochemistry, Royal College of Surgeons in Ireland, Dublin[5].

Background: A unique form of congenital hypothyroidism has been described in preterm infants. This atypical form of hypothyroidism is characterized by a delayed TSH elevation, such that preterm infants pass their first newborn screening test but are detected on repeat screening. The utility of the second screening, its optimal timing, and the optimal TSH cutoffs to be used remain subjects of active debate. Methods**:** The newborn screening records of all preterm infants with treated CHT between January 2004 and December 2016 were reviewed. Whole blood TSH samples were collected on filter paper between 72 and 120 hours after birth. Repeat samples were collected weekly in preterm infants until term corrected (37 weeks gestation). Patients were followed up to determine if CHT was permanent or transient. Results: Twenty-seven (50.9%) preterm babies born < 33 weeks gestation who were diagnosed with CHT had delayed TSH elevation and would not have been detected on first newborn screen. Twelve (40.7%) patients with delayed TSH elevation had decompensated hypothyroidism at diagnosis (FT4 <10 pmol/L) and 4 had severe CHT (FT4 < 5.5 pmol/L) at diagnosis. At least 8 (29%) preterm infants with delayed TSH elevation had permanent CHT and a further 12 patients will be re-evaluated at age 3 years. Conclusion: Repeat screening for CHT in preterm infants is necessary to avoid missing cases of CHT with delayed TSH elevation. Current consensus guideline to repeat screening once at 2 weeks of life will miss a significant number of infants with delayed TSH elevation and decompensated permanent CHT.

OC3 Permanent decompensated congenital hypothyroidism in newborns with wholeblood TSH concentrations between 8 and 10 mU/L-the case for lowering the threshold

McGrath N[1,2], Hawkes CP[3], Mayne P[4,5], Murphy NP[1,2]

Department of Paediatric Endocrinology, Children's University Hospital, Temple St, Dublin[1], UCD School of Medicine, University College Dublin[2], Division of Endocrinology and Diabetes, The Children's Hospital of Philadelphia, USA[3], National Newborn Screening Laboratory, Children's University Hospital, Temple St, Dublin[4] Department of Paediatrics and Biochemistry, Royal College of Surgeons in Ireland, Dublin[5]

Background: Congenital hypothyroidism (CHT) has a reported incidence of approximately 1 in 2000 to 4000 births. There is no consensus on the optimal cutoff whole blood TSH concentration that should be used for newborn screening (NBS). The NBS programme in the Republic of Ireland has used a cutoff of 8mU/L since 1979. The aim of this study was to determine if raising the cutoff to 10mU/L in line with the UK screening standard would have resulted in undetected cases of permanent or decompensated CHT. Methods: All cases of CHT with screening whole blood TSH concentration between 8.0 and 9.9mU/L were identified from the Republic of Ireland's NBS programme. Baseline demographics and imaging results were recorded. All cases over 3 years-of-age were evaluated to determine if CHT was permanent or transient. Results: Of 2,361,174 infants screened in the Republic of Ireland between

July 1979 and December 2016, 1063 babies were diagnosed with CHT and treated with levothyroxine. This included 33 (3.5%) infants with a whole blood TSH concentration of between 8 and 9.9mU/L. Thirteen of these 33 infants had decompensated hypothyroidism with low plasma free thyroxine level at diagnosis and 9 (41%) of the 21 evaluable cases have confirmed permanent CHT. Conclusion: Although lowering screening TSH cutoffs can increase the cost of NBS, as well as anxiety for families, many infants with borderline increases in whole blood TSH concentrations on NBS have persistent CHT and low thyroxine concentrations in infancy. We recommend that this is considered when developing and reviewing NBS protocols for identifying infants with CHT.

OC4 The Use of Stimulated Gonadotrophin Measurements to Assess the Response to GnRH Analog Therapy in Children with Central Precocious Puberty Attending Endocrine Service in Our Lady's Children Hospital in Crumlin

Al Qanoobi M.J, Cody D

Diabetes and Endocrine Centre, Our Lady's Children Hospital Crumlin, Dublin

Precocious puberty is one of the common conditions encountered in pediatric endocrinology practice. Central precocious puberty is gonadotropin-dependent while peripheral precocious puberty is gonadotropin-independent. Clinical diagnosis is confirmed by gonadotrophin-releasing hormone (GnRH) stimulation test. The mainstay treatment for central precocious puberty is GnRH analogs. Our practice in Our Lady's Children Hospital in Crumlin (OLCHC) is to repeat GnRH stimulation test in three months to ensure adequate suppression of puberty on treatment. In this study we aim to assess the outcome and the value of the second GnRH stimulation test and to compare the level of sex hormones pre-treatment and after starting the treatment. We carried a retrospective analysis of children who were diagnosed and started on treatment for central precocious puberty in OLCHC and had a repeated GnRH stimulation test on treatment between January 2016 and December 2017. Data regarding peak Leutinzing hormone and sex hormones pre and on-treatment were compared. A total of 17 patients (13 girls and 4 boys) were included in the review. All children had suppressed gonadotrophin on the second GnRH stimulation test. 77% of the girls had unmeasurable oestradiol on treatment and those who had measurable levels on treatment, their level was low and significantly less than prior treatment. Similar finding was observed in the boys' group. These findings show that central precocious puberty is biochemically suppressed in children treated with GnRH analogs and routine second GnRH stimulation test is not indicated unless individual clinical signs or symptoms indicate otherwise.

OC5 Gestational diabetes (GDM<24 weeks) is associated with worse pregnancy outcomes despite early treatment, when compared with GDM diagnosed at 24-28 weeks gestation

M. Mustafa, A. Khattak, D. Bogdanet, L. McKnenna, L.A. Carmody, B. Kirwan, G. Gaffney, P. O'Shea, F.Dunne

Galway Diabetes Research Centre, National University of Ireland Galway, Galway, Ireland.

Gestational Diabetes Mellitus is associated with more adverse pregnancy outcomes compared to women with normal glucose tolerance in pregnancy. WHO recommends screening at 24-28 weeks gestation. However, some women are screened earlier due to symptoms or because of prior GDM. Those screened and diagnosed earlier in pregnancy have a longer period of intervention which may have an impact on pregnancy outcome. Information on the outcomes of women with GDM diagnosed < 24 weeks gestation is limited. We aimed to examine pregnancy outcomes of women with GDM diagnosed < 24 weeks gestation compared to those diagnosed at 24-28 weeks in a large treated European cohort. A retrospective cohort study was carried out of 1,471 pregnancies from women with GDM diagnosed using IADPSG criteria. Women were classified as early GDM diagnosed (<24 weeks) (n = 275), or standard GDM diagnosed (24-28 weeks) gestation (n = 1,196). Women with early GDM had higher BMI at diagnosis than women diagnosed between 24-28 weeks [34.5-/+ 7.3 versus 31.8-/+ 5.9 (P value<0.001, mean difference 95%CI (1.6, 3.6)].).Table 1 below shows pregnancy outcomes. Women with early GDM are more likely to develop hypertensive disorders and have an operative delivery. Stillbirths, preterm delivery and requirement for NNU care are more common in offspring of mothers with early GDM. Although birth weights are similar, a greater number of babies from mothers with early GDM are born LGA. In view of the greater number of early GDM women displaying abnormal OGTT post-partum; this may reflect a more advanced state along the pathway to diabetes.

Maternal /neonatal outcome	<24 week (n=279, 18.9%)	24-28 week (n=1197, 80.1%)	P-value	95% CI for difference
Pregnancy induced Hypertension	12.4%	5.3%	<0.001	(0.03, 0.12)
Preeclampsia	3.8%	0.9%	<0.05	(0.004, 0.05)
Post-Partum Hemorrhage	8.7%	2.4%	<0.05	(0.008, 0.084)
Stillbirth	1.4%	0.5 %	<0.001	(0.11, -0.04)
Preterm birth (< 37 weeks)	10.9%	6.6%	0.03	(0.004,0.083)
Neonatal unit care (NNU)	30.7%	22.1%	<0.05	(0.024, 0.15)
Large Gestational Age (LGA)	19.1%	13.4%	<0.05	(0.005, 0.11)

OC6 Predictor Factors of Hypertension Induced in Pregnancy in Women with Gestational Diabetes Mellitus.

Sánchez-Lechuga B[1], Campos Caro A[2], De la Varga Martín R[2], Byrne M[3], Aguilar Diosdado, M[1], López-Tinoco C[1]

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Gestational diabetes mellitus (GDM) is associated with an increased risk of pregnancy-induced hypertension (PIH). Ambulatory blood pressure monitoring (ABPM) has been used to screen for PIH and preeclampsia. Currently, little is known in GDM about the role of inflammatory biomarkers in PIH development and their impact on perinatal morbidity. With this study, we aim to identify in women with GDM, at an early stage inflammatory markers and BP profiles (detected by ABPM) that could define a population at higher risk of developing PIH and preeclampsia. We prospectively studied 121 normotensive women with GDM consecutively recruited at 28-32 weeks of pregnancy. ABPM was carried out for one 24-h period. Serum biomarkers (sFlt1, PIGF, PAI-1, IL-6, IL-8, leptin, IL1-ß, TNF-α, adiponectin, resistin, NGF, HGF and MCP1) were determinated. Clinical and metabolic data, obstetric and perinatal outcomes were analysed. Mean age was 34.7±4.39 years. Patients with non-dipper patterns (50.5%) had higher levels of night-time systolic (106.7 vs 98.4mmHg) and diastolic BP (64.8 vs 57.2mmHg) (p<0.001).

High levels of night-time systolic BP (OR: 1.18; 95% CI: 1.00-1.39;p=0.04) and sFlt-1/PIGF ratio (OR: 2.46; 95% CI:1.15-5.25, p=0.006) increased the chance of developing PIH. sFlt-1/PIGF ratio was negatively correlated with birth weight (r=-0.42, p<0.001) and gestational age at delivery (r=-0.38, p<0.001). We concluded that a higher rate of non-dippers pattern was observed and the night-time systolic BP could be a useful predictor of PIH. There is a certain proinflammatory profile, led by an increase in the sFlt-1/ PIGF ratio in GDM that could predict the development of PIH and subsequent obstetric and perinatal complications.

OC7 Cardio-metabolic complications in acromegaly patients with elevated plasma IGF-1 concentrations

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The increased cardiovascular mortality in acromegaly can be reversed by treating plasma GH concentrations to target of < 2ng/ml. However, in 30% of patients, plasma GH concentrations which are on target are associated with discordantly elevated plasma IGF-1 concentrations. It is not known whether this discordance confers excess morbidity. The aim of this study was to determine whether discordance of plasma GH and IGF-1 negatively affects parameters which predict cardiovascular morbidity. Methods: Group 1 (Concordant): 30 patients with plasma GH <2ng/ml and IGF-1 concentrations within the age and sex matched reference range (RR), Group 2 (Discordant): 28 patients with plasma GH< 2ng/ml and elevated plasma IGF-1concentrations above the age and sex-matched RR. Parameters Measured: HOMA-IR, Carotid Intima Thickness (CIMT), arterial pulse wave velocity (PWV) and 24-hour ambulatory blood pressure. All tests were completed with a standardised protocol over one day. Results: The mean age was similar in the two groups (55.6+/-11.7 vs. 58.8+/-13.3 years, p=0.33). There were no significant differences between HOMA-IR (p=0.46), IMT (p=0.98), PWV (p=0.63), mean daytime (p=0.28) or night-time systolic blood pressure (p=0.58) between the two groups. GH nadir during OGTT (p=0.184), and basal plasma GH (p=0.47) were similar in the two groups. Conclusion: Elevated plasma IGF-1, with controlled GH concentrations, does not confer excess cardio-metabolic morbidity compared with patients with concordant results. Our results support the argument that complex and expensive treatment regimens should be reserved in discordant patients for patients with evidence of end organ morbidity due to acromegaly.

OC8 Impact of circulating cortisone on bone turnover markers in male patients with hypopituitarism

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Background: Glucocorticoid therapy is the most common cause of secondary iatrogenic osteoporosis. Less is known on the effect of glucocorticoids as replacement therapy in patients with adrenal insufficiency on bone remodeling. Method: An open crossover prospective study randomizing ten hypopituitary men with severe ACTH deficiency to three commonly used hydrocortisone doses. Following 6 weeks of each regimen, patients underwent 24-hour serum cortisol/cortisone sampling, measurement of bone turnover markers, and a 24-urine collection for measurement of urinary corticosteroid metabolites by GC-MS. Serum cortisone/cortisol was analysed by LC-MS. Results: Dose related and circadian variations in serum cortisone were seen to parallel those for cortisol. The median area under the curve (AUC) of serum cortisone was significantly higher in patients on dose A (20mg/10mg) [670.5 (IQR 621-809.2)] compared to those on dose C (10mg/5mg) [562.8 (IQR 520.1-619.6), p=0.01]. A negative correlation was observed between serum cortisone and bone formation markers, OC[1-49] (r=-0.42, p=0.03), and PINP (r=-0.49, p=0.01). There was a negative correlation between the AUC of night-time serum cortisone levels with the bone formation marker, OC[1-49] (r= -0.41, p=0.03) but there were no significant correlations between day-time serum cortisone and cortisol with any bone turnover markers. There was a negative correlation between total urinary cortisol metabolites with the bone formation markers, PINP (r=-0.39, p=0.04), and OC[1-49] (r=-0.35, p=0.06).

Conclusion: Serum cortisone and total urinary total cortisol metabolites are associated with alterations in bone turnover markers suggesting a potential role in the tissue specific metabolism of glucocorticoids on bone metabolism in patients receiving HC replacement.

OC9 The in vivo and in vitro effects of kisspeptin on human ovarian function

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Background: Kisspeptin stimulates gonadotropin secretion indirectly by stimulation of hypothalamic GnRH neurons. Kisspeptin and its receptor are also expressed in the ovary but its direct actions, if any, are unclear. Kisspeptin also has therapeutic potential, and it has been used to trigger oocyte maturation in in-vitro fertilisation (IVF). It has been shown to be associated with a low risk of ovarian hyperstimulation syndrome (OHSS), the most common serious side effect of IVF. However, its effects on ovarian steroid function in this setting have not been explored. Objectives: 1. Compare effects of maturation triggers hCG, GnRH agonist and kisspeptin on expression, in granulosa lutein (GL) cells, of genes involved in ovarian reproductive function and steroidogenesis. 2. Examine in vitro activity of kisspeptin and its direct role in ovarian steroidogenesis. Materials & methods: GL cells were isolated from follicular fluid collected at oocyte retrieval. RT-qPCR was used to compare gene expression of ovarian steroidogenesis and gonadotropin receptors. Gene expression analysis, MAPK, AKT and IP1 assays were carried out after in vitro treatment with kisspeptin. Results: GL cells from women who received kisspeptin trigger showed significantly higher expression, compared to other triggers, of FSHR, LHR, STAR, 3BHSD2, CYP19, INHBA, INHBB, ESR1, ESR1. In vitro kisspeptin treatment activates multiple receptor signalling pathways; MAPK, AKT and IP1.

Conclusion: This is the first study examining direct and indirect effects of kisspeptin in human granulosa lutein cells. Kisspeptin, when used as an oocyte maturation trigger, augments expression of genes involved in ovarian steroid synthesis, when compared to traditional maturation triggers. In vitro treatment with kisspeptin activates intracellular signalling and augments steroid synthesis, suggesting that it plays a direct role in ovarian regulation.

OC10 Effect of Sodium Glucose Co-Transporter-2 Inhibition on the Aldosterone/Renin Ratio in Type 2 Diabetes Mellitus

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Introduction: The aldosterone to renin ratio (ARR) is recommended for case detection of primary aldosteronism (PA). Several factors including medications, diet and physiology can undermine the diagnostic accuracy of the ARR. The aim of this study was to explore the effect of Sodium Glucose Co-Transporter-2 Inhibition on the ARR in patients with Type 2 diabetes mellitus (T2DM) who were prescribed a Sodium Glucose Co-Transporter-2 Inhibitor (SGLT2i) as part of routine clinical care. Methods: A prospective longitudinal study design was used. Participants were recruited by convenience consecutive sampling at routine diabetes outpatient visits between June 2016 and November 2017. Eligible participants were prescribed standard doses of empagliflozin as part of their routine medical care and sampled at baseline (pre-SGLT-2i) and at their next routine outpatient visit (post-SGLT-2i). Results: After a mean of 198(±87) days on SGLT2i treatment (n=20), there was a significant reduction in HbA_{1c}, BMI, eGFR and serum triglycerides and a significant increase in serum creatinine and sodium. Compared with baseline, there was a significant increase in median direct renin concentration (mIU/L) [40.3 (6.2-249.5) v 70.2 (7.0, 551.0)(p=0.005)] and no significant change in median plasma aldosterone concentration (pmol/L) [296 (101, 685) v 273 (101, 794)(p=0.541)] with a significant reduction in median ARR (pmol/mIU)[6.9 (0.6-70.7) v 5.3 (0.2-39.3)(p=0.007)]. The proportion of participants with a screen positive ARR decreased from 20% (pre-SGLT2i) to 5% (post-SGLT2i)(p=0.248). Conclusion: Lowered ARR consequent to SGLT-2i therapy potentially causes false-negative screening for PA. We advocate withdrawal of SGLT-2i prior to screening for PA in participants with T2DM.

OC11 Investigating the role of the Liver X Receptor in Potentiating Mitotane Therapy in Adrenocortical Carcinoma

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Introduction: Adrenocortical carcinoma (ACC) is a rare, aggressive malignancy. Adjuvant mitotane improves survival but is limited by its narrow therapeutic window and escape from therapeutic efficacy. Mitotane modulates its adrenolytic effect through SOAT1 antagonism and consequent free cholesterol accumulation. Liver X receptors (LXRs), are highly expressed in adrenal tissue and mediate cholesterol homeostasis. We hypothesise that selective antagonism of LXRα increases toxic lipid accumulation in adrenocortical cells and potentiates the adrenolytic effect of mitotane. Methodology: ATCC-H295R ACC cells were pre-treated with the LXRα antagonist GSK2033 5μM for 18hrs followed by mitotane (20/40/50μM) for 6hrs. Cell viability was assessed using propidium iodide. Intracellular lipid droplets were evaluated using Imagestream® flow cytometry to visualise and quantify BODIPY®. Free cholesterol accumulation was assessed using Filipin. Cholesterol efflux receptors and SOAT1 were evaluated by qRT-PCR. Results: Mitotane induced H295R cell death at 20, 40 and 50μM ($p<0.01$). Co-treatment with GSK2033 potentiated mitotane killing at 20μM ($p<0.0009$) and 40μM ($p<0.025$). There was a significant decrease in lipid droplet accumulation in response to mitotane at all concentrations (40μM::0.58, 20μM::0.66) versus vehicle (VC::1). GSK2033 treatment further reduced lipid droplet accumulation, alone and in combination with mitotane (GSK::0.3) (GSK&Mitotane 40μM::0.4, GSK&Mitotane 20μM::0.39). This was accompanied by decreased cholesterol efflux expression and increased free cholesterol. Conclusion: The LXRα antagonist, GSK2033 when combined with Mitotane, increases cell death in adrenocortical cancer cells. This is accompanied by a decrease in lipid droplets and increased intracellular free cholesterol. Targeting LXRα may present a novel mechanism to broaden mitotane's therapeutic efficacy in the management of ACC.

OC12 Microwave ablation of the adrenal gland for treatment of functioning adrenocortical tumours: Porcine *in vivo* study

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Introduction: Functioning adrenocortical tumours (FAT) are common (adult prevalence of 2-5%), causing hypercortisolism and primary aldosteronism. Mainstay therapy, adrenalectomy resects normal and abnormal tissue. Microwave thermal ablation (MTA) presents a plausible minimally-invasive therapeutic, to specifically target and ablate FAT, while preserving adjacent normal adrenal cortex. Objective: To evaluate MTA as a precision ablation methodology for adrenocortical tissue, simultaneously evaluating effects on adjacent non-targeted tissue. Methodology: A directional MTA applicator was used *in vivo* on adrenals of 8 male pigs: (i)sham (n=2); (ii)one gland ablated (n=3); (iii)both glands ablated (n=3). Blood was drawn intraprocedurally and at 48h for measurement of metanephrines, cortisol and aldosterone (LCMS). Animal sacrifice/tissue harvest occurred at 48h. Ablation-zone volume was assessed by basic histology (H&E) and S100a9 (IHC). Tissue function was assessed by expression of CYP17 and CYP11B1 (IHC). Differential tissue immunology was assessed using CD4, CD8, and CD68 (IHC). Results: A specific ablation zone (0.67+/-0.37cm^3) was achieved, morphologicaly demonstrating coagulative necrosis, high S100a9 and absent steroidogenic enzyme expression. Non-targeted adrenocortical tissue was preserved functionally and structurally and delineated by an immune cell infiltrate. Medullary damage occured in all ablated adrenals, consistent with higher di-electric properties and transient intra-procedural hypertension. Conclusion: For the first time, MTA is shown as a safe, effective method to precisely ablate adrenal cortex of volumes equivalent to FAT, while preserving adjacent non-targeted cortex. Intraprocedural alpha blockade is necessary to pre-treat possible intra-procedural

medullary catecholamine surge. This presents exciting short-term translational potential for the therapy of FAT

OC13 Defining reference intervals for a plasma dephosphorylated-uncarboxylated form of Matrix Gla-Protein assay in a Caucasian population and its utility in Diabetic Kidney Disease (DKD).

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Introduction: Vitamin K is essential for activation of Matrix Gla Protein (MGP), a potent natural inhibitor of tissue vascular calcification. The inactive dephosphorylated-uncarboxylated form of MGP (dp-ucMGP) reflects vitamin K status. Vascular calcification increases as glomerular filtration rate (GFR) decreases. The aims of this study were to establish normative data in an Irish Caucasian population and to explore the potential utility of dp-ucMGP in Diabetic Kidney Disease (DKD). Methods: Following informed consent, 188 healthy volunteers and 201 participants with different stages of DKD (DKD:0-2 [eGFR≥60mL/min/1.73m^2] n=126; DKD:3-4 [eGFR<60mL/min/1.73m^2] n=75) were recruited. Baseline demographics, anthropometrics and laboratory data were recorded. Plasma was collected in ethylenediaminetetraacetic acid (EDTA) tubes for measurement of dp-ucMGP using chemiluminescence technology, IDS®-iSYS InaKtif MGP. Reference intervals were determined using the 2.5th and 97.5th percentiles for dp-ucMGP concentration. Results: Of 188 healthy participants, 53 failed to meet the inclusion criteria. The reference interval for plasma dp-ucMGP was 299(90%CI:299–299)-536(90%CI:509-698) pmol/L. ROC curve analysis for patients with DKD:3-4 determined an AUC of 0.933(95%CI:0.900-0.957; P<0.001). The optimum cut-off for predicting DKD:3-4 was >557pmol/L providing a diagnostic sensitivity and specificity of 87% and 88% respectively. Among patients with diabetes, there was a strong negative correlation between dp-ucMGP and eGFR (r=-0.5796; P<0.001) and a moderate positive correlation with ACR (r=0.2581; P=0.003).

Conclusion: Reference intervals for plasma dp-ucMGP in a healthy Irish population using IDS-iSYS InaKtif MGP were established. Dp-ucMGP distinguishes patients with moderate/severe DKD from healthy volunteers and patients with no/mild DKD. This may reflect increased risk of vascular calcification that occurs as renal function declines.

OC14 Acute metabolic effects and specificity of putative GPR55 agonists using CRISPR/Cas9 gene editing and diabetic mice

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Novel endocannabinoid receptor GPR55 has been identified as a potential anti-diabetic target through the regulation of glucose and lipid metabolism. GPR55 was evaluated by identifying selective agonists and assessing their potential as therapeutic agents. GPR55 knockout pancreatic BRIN-BD11 cells were developed using CRISPR/Cas9. Insulinotropic capabilities of GPR55 agonists were assessed in wild type and GPR55 knockout BRIN-BD11 cells, with downstream receptor signalling (Ca^{2+} and cAMP) evaluated. Distribution of GPR55 was assessed by immunohistochemistry in high fat fed (HFF) mouse pancreas and intestine. Acute metabolic effects of agonist monotherapy and combinational therapy (DPP-IV inhibitor) were investigated in HFF-induced diabetic NIH-Swiss mice. CRISPR/Cas9 gene editing abolished GPR55 mRNA (p<0.001) and protein (p<0.001) expression in BRIN-BD11 cells. Endogenous (OEA, PEA) and synthetic (Abn-CBD, AM-251) GPR55 agonists increased insulin secretion from BRIN-BD11 at 5.6mM (p<0.05-p<0.001) and 16.7mM (p<0.05-p<0.001) glucose. GPR55 agonists augmented intracellular Ca^{2+} (p<0.05-0.001) with no change in cAMP observed. Insulinotropic response of Abn-CBD, AM251 and PEA was attenuated by 30-53% (p<0.05) in GPR55 knockout cells, with a reduction (p<0.05-0.01) in intracellular Ca^{2+} concentrations. Immunohistochemistry identified co-localisation of GPR55 and insulin and GLP-1/GIP in the pancreatic islet and intestine of HFF mice, respectively. Orally administered Abn-CBD and AM251 (0.1μmol/kgBW) improved glucose tolerance (p<0.001), increased plasma insulin (p<0.001), GLP-1 (p<0.05) and GIP (p<0.05) in HFF-induced diabetic mice. Agonist combination (Sitagliptin) abolished DPP-IV activity (p<0.001), whilst improving glucose excursion (p<0.05) through enhanced insulin (p<0.05) and incretin (p<0.05) secretion from islet and enteroendocrine cells. GPR55 agonist monotherapy and combinational therapy presents a novel approach for the treatment of type-2-diabetes.

OC15 Examining Galectin-3 levels in lean and obese adults and children

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Galectin-3 (Gal-3) is a β-galactoside-binding lectin that has been implicated in the development of insulin resistance and other human diseases. Recent studies have suggested that Gal-3 is raised in childhood and adult obesity with levels correlating with markers of inflammation. We aimed to further investigate Gal-3 levels in lean and obese children and adults and determine any correlations with BMI and markers of insulin resistance. Serum levels from 120 adults (40 lean, 80 obese) and 80 children (30 lean, 50 obese) were measured using enzyme-linked immunosorbent assays (ELISA). Of the obese adults, 40 were diabetic (OD), age-matched to 40 non-diabetic (OND) (age 48.5±9.8 years vs 51.3±7.6 years, p=0.16). We found that obese adults have higher Gal-3 compared to lean (5.84±2.87ng/ml vs 4.54±1.55ng/ml p=0.03). OD have higher Gal-3 than OND (6.79 ±3.20ng/ml vs 4.89±2.14ng/ml, p=0.002), higher HbA1c (65.7±18.4 vs 37.8±4.2mmol/mol, p<0.0001), higher FBG (10.3±3.7 vs 5.7±0.8mg/dl, p<0.0002) but lower BMI (47.2±8.3 v 51.0±7.1kg/m^2, p=0.03). In obese adults, Gal-3 correlates positively with age (r=0.31, p=0.005), HbA1c (r=0.35, p=0.003) and FBG (r=0.32, p=0.005). There was no difference in Gal-3 levels between lean and obese children (5.57±0.62ng/ml vs 6.24 ±0.90ng/ml, p=0.60) and levels didn't correlate with age, BMI Z-score or HOMA-IR (measure of insulin resistance). Overall, our results suggest that Gal-3 is related to obesity and hyperglycaemia in adults but not in children. Age is an important determinant of Gal-3 serum concentration.

OC16 Influence of Sleeve Gastrectomy on Leptin to Adiponectin Ratio in Severely Obese Adults: A Prospective Cohort study

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Background: Bariatric surgery is known to dramatically increase insulin sensitivity in severely obese adults. However quantifying insulin sensitivity in these patients is technically challenging, therefore there is a role for better methods of insulin sensitivity quantification in these patients. Leptin to Adiponectin ratio (LAR)has been validated a measure of whole body insulin resistance but the influence of bariatric surgery on LAR has not previously been described. Objectives: We sought to determine the influence of Sleeve Gastrectomy on LAR at 12 months in a cohort of severely obese adults. Methods**:** We conducted a Single-centre, prospective cohort study of all patients undergoing Sleeve Gastrectomy between September and December 2016. Anthropometric data, metabolic profiles, leptin and adiponectin levels were collected pre and one year post surgery. Leptin and Adiponectin was measured using the two-site micro titre plate-based DELFIA assay. Statistical analysis was done using paired one tailed t test: Two-Sample Assuming Equal Variances. Results:25 patients undergoing surgery, 17 (12 female) attended for follow up at 12 months. Mean age was 52.2±8.3 years, follow up interval of 12±1 months. 12 patients had type 2 diabetes mellitus (T2DM),1 had type 1 diabetes mellitus (T1DM). Over 12 months Weight reduced from 130.5±30.8kg to 97.5±21.6kg ($p<0.001$),BMI from 46.8±7.8 to 35.3 ±7.2kgm^{-2}($p<0.001$),Excess body weight % from 87.5±31.2 to 41.3 ±28.8%($p<0.001$),ALT from 33.8±16.6 to 15.7±5.5mmol/L ($p<0.001$). HbA1c in all patients changed from 50.06±16.2 to 44.06±13.2mmol/mol ($p=0.051$). Leptin reduced from 40.6±24.8 to 30.8 ±30.4ng/ml ($p=0.111$), Adiponectin increased from 4.48±1.58 to 8.92±6.36μg/ml ($p=0.005$). LAR reduced from 8.88±4.76 to 5.26±6.52μg/ml ($p=0.001$). Conclusion: In patients with DM Sleeve Gastrectomy induces significant reductions in insulin sensitivity as evidenced by a significant reduction in LAR.

OC17 Can sCD163 Predict Outcomes of Liraglutide Treatment in Metabolically Unhealthy Obese

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Background: Liraglutide is a Glucagon-Like Peptide-1 (GLP-1) Receptor Agonist licensed to treat T2DM and obesity. Soluble CD163 (sCD163) is a marker of macrophage activation, the integral immunological component in inflammation associated with obesity. We aim to elucidate if levels of sCD163 can be used to predict treatment outcomes of Liraglutide in metabolically unhealthy obese patients. Methods: Thirty-four obese patients (58.8% female; 44.1% diabetic) were enrolled for 12-week Liraglutide therapy. Anthropometric parameters were assessed before and after. Serum levels for sCD163 were measured using enzyme-linked immunosorbent assays (ELISA). Results: Pre-treatment age (mean ± SD) was 52.41 ± 10.74y, Body Mass Index (BMI) was 44.97 ± 7.71 kg/m^2, HbA1c was 47.18 ± 15.96 mmol/mol and sCD163 was 284059.20 ± 71859.88 pg/ml. After treatment, BMI reduced to 43.19 ± 7.92 kg/m^2 ($p < 0.001$), HbA1c to 43.59 ± 16.00 mmol/mol ($p<0.001$) and sCD163 to 249130.45 ± 57972.85 pg/ml ($p<0.001$). Age, BMI and HbA1c correlates weakly to moderately with pre-treatment sCD163 levels (r=0.2, 0.3 & 0.4). Changes in BMI post-treatment (ΔBMI) is negatively correlated with initial sCD163 levels (r=-0.3) and is not correlated with ΔsCD163. Percentage of ΔHbA1c correlates strongly with ΔsCD163 (r=0.6). Higher levels of pre-treatment sCD163 correlates strongly with higher ΔsCD163 (r=0.7). Conclusion: Liraglutide treatment leads to significant improvement in sCD163 levels in metabolically unhealthy obese patients. Patients with high HbA1c have high levels of sCD163. Reduction in sCD163 predicts reduction in HbA1c. Higher initial sCD162 predicts poor weight improvement. Patients most likely to have reduction in sCD163 are the ones with higher initial sCD163 levels.

OC18 TRAIL protects from RANKL-induced calcification in the aortic endothelium via an anti-oxidant mechanism

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Vascular calcification (VC) is a leading risk factor for cardiovascular morbidity/mortality among type-2 diabetics. 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. RANKL is a well-established promoter of VC, and we have recently shown that TRAIL exerts a protective effect on the endothelium via attenuation of RANKL-induced paracrine signalling and non-canonical NF-κB activation. The mechanism by which TRAIL exerts this protective influence is unclear, but recent evidence supports a pro-oxidant role for RANKL and an anti-oxidant role for TRAIL. Thus, we hypothesise that endothelial redox signalling pathways may be involved in the mediation of VC by these ligands. To investigate this hypothesis, primary human aortic endothelial cells (HAECs) were treated with RANKL (25 ng/mL) +/- TRAIL (5 ng/mL) or N-acetyl-*L*-cysteine (NAC) (5 mM) for 72 hrs. Following analysis of pro-/anti-oxidant genes (e.g. heme oxygenase 1, p47 phagocytic oxidase, superoxide dismutase), it was found that RANKL and TRAIL indeed exerted a pro-oxidant and anti-oxidant influence, respectively, on the endothelium. Furthermore, TRAIL had the ability to significantly diminish RANKL-induced reactive oxygen species (ROS) levels, and thus, oxidative stress. Moreover, following analysis of a number of pro-calcific indices, it was found that NAC (a potent anti-oxidant) exerted a similar anti-oxidant/anti-calcific effect to TRAIL, in the attenuation of RANKL-induced bone morphogenetic protein-2 and alkaline phosphatase. Thus, TRAIL may block the pro-calcifying actions of RANKL in the vasculature via anti-oxidant redox pathways, yielding valuable mechanistic information on VC pathogenesis.

OC19 Dominant negative variants in PPAR alpha have a metabolic fingerprint

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The fibrate class of drugs, used in the therapy of hypertriglyceridemia, are believed to exert their actions through the nuclear receptor PPARα. Much of the underlying science on PPARα action has been undertaken in mice but there are clear species differences and the translatability of much of this research to humans is uncertain. Using a pooled sequencing strategy, we examined the coding sequence of PPARα in 11,848 participants. Twenty nine heterozygous missense variants in *PPARA* were identified ranging in allelic frequency from 3.7×10^{-5} to 1.1×10^{-1}. To determine functional significance, *PPARA* missense variants were mapped to

PPARG and stratified functionally using the missense interpretation by experimental response (MITER) classifier, five *PPARA* variants were predicted to be pathogenic. In vitro, four of the variants (p.R157Q, p.K292R, p.R341C and p.L426H) demonstrated impaired transcriptional activity when compared to wildtype (WT). Co-transfection of the mutant expression vector to HepG2 cells impaired transactivation by the WT protein in a dominant negative fashion. Examining the association with metabolic phenotypes among *PPARA* variant carriers (n=4), we observed significantly higher median (IQR) levels of non-esterified fatty acids 514 (421-882) umol/L vs. 303 (212-423) umol/L (p=0.025), gamma-glutamyl transferase 83.5(64-98.5) U/l vs. 25 (20-37) U/l (p=0.003) and alanine aminotransferase 34 (31-50) U/l vs. 24 (18-33) U/l (p=0.046) when compared to a control population (n=660). Dominant negative *PPARA* variants are associated with a signature of elevated circulating free fatty acids and hepatic damage. Future studies will illuminate the contribution of such variants to metabolic and hepatic disease providing new insights on the role of PPARα in human metabolism.

OC20 Metformin and a DPP-4-inhibitor differentially modulate the microbiome and metabolome of Metabolic Syndrome mice

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This study assessed the impact of two anti-diabetic therapies on the gut microbiome and markers of cardiometabolic disease risk in mice. We employed a metabolic syndrome model in which C57BL/6 mice were fed a high-fat diet for 25-weeks while receiving one of two anti-diabetic therapeutics, Metformin or a dipeptidyl peptidase-4 inhibitor (PKF-275-055), for the final 12 weeks. Animals were monitored for weight gain, as well as glucose/cholesterol metabolism. In addition, adiposity was investigated at dissection, cecal microbiome was analysed by 16S compositional sequencing and serum was analysed by liquid chromatography-tandem mass spectrometry. Both therapeutics significantly improved glucose/cholesterol metabolism, attenuated weight gain and mesenteric adipose accumulation. However, multivariate analyses of microbiome and metabolomics data revealed clear profile separation of the therapeutic groups. While both Metformin (0.78; $p<0.05$) and PKF-275-055 (1.00; $p<0.05$) mice displayed significantly decreased Firmicutes/Bacteroidetes ratios, only Metformin animals harboured metabolic health-promoting *Akkermansia* (3.4%; $p<0.0001$). Intriguingly, PKF-275-055 mice displayed elevated levels of the butyrate-producing *Rumminococcus* (2.0%; $p<0.05$) and the acetogen *Dorea* (0.95%; $p<0.05$). We identified reduced levels of certain sphingomyelin, phosphatidylcholine and lysophosphatidylcholine entities within serum of the PKF-275-055 group when compared to Metformin and control. Conversely, Metformin mice presented primarily with reduced levels of acylcarnitines, a functional group which has correlated with obesity, insulin resistance and systemic metabolic dysfunction in humans. This study adds weight to the hypothesis that some anti-diabetic therapeutics act in part through manipulation of the gut microbiome. Additionally, we identify several metabolites which may be of central importance in the mechanisms of Metformin and PKF-275-055.

OC21 HDL particle size is increased and HDL-cholesterol efflux enhanced in subjects with type 1 diabetes compared to age, sex and BMI-matched non-diabetic subjects

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Atherosclerosis is increased in type-1 diabetes (T1DM) despite normal-to-high HDL-cholesterol (HDL-C) levels. Cellular efflux to small HDL particles is mediated via ATP-binding cassette transporter (ABCA1-dependent efflux), and to larger particles via ABCG1 and SR-BI (ABCA1-independent efflux). HDL efflux is a better predictor of cardiovascular events than HDL-C. We compared HDL-particle size (NMR) and efflux (^{3}H-cholesterol efflux from J774-macrophages to HDL) in T1DM (37.6 ±1.2 years; BMI 26.9±0.5 kg/m^{-2}) and non-diabetic subjects (37.7±1.1 years; 27.1±0.5 kg/m^{-2}). HDL-particle size and total, ABCA1-dependent and ABCA1-independent efflux were greater in T1DM. HDL particle size correlated positively with ABCA1-dependent efflux (r=0.25) in T1DM, and total (r=0.36), ABCA1-dependent (r=0.30) and ABCA1-independent (r=0.35) efflux in non-diabetic subjects (P<0.05 for all).

	T1DM (Mean±SD) (n=100, 60 female)	Non-diabetic (Mean±SD) (n=100, 60 female)	P value (unpaired t-test)
HDL particle size (nm)	9.82± 0.57	9.43± 0.57	<0.0001
Total efflux	14.87 ± 0.24	12.31 ± 0.38	<0.0001
ABCA1 dependent	6.40 ± 0.25	5.27 ± 0.26	0.002
ABCA1 independent	8.50 ± 0.18	7.03 ± 0.17	<0.0001

Greater HDL particle size in T1DM is associated with enhanced HDL efflux function, which potentially acts to reduce progression of atherosclerosis in this high-risk group. Further exploration of the mechanisms through which these effects occur will help understand the processes that contribute to HDL function.

OC22 LRG1: a novel predictive biomarker for pre-eclampsia in pregnant women with diabetes

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Pregnant women with type 1 diabetes (T1DM) have a 4-fold increased risk for pre-eclampsia (PE) vs. their non-diabetic counterparts. PE is characterised by new-onset hypertension, with proteinuria and/or organ damage developing after 20 wks gestation: it can be fatal to both mother and child. Currently, PE is hard to predict, and the only cure is delivery. Improved biomarkers and specific treatments are urgently needed. The aim of this study was to explore the utility of Leucine-Rich alpha-2-Glycoprotein-1 (LRG1), a marker of inflammation and angiogenesis, as

a predictor of PE in pregnant type-1 diabetic (T1DM) women. This was a prospective study of 66 pregnant women: 23 with T1DM who developed PE, 24 with T1DM who remained normotensive, and 19 healthy non-diabetic women as reference controls. The two T1DM groups were matched for age, duration of diabetes, HbA1c and parity. LRG1 was measured at each of the 3 trimesters. Results highlight that LRG1 protein levels were significantly increased in women with T1DM who subsequently developed PE vs. those who did not (eg second trimester: 50.7 ± 2.4 vs 40.8 ± 2.5 μg/mL, $p<0.01$, mean ± SEM). This significant increase preceded the clinical signs and symptoms of PE. LRG1 may therefore have utility as an early predictor of PE, and could provide novel insights into disease mechanisms for PE in diabetic women.

OC23 Promising therapeutic efficacy of chronic apelin analogue administration in comparative study with incretin mimetics in diabetic *db/db* mice

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Stable apelin-13 peptide analogues have previously shown promising acute *in vivo* antidiabetic effects in diet induced obese diabetic mice. The efficacy of (pGlu)apelin-13-amide and the acylated analogue (pGlu)(Lys^{8}GluPAL) apelin-13-amide, were compared with exendin-4 and liraglutide following chronic administration in diabetic *db/db* mice. Five groups of 9-week old male *db/db* mice (n=8) received twice daily (09:00 and 17:00 h) administration of saline vehicle, (pGlu)apelin-13-amide, (pGlu)(Lys^{8}GluPAL) apelin-13-amide, exendin-4(1-39) or liraglutide all at 25 nmol/kg body weight for 21 days. Control C57BL/6J mice were treated twice daily with saline. No changes in bodyweight or food intake were observed with apelin treatments, but exendin-4 showed a reduction in cumulative food intake ($p<0.01$) compared with saline-treated *db/db* mice. Apelin analogues and incretin mimetics showed sustained improved glycaemic control ($p<0.05$ to $p<0.001$, from day 9 to 21) and enhanced insulinotropic responses versus saline-treated *db/db* mice. Both (pGlu)apelin-13-amide and (pGlu)(Lys^{8}GluPAL) apelin-13-amide, and incretin mimetics showed improved OGTT and ipGTT versus saline-treated *db/db* mice ($p<0.05$ to $p<0.001$). Apelin analogue treatment significantly reduced glycated haemoglobin by 1.5-1.6% after 21 days ($p<0.05$), 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 saline-treated *db/db* mice. Apelin peptides and liraglutide unlike exendin-4 reduced pancreatic α-cell area by 15-20%, ($p<0.05$ to $p<0.01$) and all peptide treatments improved pancreatic insulin content by 39-72% ($p<0.05$ to $p<0.01$) versus saline-treated *db/db* mice. In conclusion longer-term administration of apelin-13 based analogues was as effective as incretin mimetics in *db/db* mice, providing a viable alternative therapeutic approach for counteracting diabetes.

Poster Presentations

P1 Not always CAH: Urinary Steroid Profile leads to early diagnosis in infants with salt wasting crisis

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Background: The investigation of an infant presenting with salt crises is challenging. An early diagnosis is essential for appropriate management. Congenital adrenal hyperplasia (CAH) is the most common cause of salt wasting during infancy. When an adrenal disorder is suspected, a urinary steroid profile (USP) is useful because the specimen is easily accessible and early results can identify/exclude a variety of disorders including CAH (common) and aldosterone synthase defects (rare). Case Report: We report a 2 week old female neonate born at term to non-consanguineous parents, presented with failure to thrive, salt wasting, hyponatremia, Na 118mmol/L (range: 132-144mmol/L), hyperkalaemia, K 7.2mmol/L (range: 3.5-5.1mmol/L) with early morning cortisol in the lower range of normal 134nmol/L (range: 101-536nmol/L). A diagnosis of CAH was considered and hydrocortisone, fludrocortisone and sodium chloride supplements were commenced. Additional blood tests (17-hydroxyprogesterone, adrenocorticotropic hormone, renin, and aldosterone) were requested and USP was sent to external lab to Kings College, London. The USP result was available within 3 days, which reported a diagnosis of Aldosterone Synthase Deficiency (ASD) type I (CMO1, OMIM: # 203400) allowing us to continue fludrocortisone and to stop hydrocortisone. The results for renin >300pg/ml/hr (normal <61 pg/ml/hr) and aldosterone 50pg/ml (normal > 300-1900 pg/ml) were available only after three weeks. Molecular genetic analysis result is still awaited. Conclusion: A salt wasting crisis in infancy is not always CAH. USP can aid early diagnosis of adrenal insufficiency. Aldosterone synthase deficiency is rare but should be considered in the differential diagnosis.

P2 Unexpected growth patterns in Branchio-Oto-Renal syndrome

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Branchio-oto-renal (BOR) syndrome is a rare condition affecting the ears, 2nd branchial arch structures and urinary system. Features include hearing loss, structural ear defects, branchial defects, and renal malformations. Known genetic variants (SIX1; EYA1) account for approximately 49% of cases. Short stature has not been described, but is associated with oculo-facial-cervical syndrome and oculoauriculovertebral syndrome, which have allelism with BOR. We present data from two unrelated pedigrees with branchio-oto-renal syndrome. The first pedigree consists of four siblings, the second of three siblings, aged 7 to 24 years. Four have reached a final height ranging from <3rd to 10th centile with a mid-parental height prediction of the 25th centile. Growth measurements show normal pre- and post-natal growth, delayed bone age, and reduction in height velocity from mid-childhood. None have sufficient renal involvement to impact on growth. Two individuals have met the criteria for growth hormone deficiency and have responded to replacement.

Short stature and growth hormone deficiency are not recognised features of BOR but these two families show similar patterns, with low height velocity, falling below centiles in later childhood and failure to reach the predicted mid-parental height, suggestive of suboptimal late childhood and pubertal growth. The aetiology for this remains unclear. Genetic analysis is in process but yield in BOR syndrome is low. We are pursuing auxology data on other families with BOR to expand on this unusual phenotype. Growth surveillance is advocated in children with BOR. Normal growth in the early childhood years does not guarantee final height attainment.

P3 Parent-child dyads in diabetes: Does it affect control and outcomes for both or either? A pilot study

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Background: Approximately 10-15% of type 1 diabetes (T1D) patients have affected first degree relatives with diabetes.

Objectives: To examine diabetes control and engagement with diabetes services in parents and children following their child's diagnosis, rates of Diabetic Ketoacidosis (DKA) at presentation and episodes of severe hypoglycaemia (SH) compared to a control group. Methodology: This was a quantitative retrospective study. 28 parent-child dyads were identified. The next aged and gender matched newly diagnosed child was used as a control. A questionnaire to parents in the dyads was distributed to gather more information on their diabetes management. Results: 35.2% of the parents do not currently attend any diabetes service, 50% of these are now awaiting an appointment having decided to re-engage with services following their child's diagnosis. 45% attend clinic at least twice per year, the remainder are seen annually. No Improvement was seen in parents HbA1c in the 2 years following their child's diagnosis, although, 94% reported an improvement in diabetes self management following their child's diagnosis. In the child/control group no differences were found in relation to HbA1c levels and episodes of SH. Notably only 25% of the children in the dyad group compared to 50% of the control group presented in DKA at diagnosis. Conclusion: Despite a perceived improvement in diabetes management among parents, no improvement was seen in relation to clinic attendance and HbA1c levels. The lower rates of DKA in the child group may be attributed to an earlier identification of the disease process among parents.

P4 A Case of Iodine Deficiency causing Hypothyroidism in an Iodine-Rich Area

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A thirteen-year-old girl presented to paediatric services in 2015 with a goitre, low T4 6.8 pmol/L (12.6-21.0 pmol/L), normal TSH 3.08 mIU/L (0.51-4.30 mIU/L), and T3 3.25 nmol/L (1.71-3.20 nmol/L) [Roche assay]. Assay interference was excluded using the Abbott assay. Ultrasound thyroid showed multiple small cystic nodules. She represented in 2017 with fatigue and persistent goitre. Her TFTs showed T4 5.5 pmol/L, TSH 2.37mIU/L and T3 2.95 mIU/L. Pituitary profile, MRI pituitary, anti-TTG and anti-TPO antibodies were normal. Morning cortisol was 326 nmol/L (6-10am: 166-507 nmol/L). Vitamin B12 was <125 pg/ml (187 -883) and Vitamin D 65 nmol/L. She was treated with Eltroxin, vitamin B12 and vitamin D supplements. Urinary iodine was measured [Iodine:Creatinine ratio 6.10 nmol/mmol (50-360 nmol/mmol)]. A diagnosis of hypothyroidism due to iodine deficiency was made. Since infancy, the patient had a diet that excluded eggs, dairy, fish, and nuts. She was diagnosed with allergies to several food products when she underwent allergy testing to identify food allergens that were exacerbating her eczema. Iodine intake was encouraged with dietician input and Eltroxin was continued. Repeat TFTs five months later showed T4 15.6 pmol/L and TSH 0.62 mIU/L. Discussion: Iodine is involved in thyroid hormone synthesis and is obtained from the diet and the environment. 53% of 14-15 year old girls in Galway are iodine deficient with a urinary iodine <100ug/L, however severe iodine deficiency (urinary iodine <20ug/L) is rare (<1%). This case highlights the importance of considering iodine deficiency in patients with incongruous TFTs.

P5 Parental knowledge of children's screen time and the depiction of nutritional products on children's television

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Introduction: Childhood obesity is a major risk factor for developing metabolic syndromes, with these patients five times as likely to develop type 2 diabetes compared to those without metabolic syndromes. Significant contributors to obesity include decreased physical activity, poor diet, and sedentary behaviours, especially television viewing. Current guidelines recommend no more than 2-hours non-educational screen-time per day. Aims: Examining parental knowledge regarding food-types on children's programming and ascertain self-reporting of television viewing and parental concerns regarding nutritional influence of television. Methods: Cross-sectional survey on parents of children aged 4-16 years old, presenting to University Hospital Limerick, October-April,2018. Surveys regarding demographics, television viewing, perceptions of television portrayal of nutrition. Data analysed on SPSS. Results: Sixty parents completed the surveys with 15% reporting their children watched over 2 hours of television during weekdays, increasing 35% during weekends. Whilst the majority (55%) reported sweet snacks the most commonly depicted on television. 10% of children always watched television during meals with half of children regularly watching television during meals. 80% of parents admitted concern regarding advertising of unhealthy foods with 85% doubting the advertising industry would protect children. 75% of parents were concerned regarding children nutrition, with various concerns expressed. Conclusions: Results showed high level of concern regarding advertising and children eating habits. Overall results showed significant proportion of children spending greater than the recommended time watching television, with a significant portrayal of unhealthy food types during this period. Future work in this area should fully explore the influence of screen time on food choice and nutritional intake of children.

P6 Primary Ovarian Insufficiency in adolescence- a novel genetic mechansim

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Background: Critical regions for normal ovarian function have been identified on the X chromosome between Xq13.3-q27. Large rearrangements may result in primary ovarian failure (POF) through gene interruption or possible haplosufficiency. While treatment generally focuses on hormone replacement and oocyte preservation, mental health support is also critical for optimal outcome. Case Report: A 14 year old non dysmorphic girl of normal height (9th centile) & IQ presented with primary amenorrhea and arrested breast development (Tanner stage 2). Gonadotrophins were elevated, oestradiol was undetectable and anti-mullerian hormone was <3.0pmol/L confirming primary ovarian insufficiency with few oocytes. Pelvic ultrasonography identified a prepubertal uterus and bilateral ovaries. An abnormal karyotype was noted and comparative genomic hybridisation (CGH) array characterised an unbalanced X translocation involving Xq and 6q (46,X,der(X)t(X;6)(q21;q22)). Puberty was successfully induced but her course was complicated by the development of severe depression requiring fluoxetine therapy and counselling. Conclusion: While autosome translocations constitute a rare cause of primary ovarian insufficiency this case serves as a potent reminder that chromosomal rearrangements are an important aetiology even in the absence of dysmorphism. It also illustrates how X-inactivation of the translocated chromosome can ameliorate the negative consequences in terms of intellectual disabiltiy of an autosomal imbalance. This large duplication involved chromosome 6 which would predict mild/moderate intellectual disability but because it is attached to the X chromosome, the extra chromosome 6 material is being inactivated and her intellect preserved. The diagnosis of POF is very distressing and mental health support is critical to good outcomes.

P7 High rates of diabetic ketoacidosis in patients with new and known type 1 diabetes in a regional paediatric diabetes centre over a six year period

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Background: Ireland is a high incidence country for type 1 diabetes (T1DM) with 28.8 newly diagnosed cases/100,000/year. Patients with new onset T1DM frequently (15-70%) present with diabetic ketoacidosis (DKA). Aims: To analyse all patients who presented with diabetic ketoacidosis (DKA) from 2012 to 2017. Methods**:** Analysis of 133 cases of DKA who presented to Cork University Hospital during this time period. Results: There were 133 cases of DKA. 61% were first presentations of T1DM, with DKA of varying severity making up 38% of new presentations of T1DM. In 52 cases (39%) there was a known diagnosis of T1DM. Overall, the severity of DKA was mild in 61 (46%), moderate in 34 (25.5%) and severe in 38 (28.5%) cases. Of the 52 with known diabetes, 13 (25%) had severe and 15 (28.8%) had moderate DKA, with the majority (70.6%) occurring in adolescents aged over 12 years. Precipitating factors included chronic suboptimal control and psychosocial factors (28/52), acute illness (16/52), and pump technical failure (5/52). Intensive care unit (ICU) admission was required for 12 (9%) children. There were two cases treated for suspected cerebral oedema and one case each of subarachnoid haemorrhage and cardiac arrhythmia. There were no deaths. Conclusion: The current proportion of new T1DM presenting in DKA is higher than international data. The high frequency of DKA in those with known T1DM indicates a need for improved education with particular focus on the adolescent age group.

P8 Parental knowledge of physical activity guidelines and levels of physical activity in children

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Introduction: Childhood obesity is a risk factor for developing metabolic syndromes, with these patients five times as likely to develop type 2 diabetes compared to those without metabolic syndromes. Significant contributors to obesity include decreased physical activity, poor diet, and sedentary behaviours, especially television viewing. Current guidelines recommend no more than 2-hours non-educational screen-time per day. Aims: Examining parental knowledge regarding exercise guidelines, the portrayal of exercise on television and to ascertain self-reporting of physical activity and any relevant barriers. Methods: Cross-sectional survey on parents of children aged 4-16 years old, presenting to University Hospital Limerick, October-April,2018. Surveys regarding television viewing and perceptions of television portrayal of exercise. Data analysed on SPSS. Results: Sixty parents completed the surveys and the majority of were aware that 60 minutes is the recommended guideline (50%), despite a wide answer range (20-240min). Most parents believed dancing was the most common exercise depicted on television (40%). 60% of children met activity guidelines during weekdays, with this increasing to 75% at weekends. Two-thirds of parents surveyed were not concerned regarding their child's activity levels. Commonly reported barriers to exercise were time involved and cost. Results showed parents were aware of physical activity guidelines and of exercise portrayal on television. Self-reporting indicated two-thirds of children were meeting minimum recommended activity guidelines during the week. Despite parental knowledge regarding guidelines, many children do not meet recommendations, which is associated with increased sedentary television viewing. Future work in this area should fully explore mechanisms underpinning reduced activity and relevant interventions.

P9 Paediatric and Emergency Staff Adherence to DKA guidelines

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Background: Cork University Hospital paediatric and emergency department staff currently use the 2009 BSPED Diabetic Keto-Acidosis (DKA) protocol. In light of new 2015 BSPED and 2018 ISPAD guidelines, we aimed to see staff adherence to the current protocol. Objectives: Evaluate paediatric & ED staff adherence to the protocol. Secondary objectives included analysis of patient demographics, severity of DKA, complications and length of stay. Methods: We retrospectively analysed all paediatric patients with T1DM presenting with DKA from January 2015 until July 2017. Patients were identified from Diabetes Nurse Specialist database. Data was recorded and comparison was made between initial treatment from emergency staff and subsequent review by paediatrics. Results: The total number of patients on the DKA protocol during the period was 53 and, following exclusion criteria, 37 (69%) charts were analysed. Notable exclusions were 6 patients (11%) commenced on protocol despite not meeting criteria for DKA diagnosis. The average age at presentation was 8.18 years, male to female ratio 2:3 and 81% (n=43) of presentations were new onset T1DM. A majority (56%) of presentations were of moderate severity. Within management from ED staff, 28% (n=10) had no protocol documentation. Only 8% (n=3) had the correct protocol documented and commenced. 31% (n=11) were seen by paediatric team directly. Paediatric staff incorrectly calculated protocol management plans in 65% (n=24) of cases. Conclusion: Health care providers working in CUH adherence in BSPED 2009 protocol is poor. We recommend emergency & paediatric staff education and implementation of a mandatory proforma for DKA presentations.

P10 Health related Quality of Life in children with Type 1 Diabetes in Ireland

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Aim of this study is to examine the quality of life (QoL) and its association with glycaemic control and socio-demographic factors in Irish children with type 1 diabetes (T1D). The Paediatrics Quality of Life Inventory (PedsQL) measures health-related QoL in children and adolescents and integrates both generic core (physical, emotional, social and school functioning) scales and disease-specific modules (physical symptoms relating to diabetes, treatment concerns, worries about diabetes and problems with communication) into one measurement system. PedsQL questionnaire was completed by 175 children with T1DM (51.9% boys) aged 4 – 18 years (mean 12.2± 3.3) and their parents. Girls showed significantly lower total score in both generic and diabetes-specific QoL modules compare to boys (p=0.008; 79.3±19.8 vs 87.4±10.7 in generic and 69.4±18 vs 76.4±10.8, p=0.013 in diabetes). Comparing employed and unemployed families, children with unemployed parent had significantly lower QoL score on both modules generic (p=0.013; 84.3±15.2 vs

69.4±26.1) and diabetes-related (p=0.012; 74±14.5 vs 60.6±19.9), while their parents scored low only on diabetes module (p=0.019; 70.6±13.9 vs 59.1±22.9). Parent diabetes-specific score correlated to glycaemic control significantly (r= -0.2, p=0.009), while child diabetes specific score had a tendency to this correlation (r= -0.18, p=0.054). QoL is associated with glycaemic control. These results are consistent with current international literature highlighting that girls with T1D and children with unemployed parent may require more psycho-social support.

P11 *INSR* mutations - the challenge of predicting phenotype from genotype

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Genetic Syndromes of insulin resistance due to autosomal dominant mutations of the insulin receptor (INSR) gene result in a variety of metabolic and biochemical defects ranging from hyperandrogenism and ovarian dysfunction to dysglycaemia. This paper presents the challenges of a family where three of four children carry the mutation with varying implication. The proband presented at 21 months of age with an afebrile hypoglycaemic non-ketotic seizure following minimal fasting. She required initial therapy with diazoxide and assisted feeding via PEG tube to avoid overnight hypoglycaemia. She has a subsequent diagnosis of ASD. Her sister was screened at birth and found to be positive for the mutation. She is now 3 years and 2 months of age and remains in good health with no evidence of hypoglycaemia on overnight glucose profile and can tolerate a twelve hour fast. Her brother was screened at 2 years when concerns of failure to thrive were raised with his younger sister who was incidentally negative for the mutation. The parents are a consanguineous traveller couple. The mother has hirsuitism, fertility issues and type 2 diabetes managed with metformin. The mother and three children have been proven to carry the missense mutation *p.Met1153Lys* involving the replacement of methionine for lysine at position 1153 on the insulin receptor gene on chromosome 19 with resultant reduction in tyrosine kinase activity of the insulin receptor. The risk of hypoglycaemia in children with INSR mutation is becoming more established. Identification of an insulin receptor mutation in the well child raises a variety of clinical and ethical issues. This case series underlines the challenges in managing such a family.

P12 Changes in Inflammatory Markers Indicate Immune Dysregulation in Obese Children

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Obesity is associated with a state of chronic inflammation with a dysregulated immune system seen in children and adults. Cytokines are small proteins released by immune cells to communicate with other cells. Adipokines are similar, but released by adipocytes (fat cells). Our aim was to measure levels of various serum cytokines and adipokines to assess differences seen between lean and obese children. sCD163 is a marker for macrophage activation into a pro-inflammatory state. It predicts risk of developing type 2 diabetes and has previously been found to be raised in obesity. Leptin is a hormone released by fat cells that reduces hunger and increases energy usage. It has previously been found to be raised in obesity. Galectin-3 is thought to be involved in inflammation and insulin resistance. There is just one published study which found levels to be higher in obese children. IL-1β is a pro-inflammatory cytokine produced by monocytes that has been implicated in autoimmune disease. It has been found to be increased in adults, and one study examining levels in children found no difference.

We examined serum from 50 obese children and 30 healthy controls. Obese children had higher levels of sCD163 and leptin. There were no significant differences in Galectin-3 or IL-1β. Our results on sCD163, leptin and IL-1β confirm previously reported findings. The Galectin-3 results contradict the one published study on this marker. Overall, these findings highlight important immune differences between lean and obese children, suggesting profound dysregulation of the immune system in childhood obesity.

P13 Xp21 Deletion Syndrome

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Background: While most male infants presenting with salt loss in the newborn period will have congenital adrenal hyperplasia (CAH) due to CYP21A deficiency, adrenal hypoplasia congenita (AHC) also needs to be considered in the differential. More rarely AHC may arise as part of a contiguous deletion of genes in Xp21 with loss of the locus for glycerol kinase (GK), AHC and Duchenne Muscular dystrophy (DMD) resulting in a more complex phenotype**.** Case reports**:** We present two (unrelated) cases of Xp21 deletion syndrome diagnosed in the neonatal period. Both presented with weight loss, hyponatramia and hyperkalaemia suggestive of CAH. However investigations revealed normal cortisol and 17OHP levels. Extended investigations showed markedly elevated creatinine kinase and hyper triglyceridaemia suggestive of glycerol kinase deficiency, all components of the contiguous deletion disorder. CGH array analysis confirmed Xp21 deletion in both infants. Both infants were managed with hydrocortisone, fludrocortisone and salt supplementation with follow up in specialist endocrine, metabolic and neurology services. Conclusion: Xp21 deletion syndrome is a very rare disorder caused by deletions in neighbouring genes resulting in AHC, DMD and GK deficiency. We report the first two cases of Xp21 deletion syndrome in the Republic of Ireland.

P14 Analysis of the increasing incidence of congenital hypothyroidism in Ireland over 37 years

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Background: Congenital hypothyroidism (CHT) is one of the most common preventable causes of learning disability. Newborn screening with

whole blood thyroid stimulating hormone (TSH) measurement was introduced in the Republic of Ireland in 1979 and is co-ordinated from a single centre with an unchanged protocol since inception. The objective of this study was to describe the incidence of CHT in the Republic of Ireland over the past 37 years, in the context of a complete national population and unchanged screening protocol. Methods: The newborn screening records of all individuals diagnosed with CHT between 1979 and 2016 were reviewed. Screen positive infants had a whole blood TSH value of ≥ 15 mU/L at 72 to 120 hours of life; values 8-15 mU/L required a repeat whole blood screening test. Results: Of 2,361,174 infants screened between July 1979 and December 2016, 1063 babies (662 female) were diagnosed with CHT (incidence 0.45 per 1000 live births). The number of detected cases increased from 0.27 per 1000 live births treated between 1979 and 1991 to 0.41 per 1000 live births between 1992 and 2004, to 0.65 per 1000 live births between 2005 and 2016. The increase in detected cases of CHT was predominantly in the normal/hyperplastic gland category.

P15 Absence of uptake on scintigraphy does not always correlate with athyreosis: Re-evaluation of patients diagnosed with athyreosis over a 10 year period in the Republic of Ireland

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Background: Thyroid imaging is recommended to determine the aetiology of congenital hypothyroidism (CHT). Scintigraphy is the gold standard imaging modality. Negative scintigraphy despite the presence of thyroid tissue may lead to a spurious diagnosis of athyreosis. Few centres perform both scintigraphy and ultrasound so the incidence of misclassified athyreosis is unknown**.** Aim: Describe the incidence of sonographically normal thyroid glands in patients scintigraphically diagnosed with athyreosis using technetium (^{99m}Tc). Methods: All infants with treated CHT in the Republic of Ireland between 2007 and 2016 were identified. We identified all patients diagnosed with athyreosis on thyroid scintigraphy. Patients with no uptake on scintigraphy were invited to attend for a thyroid ultrasound scan. We re-evaluated the patients found to have a normal gland on ultrasound to establish if they had transient or permanent CHT. Results: 488 patients were diagnosed with CHT over this ten year period in the Republic of Ireland (incidence 1:1538 live births). 73 patients had a presumed diagnosis of athyreosis with no uptake on scintigraphy in the newborn period. Sonography demonstrated thyroid tissue in 18/73 (24.6%) patients who had negative scintigraphy. Ten of the 15 patients with a normal gland on ultrasound were eligible for re-evaluation and of these 6 (60%) had transient CHT. Conclusion: Absence of uptake on scintigraphy does not always correlate with athyreosis. Almost one quarter of patients with no uptake on scintigraphy had thyroid tissue on ultrasound and of these 60% had transient CHT. Ultrasound should be performed in all patients with no uptake on scintigraphy.

P16 Hydrocortisone granules with taste masking for the treatment of children with adrenal insufficiency: pharmacokinetics and long-term follow up

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There is no licensed dose-appropriate formulation of hydrocortisone for children with adrenal insufficiency and they rely on compounded adult medication. This study aimed to evaluate the absorption, palatability and safety of Alkindi® (hydrocortisone granules in capsules for opening). An open-label, single-dose study was conducted in 24 children aged 0-6 years with adrenal insufficiency. Fasted children were given a single dose of Alkindi® as dry granules, administered directly from capsule or spoon, followed by a drink. The primary endpoint was serum cortisol 60 min after administration. Secondary endpoints were palatability and adverse events. All children showed an increase in cortisol above baseline ($p<0.0001$), with geometric mean ±SD cortisol concentration at 60 min of 575.8 ± 299.5 nmol/l, which is similar to physiological cortisol levels reported in healthy children. There were no difficulties with administration, 95.5% of parents/carers reported they preferred Alkindi over their child's current medication. 6 children completed an age-appropriate palatability questionnaire: 80% responses were very good, good or neutral and 20% were bad or very bad. No serious or severe treatment-emergent adverse events were reported. Subjects were invited to continue to receive Alkindi in an ongoing extension study, in which Alkindi was administered at home, according to usual clinical practice (3 times per day). The primary endpoint was safety. Interim analysis up to 12 months reported 80 Treatment Emergent Adverse Events, all typical illness in young children, and none suspected to be related to Alkindi. No cases of choking or adrenal crises have been reported to date.

P17 It's the parents, It's the school, It's the children: Responsibility for adolescent unhealthy living

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The Healthy Ireland framework aims to prevent the growing problem of non-communicable diseases. To develop a flagship demonstration model for school-aged children, preparatory research in the form of evidence reviews, stakeholder interviews and observations in schools were conducted in six schools in Ireland. A rapid review that focused on peer-mentoring as an effective mechanism to support healthy behaviours of school-aged children helped to direct interview guides used in repeated visits to child and adult stakeholders in the post-primary school setting. Over 60 children, 34 teachers and six principals attended focus groups. Parents responded to an online survey. There were vast differences in the school settings, policies and practices for physical activity and healthy eating, hence the responses were varied and the solution is not straight forward. Through thematic analysis of the data, "somebody else's responsibility" was a dominant theme. Although each adult group reported they had some influence towards the health of the child, they also felt that more responsibility was with another group of adults. In addition, 34% of parents reported their child was not of average body shape, despite reporting large discrepancies with the parents estimate of the child's height and weight. The protectiveness that parents have over their child may be a limiting factor to a child's health, however parent feel the main responsibility lies within the school, where the child learns to make the right choices to remain healthy. A supportive environment with peers needs to be tested to bridge between school and home behaviours.

P18 Expanding the Genotype–phenotype Correlation of Osteogenesis Imperfecta with a Novel Mutation in Col1A2 Gene

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Osteogenesis imperfecta is a disorder of bone fragility with a variable spectrum of severity and poor correlation of antenatal findings with postnatal outcome. We present two antenatal diagnosed cases with a mild postnatal course significant for the absence of fractures and progressive remodelling of the long bones. Both has a novel heterozygous pathogenic mutation predicted to replace glycine with aspartic acid at position 913 in exon 42 of COL1A2 gene. First child is a female proband born at term was identified on scan at 20-weeks' gestation to have bowed femori. Postnatally, she had marked curvature of lower limbs, talipes, frontal bossing, flat feet and white sclerae. She has macrocephaly and imaging showed mild dilatation of the lateral ventricles with evidence of basilar invagination. The second child is a boy born at 36-weeks' gestation was identified on antenatal scan to have short long bones and angulation of femori. Postnatally he had curved lower limbs, a right parietal skull fracture, frontal bossing, flat feet and white sclerae. Both children [now 7 and 3 years respectively] has normal motor development and height velocity. Neither has had further fracture nor indicated for bisphosphonate therapy. In both cases the lower limbs have demonstrated progressive remodelling without intervention. Published genotype-phenotype correlations suggest that C-terminal mutations involving glycine substitution with aspartic acid would be suggestive of a higher risk of lethality or a more severe outcome. Phenotyping of antenatal cases based on early ultrasound findings and genotype remain fraught with uncertainty and can result in milder outcomes.

P19 Off-label use of Liraglutide in paediatric Type 2 diabetes mellitus

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Background: Liraglutide, an analogue of glucagon-like peptide 1, potentiates insulin release, decreases glucagon secretion and delays gastric emptying. It is licensed for use in adult type 2 diabetes mellitus as an adjunct to diet and exercise or medication. Case: We present a case of off-label use of liraglutide in a young morbidly obese, girl with type 2 diabetes mellitus. Our patient presented at the age of 10 years in diabetic ketoacidosis. She is of African ethnicity with a strong family history of obesity and T2DM and diabetes autoantibodies were negative. She was initially managed with insulin, metformin and lifestyle modification. Despite extensive multidisciplinary input and increasing insulin doses her glycaemic control remained very suboptimal and she continued to gain weight with a BMI of 47 kg/m at age 13 years. While she had no diabetes complications, liver ultrasound confirmed fatty infiltration. Liraglutide offered a novel therapeutic target and was commenced. Over a 4 week period, liraglutide was well tolerated, blood glucose levels stabilised, insulin doses reduced by 70% and she reported appetite reduction. Over 4 weeks, she lost 1kg and interval HBA1C improved from 86mmol/mol to 74mmol/mol. Conclusion: Liraglutide was well tolerated and short term efficacy was demonstrated in this morbidly obese young girl with T2DM. Long-term follow up demonstrating safety and efficacy is required.

P20 Phenotypic variability within a family with multiple endocrine neoplasia type 1 (MEN1) syndrome

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MEN1 is an autosomal dominant endocrine tumour syndrome, caused by inactivating mutations of the *MEN1* tumour suppressor gene at 11q13 locus and characterised by occurrence of hyperparathyroidism, pancreatic tumours and pituitary adenomas. We describe a family with MEN1 syndrome. The index case was a 71-year-old man, referred to Endocrinology clinic in Midland Regional Hospital Portlaoise for hypercalcemia (calcium 3mmol/L, phosphate 0.5mmol/L, PTH 350pg/ml, creatinine 120umol/L) and diagnosed with primary hyperparathyroidism (PHPT). He was treated with cinacalcet as he had multiple comorbidities. CT imaging for another indication demonstrated a bulky pancreas with a 4x3 cm lesion in the pancreatic tail. He underwent *MEN1* genetic testing. In the meantime, his eldest son presented at 40 years with hypercalcaemia due to PHPT (calcium 3.29mmol/L, phosphate 0.75mmol/L, PTH 174pg/ml). He was referred to St. Vincent's University Hospital neuroendocrine multidisciplinary clinic and underwent subtotal parathyroidectomy. On screening, he had a non-functioning pituitary macroadenoma which was resected, bilateral adrenal adenomas with low-grade hypercortisolism and pancreatic neuroendocrine tumours (pNETs). The second son also presented with hypercalcaemia. On further screening, he had pNETs but no evidence of pituitary tumour or adrenal lesions. Genetic testing of all three patients revealed a heterozygous mutation in *MEN1* gene, Exon 9, c.1348C>T, pGln405Ter. In conclusion, this report of MEN1 family highlights the phenotypic variability of MEN1 syndrome within one family having the same *MEN1* mutation. Careful phenotyping of patients with PHPT can reveal additional diagnoses of endocrine tumours.

P21 Unusual presentation of metastatic prostatic carcinoma as bilateral adrenal incidentalomas

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Adrenal incidentaloma is defined an asymptomatic adrenal mass detected on imaging not performed for suspected adrenal disease. Prostatic cancer tends to spread along the capsular surface of the gland and may invade locally. Typical distant metastases occur mostly to regional lymph nodes and bones. We report a case of 69-year old man, who underwent CT thorax for respiratory tract infection and history of smoking. CT thorax demonstrated 4.3x3.6 cm left adrenal mass and probable right adrenal mass. Subsequent CT adrenals with contrast revealed uniformly enlarged minimally enhancing adrenal glands bilaterally, with right adrenal mass (4.8cm) and left adrenal mass (3.8cm). Subsequent FDG-PET scan showed FDG-avid adrenal masses with FDG-avid lymph nodes in the retroperitoneal and pelvis, consistent with metastatic disease. After outruling phaeochromocytoma and adrenal insufficiency biochemically, and with careful consideration of risks and benefits of "capsule violation", CT-guided right adrenal biopsy was performed, and the findings were consistent with metastasis from prostatic primary adenocarcinoma, which was also confirmed by the subsequent prostate biopsy showing invasive prostatic adenocarcinoma, Gleason pattern 4+5 (combined score 9). The patient had no lower urinary tract symptoms or haematuria. In conclusion, our case report highlights the atypical presentation of prostatic carcinoma

as bilateral adrenal incidentalomas. Adrenal metastasis from prostatic carcinoma is extremely seldom according the published data. The potential pitfall in overlooking the metastatic adrenal incidentalomas from undiagnosed prostatic primary carcinoma may be avoided by keeping a high index of suspicion when an adrenal incidentaloma is found in men with no known primary malignancy.

P22 Quality improvement approach to Insulin Prescription and Glucose Record in a level II Irish Hospital

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Prescribing insulin has resulted in reported fatality and severe outcomes. The Australian Commission on Safety and Quality in Health Care (ACSQHC) recently developed a new chart for insulin prescription, which improved the prescription errors and the glycaemic control. After an approval from the hospital audit committee, we audited a maximum of ten days retrospectively for 20 patients admitted to St. Columcille's Hospital from January to November 2017, a total of 160 days were analysed. The audit tool, which is a modified version of the ACSQHC audit tool, was a total of 46 questions, including parameters to measure errors in prescribing and administration of insulin, and to assess the agreed glucometrics. The blood glucose measurements (BGMs) were not recorded correctly according to standards in 42.08% of times and were not done in the default number in 24.4% of cases. There wasn't a doctor notification for hypoglycaemia in 29 out of 32 total times, and hyperglycaemia (> 20 mmol/l) in 19 out of 27 total times, as instructed in the chart. Prescriptions weren't clear and appropriate notably, and pharmacists review were lacking in 85% of cases. There was missing doses of insulin in 5.1% of times. Our data indicates insulin prescribing and management of serious glucose excursions fall below expected standards. A redesign of the hospital insulin chart following an international verified early warning score model is currently being implemented. Alone this is unlikely to improve insulin safety and an education programme will accompany the role out of the new chart.

P23 Rising rates of referral for assessment and management of gender dysphoria in the Republic of Ireland

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In the Republic of Ireland, the majority of patients with gender dysphoria (GD) seeking treatment are referred to St Columcille's Hospital GD service, and the numbers of these referrals appear to be rising. In a previous study we reported that while only 6 patients were referred in 2005, 55 were referred in 2013. The primary aim of this study was to determine the rate of referral of patients seeking assessment and treatment for GD in 2017. We retrospectively reviewed all referral letters for GD assessment and/or treatment received by the psychiatry and endocrine departments that constitute the GD service. A structured proforma was used to retrieve demographic and co-morbidity data. Duplicate referrals were excluded. Our results indicate that in 2017 a total of 209 new patient referrals were made to the GD service. This represents an increase of 280% from 2013 and 3383% from 2005. 187 referrals contained sufficient information for additional analysis and of these we noted 56% of patients were referred for male to female GD, 44% were referred for female to male GD, and at least 6% of the patients referred had already underwent some form of gender-affirming surgery. The median age of the patients referred was 26.38 with a range of 16 to 61 years. Psychiatric co-morbidities were documented in 47.6% of these referrals. From these results we conclude that rates of referral for GD in Ireland continue to rise precipitously, with significant implications for resource allocation if this increasing need is to be met.

P24 Bone metastases in neuroendocrine tumour patients: impact on therapeutic options and survival

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The significance of skeletal metastases in neuroendocrine tumours (NETs) has not been thoroughly studied. Indications and influence on prognosis of anti-resorptive therapy are unknown. We performed a retrospective analysis of NET patients with bone metastases. A radiologist reviewed the images and fully characterised bone lesions. We identified 54 patients with bone metastases; 6 were excluded following review. The primary tumour was small intestine (siNET) 44% and pancreatic (pNET) in 40. Bone metastases were present at inaugural NET diagnosis in 54%. Somatostatin receptor (SSTR) scintigraphy was positive for the primary tumour in 31 of 37 patients (77%) tested; bone metastases were positive in 19/31 (61%). Fracture data were available in 38 patients; 2/4 fractures were related to metastases. Almost half (47.4%) of pNET patients with skeletal metastases had grade 3 tumours, compared to 11% of siNET ($p< 0.01$). Lytic lesions were more common in pNET (41.2%) than siNET (10.5%) ($P < 0.05$). Survival post diagnosis of bone metastases is significantly for small intestinal NETs (71 months) compared to pNETs (43 months)($p=0.018$). Overall survival since diagnosis with bone metastases was better for siNET (71 months for grade 1 and 27 months for grade 3) compared to pNET (43 months for grade 1 and 12 months for grade 3)($p< 0.05$). A significant proportion of NET patients with bone metastases present at diagnosis. Bony deposits are SSTR-negative in a subset of patients which has implications for identification and therapeutic decision-making. Bone metastases from pNET are associated with higher grade primaries, lytic lesions and shorter overall survival.

P25 Diabetic ketoacidosis at Tallaght Hospital – demographics and presenting features of DKA in 2017

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Introduction**:** There is a paucity of information in the literature regarding diabetic ketoacidosis (DKA) presentation and management. We carried out an audit of all patients presenting to Tallaght Hospital with DKA between 1st January and 31st December 2017. Here we present the predominant demographic, clinical, and presenting features seen. Methods: Patients discharged with primary diagnosis of DKA (from HIPE coding) were analysed and included if the diagnosis was confirmed. Information was collated on a standard proforma and analysed using Microsoft Excel. Results**:** Fifty-one episodes met criteria for DKA; mean age 44.7 years

(range 17-85 years), male:female ratio 35:65, average HbA1c was 10.7%. Average time since diagnosis was 18.8 years and average total insulin dose 33 units (minimum 0, maximum 80 units). Seventy-five percent were taking basal bolus insulin, 3.9% on BD mixed insulin and CSII. Most common presenting symptom was nausea and vomiting (80.4% of patients). The average duration of symptoms prior to presentation was 4.2 days, with 51% of patients suffering symptoms for 24 hours or less prior to attending hospital. The most common cause of DKA was missed insulin (33.3% of cases), commonly in association with the use of alcohol (20%), with infection a factor in 14% of cases. Seven patients (14%) were newly diagnosed on admission. Discussion: DKA is a serious diabetic complication, affecting a wide range of patients with Type 1 diabetes. Understanding the demographics and presenting features allows us to counsel our patients on recognizing and avoiding this potentially life-threatening condition.

P26 Primary amenorrhoea in a biochemically normal young woman. A common but uncommonly seen syndrome of primary amenorrhoea

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A 17 year old female was referred to endocrine outpatient clinic with primary amenorrhoea. She had undergone puberty, normal in both timing and development, except never reached menarche. She had normal and complete external female secondary sexual characteristics. She reached her predicted height of 162 cm with a normal BMI. Tanner staging for breast, pubic and axillary hair were all stage 5. There was no evidence of facial dysmorphism, webbing of the neck, skeletal abnormalities or virilisation signs. Hormonal investigations were unremarkable with entirely normal sex steroid hormones, thyroid hormones and other routine bloods. Her karyotype was 46 XX and bone scan showed age- appropriate skeletal maturation. A progesterone challenge test yielded no result. Subsequent ultrasound revealed normal ovarian volume and morphology bilaterally but the uterus was not definitively identified. MRI pelvis finally confirmed an extremely small uterine body measuring 22 mm in length and 10 mm in AP dimension and the absence of upper part of vagina. A diagnosis of Mayer-Rokitansky-Küster-Hauser syndrome was made. This syndrome also known as Müllerian agenesis is characterized by congenital aplasia of the uterus and the upper part of the vagina. This can be a perplexing diagnosis to make in the beginning as patients usually present with normal secondary sexual characteristics, 46 XX karyotype, fully functional gonads and normal hormonal profiles. The incidence of MRKH syndrome has been estimated as 1 in 4500 female births. Making the right diagnosis is important for fertility counselling, management of an underdeveloped vagina and other potential associated features.

P27 A patient with mood swings, headache and lethargy with high levels of testosterone

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Partial androgen insensitivity syndrome is inherited as X-linked recessive disorder. Gene involved is located on long arm of X chromosome due to a different mutation in AR receptor gene. We report effects of a novel mutation in AR receptor in a 17 year male who attended endocrinology services. 17 year old male presented to GP with symptoms of intermittent headache, lethargy and mood swings. He has history of hypospadias at birth. On routine bloods GP found high levels of testosterone and sent to endocrinology clinic.Examination and labs reveled small size penis (2.2inches) with normal size testis. His growth and secondary sexual characters were normal with raised LH& testosterone levels. His birth history revealed full term birth with severe hypospadias & ambiguous genitals. Karyotyping showed 46xy.he got surgical repair for hypsadiasis and trial of testosterone with inadequate response. his genetic workup showed mutation Ala896Glu in AR receptor. His two brothers have shown identical presentation with ambiguous genitals on birth with severe hypospadias, inadequate response to testosterone. normal size testis with small penis size at puberty. Discussion: Ala896Glu considered to be a novel AR mutation which resides at c terminal end of ligand binding domain. This residue not highly conserved among steroids but shared with glucocorticiod receptor. MCGILL AIS database doesn't show any mutation in ALA896.effects of this mutation are not reported in literature. We found our case as first ever reporting effects of this mutation. We found patient attained normal puberty, growth, secondary sexual development with small size penis with inadequate response to testosterone therapy.

P28 What is the impact of weight gain less than that recommended by IOM on pregnancy outcome for women with GDM and BMI >/= 30

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Background and aims: The Institute of Medicine (IOM) recommends gestational weight gain (GWG) of 5-9 kg in women with a body mass index of >/=30. Debate continues as to whether GWG less than that recommended is safe. Materials and methods: We examined pregnancy outcomes for mothers with GDM and a BMI >/=30 and their offspring (n = 752) of whom 473 were treated with insulin. Women were categorized into 3 groups (1) those with weight loss or weight gain 0-5kg, (2) weight gain 5-9kg (3) weight gain >9kg, from the first antenatal visit to delivery. We examined pregnancy outcomes for groups 1 and 2 in women treated by diet only (GDM-D) and in those treated with insulin (GDM-I). Results: In the GDM-D group (n = 120) the baseline systolic (123 vs 117 mmHg; p = 0.03) and diastolic (73 vs 68 mmHg; p = 0.01) pressure was higher in group 1 vs 2. Women in Group 1 (n =91) were more likely to deliver earlier (38.9 vs 39.8 weeks, p<0.01), to develop hypertension (15.4% v 0%; p =0.02) or have a haemorrhage (13.2% vs 0, p=0.03) compared to GDM-D women in Group 2 (n = 29). Rates of prematurity were higher in group 1 vs 2 (14.3% vs 0%, p=0.03). In the GDM-I group (n = 192), women in Group 1 (n = 144) had higher rates of haemorrhage (7.9% vs 0, p=0.05) compared to group 2. Conclusion: Weight gain less than IOM recommendations appears safe for infants of women with GDM.

P29 Endocrine disorders in adults after allogenic hematopoietic stem cell transplant

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Background: Endocrine disorders are among the most common complications in survivors after hematopoietic allogeneic stem cell transplant (HSCT), but data on adult transplant patients are still scarce. Methods: This is a retrospective study which included 284 adult patients (94 females and 190 males) who underwent allogeneic HSCT between 2002 and 2014. Results:

The mean age of the patients at diagnosis was 33.3 (SD±10.6) years old with a mean age at transplant of 35.2 (SD±10.3) years old. 11.3% of the patients tested (n=44) had low morning cortisol levels at 16 months post-transplant and 25% of the patients tested (n=12) had hyperprolactinemia at 6 months post-transplant. Insulin-like growth factor-1 values were below the normal range in one patient (7.6%) and above normal range in 2 patients (15.2%). Beyond one-year post - transplant, 39% of the patients had abnormal thyroid function tests of which 15% (n=10) displayed biochemical features of central hypothyroidism. Out of 54 women tested, 8 (14.8%) displayed biochemical features of hypogonadotropic hypogonadism and 33 (61.1%) had hypergonadotropic hypogonadism. In males, out of 108 tested, 2 (1.8%) had hypogonadotropic hypogonadism and 67 (62%) had hypergonadotropic hypogonadism. Out of 104 patients tested, 21.1%had a raised sex hormone binding globulin (SHBG). Men were more likely than women to develop hypergonadotropic hypogonadism (P<0.01). Conclusion: These data suggest that adults undergoing HSCT are at a high risk of endocrine dysfunction and require early input and long-term surveillance.

P30 Preventing acute kidney injury in medical admissions: results of audits of prevalence and staff knowledge

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Acute kidney injury (AKI) is common in acute medical admissions. It is associated with increased mortality and prolonged length of stay. Advice to hold nephrotoxic medications at times of illness may not be getting through to patients. We retrospectively reviewed all 238 medical admissions in a 1 week period (20/11/17 – 27/11/17). AKI was present in 61 (26%). 30 of 61 (49%) were taking nephrotoxic medications and only 1 (2%) had omitted these agents. On further analysis we separated patients with AKI into 3 cohorts: patients with standard medication dispensing (n = 33, 54%), weekly blister-packs (n=20, 33%), and nursing home residents (n=8, 13%). 11 of 20 (55%) with blister-packs were prescribed nephrotoxic medications, none were stopped pre-admission. 8 of 8 nursing home residents were prescribed nephrotoxic medications, none were held. Secondly we performed an electronic questionnaire of staff knowledge, completed by 34 medical staff of all grades. 82% of medical staff were aware of nephrotoxic sick day rules. 29% stated they advised patients of these rules at clinic appointments. 92% of medical staff would like a kidney safety card. Thirdly we assessed patient knowledge by asking patients to complete a written questionnaire. 51 were returned. 78% were not aware of nephrotoxic sick day rules. 84% would like a kidney safety card. We demonstrate a high prevalence of AKI, a low level of patient knowledge of the potential for nephrotoxicity, a low level of staff education of patients with both patients and medical staff expressing a preference for a kidney safety card.

P31 Diabetic ketoacidosis at Tallaght Hospital – biochemical and outcome measures of DKA presentations in 2017

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Introduction: There is a paucity of information in the literature regarding diabetic ketoacidosis (DKA) presentation and management. We carried out an audit of all patients presenting to Tallaght Hospital with DKA between January and December 2017. Here we present the biochemical features and outcome measures found. Methods: Patients discharged with primary diagnosis of DKA (from HIPE coding) were analysed, and included if the diagnosis was confirmed. Information was collated on a standard proforma and analysed using Microsoft Excel. Results: Fifty-one patients were included in the analysis (previously described). Severity of acidosis varied widely (average pH 7.14 and HCO3 12); 10 patients required HDU or ICU care (20%). Diagnosis was made utilising capillary ketone measurement in 100% of patients. Blood gas measurement was primarily arterial (98%) as per guideline, and 100% of patients were treated according to the hospital's DKA guideline. Long-acting insulin was continued in 94% of patients. Times to institution of treatment were delayed; average time to IV insulin 79 minutes and IV fluids 92 minutes. Average time on IV insulin was 39 hours (median 29 hours). Length of stay aeveraged 6.2 days. Hypoglycaemia occurred in 35% of patients at some stage during their admission, and hypokalaemia in 37% (severe in 15.7%). There was no mortality recorded. Discussion: DKA is a serious diabetic complication, with guideline driven management paramount. New guidelines based on capillary ketone measurement have been introduced and would appear to be being adhered to in the majority. Adverse events continue but appear within reasonable limits.

P32 Validation of a diagnostic test for *SDHC* epigenetic silencing and identification of the indications for testing in clinical practice

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The enzyme succinate dehydrogenase (SDH) plays a key role in the citric acid cycle and loss of SDH function predisposes to phaeochromocytoma/paraganglioma (PPGL), gastrointestinal stromal tumour (GIST) and renal cell carcinoma. A germline mutation in one of the four genes (*SDHA*/*SDHB*/*SDHC*/*SDHD*) encoding the SDH complex is the most common cause of SDH inactivation and is routinely screened for in clinical practice. SDH deficiency can also arise due to epigenetic silencing of the *SDHC* gene and this diagnosis has a number of important clinical applications, although at present clinical testing for an *SDHC* epimutation is not routinely available. *Aim:* To investigate a diagnostic workflow for the detection of an *SDHC* epimutation in clinical practice. *Design: SDHC* promoter–specific methylation analysis of 32 paraffin embedded (FFPE) GIST and PPGL and 17 *IDH1* mutant glioma samples with a presumed hypermethylator epigenotype, was performed using a pyrosequencing technique and optimized and correlated with *SDHC* gene expression. *Results:* An *SDHC* epimutation was identified in 18% (6 /32), all identified cases had a diagnosis of GIST and 2/6 cases developed a subsequent PPGL. Whole genome sequencing of germline DNA from 3 cases with an identified *SDHC* epimutation, did not reveal any causative sequence anomaly and no case of constitutional *SDHC* promoter hypermethylation was identified. This study has demonstrated that methylation of the *SDHC* gene promoter could be accurately assessed by pyrosequencing and correlated with *SDHC*

gene silencing and has enabled us to recommend a diagnostic workflow for the clinical detection of an *SDHC* epimutation.

P33 Re-audit of diabetes in-patient care. Are we sweet enough 2?

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The (UK) National Diabetes Inpatient Audit 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. A consultant endocrinologist was appointed to Our Lady of Lourdes Hospital (OLOLH) in September 2016. We audited inpatient care of people with diabetes in OLOLH in December 2016 and again in May 2018. The prevalence of inpatients with diabetes was 12.9% of whom 91.5% had T2DM. The median age of inpatient with diabetes was 74 years and 44.7% were male.

Parameter	2016 (n=44)	2018 (n=47)	P Value*
Hypoglycaemia experienced in hospital, n (%)	14 (33.3)	6 (12.8)	**0.02**
Appropriate management of hypoglycaemia, n (%)	7 (50.0)	5 (83.3)	0.16
Hypoglycaemia agent prescription error, n (%)	15 (40.5)	10 (23.8)	0.11
Foot examination performed, n (%)	17 (38.6)	6 (12.8)	**<0.01**

*, probability values were calculated using Chi-squared testing.

In-patient glycaemia management has improved significantly in OLOLH. Further improvements are expected as a result of the recently ratified insulin prescription chart and peri-operative glycaemia management protocol. Our audit highlights aspects of in-patient diabetes management that require improvement.

P34 Werner syndrome - a unifying hypothesis for NAFLD, insulin resistance and multiple endocrinopathy

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Werner syndrome (WS) is a rare genetic disorder due to mutations in the WRN or LMNA genes, with an estimated global incidence of 1 in 1,000,000 - 10,000,000. It is a segmental progeroid disorder characterised by an array of clinical features consistent with accelerated aging. We report the case of a 28 year old female patient, the offspring of a consanguineous union, who was referred to our metabolic clinic for review. She reported a history of vocal cord paralysis aged 19 years and subcapsular cataracts aged 24 years. Moreover, she had been diagnosed with primary hypothyroidism, primary hyperparathyroidism and subfertility despite normal menstruation. Further diagnoses included NAFLD with mild fibrosis. On examination, she had skin atrophy, hyperkeratosis, a loud S2, scalp alopecia, axillary acanthosis nigricans, marked visceral adiposity with lipodsytrophic upper and lower limbs. Echocardiography confirmed trace regurgitation in aortic, mitral and tricuspid valves and DEXA confirmed osteoporosis. HOMA score was > 11 confirming severe insulin resistance and AMH levels were low. Phenotypically the patient had a diagnosis of definite WS but genetic confirmation was sought. Analysis of *LMNA* did not identify pathogenic variants. An RT-PCR method with direct sequencing was developed in-house to examine the extensive coding region of *WRN*. This revealed a homozygous genotype for the nonsense variant g.129,248C>T, c.3961C>T , p.Arg132Ter. To our knowledeg this is the first reported case of WS in the Republic of Ireland. In cases with multiple early-onset morbidities a genetic basis should be considered, particularly if there is a risk of consanguinity.

P35 An Audit of Inpatient Hypoglycaemia Management in a Large Tertiary Referral Centre

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The prevalence of hypoglycaemia is high amongst hospitalised patients with diabetes and is associated with greater mortality, prolonged length-of-stay, increased readmission rates and higher cost. Research suggests that inpatient hypoglycaemia is under-recognised and suboptimally managed. At our hospital all inpatient glucose measurements are captured by a customised electronic application. Using this, we identified all glucose measurements <4 mmol/l in a one-week period in patients with diabetes in general medical and surgical wards excluding critical care. Subsequently we reviewed all relevant medical, nursing notes and electronic records. We identified 39 episodes of hypoglycaemia in 19 patients (15 patients with type 2 diabetes, one with type 1 diabetes and three with secondary diabetes). The median interval to next glucose check was 29 mins (15 mins-24h). In 20% of episodes glucose was rechecked within the recommended 15 minutes. 52% of patients had 2 or more episodes. 26% were treated with insulin only, 26% with a combination of insulin and oral hypoglycaemic medications (OHAs) and 47% with OHAs only. Risk factors for inpatient hypoglycaemia were age, impaired hypoglycaemia awareness, chronic kidney and liver disease. 60% of patients were over 65 years old. 65% had established cardiovascular disease. Lack of access to snacks/ missed meals/ fasting was contributory in 42% of patients. Five episodes were documented in the medical notes, and in four cases medication alterations were made to prevent further hypoglycaemia. Hospitalised patients with diabetes are at risk of recurrent hypoglycaemia. Recognition and management of hypoglycaemia are suboptimal. Education and timely intervention are essential to improve patient outcomes.

P36 Inter-pregnancy Weight Gain in Women with Gestational Diabetes Mellitus

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The association between maternal obesity and gestational diabetes mellitus (GDM) is well recognised. In the Royal Jubilee Maternity Service, women with GDM are advised of GDM risk in subsequent

pregnancies and of later type 2 diabetes. Whilst they are encouraged to adopt lifestyle changes to promote weight loss and mitigate these risks, formal programmes to support these changes in new mothers are limited. To evaluate the effectiveness of current maternal lifestyle advice we reviewed inter-pregnancy weight gain in women following a diagnosis of GDM. A retrospective study of mothers with GDM who proceeded to further pregnancies between 2010-2014 was performed. Booking weight and BMI were obtained from their index pregnancy with GDM and all subsequent pregnancies. Only pregnancies with complete data were studied. 424 women had at least one further pregnancy subsequent to their pregnancy with GDM. 77, 10 and 2 women had 2, 3 and 4 further pregnancies respectively. 476 sequential pregnancies were included in the analysis. Weight and BMI increased between pregnancies (weight: 78.7kg – 82.1kg; p<0.001, BMI: 29.5kg/m^2 – 30.8kg/m^2; p<0.001). Gestational age at booking was similar (12.2 weeks vs 12.0 weeks; p = 0.221). Defining stable weight as +/- 1kg, only 23.9% of women lost weight between pregnancies, 15.5% remained stable and 60.5% of women gained weight. 69.3% of all pregnancies post GDM diagnosis were planned. Despite the majority of pregnancies post-GDM being planned, only 15.5% of women lost weight between pregnancies. This highlights the need for formal lifestyle programmes targeted to this cohort of women.

P37 A case of "simple Conn's"

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We report 52 year old male with 9 years history of hypertension, hypokalaemia, right macular oedema and a splenectomy aged 11 for spherocytosis. His treatment included telmisartan 80mg daily, lercanidipine 20mg daily and slow K tablets two tablets three times daily. Potassium level was low since November 2015 with the lowest level 2.5 mmol/l and remained low despite increasing doses of potassium replacement. Baseline investigations : renin 8.6 mIU/L (9.0-103.5) , aldosterone 567 pmol/L (138-670), sodium 144 mmol/L (133-146), potassium 3.3 mmol/L(3.3-5.0), urea 5.2 mmol/L (2.8-8.6), creatinine 95 umol/L (65-107), ARR 50.3 pmol/L:mIU/L TFT-normal, am cortisol 275 nmol/L (150-455), plasma methanephrines/normetanephrine were normal. Antihypertensive were changed to verapamil to facilitate investigation with a saline suppression test. The test showed at time zero: Cortisol 199 nmol/L (150-455), aldosterone 553 pmol/L (138-670), renin 11.0 Miu/L (9.0-103.5). And after 4 hours: cortisol 68nmol/L nmol/L (150-455), non suppressed aldosterone 249 pmol/L(138-670), renin 9.3 mIU/L (9.0-103.5). CT adrenals showed 2.1cm nodule in the left adrenal gland with HU of 5 consistent with adenoma and 2.7cm enhancing mass arising from the left kidney and 2.5cm enhancing mass arising from the right kidney consistent with Renal Cell Carcinoma. Our patient had a laparoscopic left partial nephrectomy and left adrenalectomy with normalisation of potassium and significant improvement in BP, four months later laparoscopic right partial nephrectomy. Histology confirmed bilateral Renal Cell Carcinoma and left adrenal Conn's adenoma. This is first reported case of bilateral Renal Cell Carcinoma and adrenal Conn's.

P38 Cardiovascular Risk Factors in Patients with Diabetes

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Cardiovascular disease is the leading cause of death in diabetic patients. The ADA has set clear guidelines for management of these risk factors. We reviewed 913 records of patients with diabetes and we found that 285 (31%) had T1DM, 72% were on multiple daily injections and 28% were on insulin pumps. Type 2 diabetes 628 (69%), 431 (69%) on oral hyperglycaemic agents and 30 (5%) diet controlled. We found that 241(26%) of patients had a documented history of cardiovascular disease – 13% of T1DM and 32.3% T2DM. Group with T1DM 164 (74%) patients had T. Cholesterol of less than 5 mmol/, mean cholesterol value was 4.38 mmol/l (SD 0.93), 138 had an LDL of less than 2.6 with mean LDL was 2.4 (SD 0.79). Group with T2DM, 391(85.7%) patients had T. Cholesterol value of less than 5mmol/L, mean T Cholesterol value was 3.99 mmol/l (SD 1.44), 342 (75%) patients had a LDL value of less than 2.6mmol/ with mean LDL reading was 2.1 mmol/l (SD0.8). We found that 652 (52%) patients were on statins in T1DM and 80% inT2DM group. Antihypertensive ACE/ARB therapy was received by 41.4% of T1DM and 65.8% T2DM. On review 198 (22%) had no microalbumin to creatine ratio recorded. The majority of our patients received ADA guidelines recommended blood pressure agents and statins. Approximately 20% of our patients have no microalbumines creatine ratio recorded. Microalbumin to creatinine is an important screen for early diabetic nephropathy and is essential in predicting those at risk of progression to diabetic kidney disease.

P39 Impact of an MDT on the surgical management of adrenal tumours in a tertiary referral centre

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Adrenal tumour diagnosis is increasing with advances in radiologic imaging resolution and use. This growing workload mandates a multidisciplinary approach to ensure clear decisions for surgery, surveillance or discharge. Surgical consideration is based on patient symptoms, biochemical analysis and radiologic imaging as histologic confirmation is rarely indicated for adrenal tumours. We report a large series of adrenalectomies in a tertiary referral centre before and after the introduction of an MDT. A retrospective review of a prospectively collected database of all adrenalectomies from 2004 to 2017 was performed. Since July 2014 a monthly adrenal MDT was established. A standard proforma is required for each patient discussed. Demographic, biochemical, radiologic, operative and pathologic data were collected. Over the 14 year period, 122 adrenalectomies were performed (95% laparoscopically) . Mean age was 50 years and 61% of patients were female. The mean pathologic size was 37mm and included 30 phaeochromocytomas and 11 adrenocortical carcinomas. Since the introduction of the MDT the number of cases discussed per month has increased from 5.6 in 2014 to 14.0 in 2018 (p<0.01) however in the same period, the percentage who underwent adrenalectomy fell from 38% to 15% (p<0.01). There was no significant difference in the rate of carcinoma resections (21% vs 19%, p=0.82) nor in the rate of benign, non-functioning

adenoma resections (29% vs 22%, p=0.41) since introduction of the MDT. Despite the increasing diagnosis of adrenal tumours, the MDT has facilitated appropriate and accurate patient selection for surgery while reducing investigations and interventions for benign pathology.

P40 Morphological, endocrine, and clinical follow-up of 420 patients consecutively reviewed in a single centre by a dedicated Adrenal Multidisciplinary Team

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Background: Increased use of Radiological investigations has resulted in the frequent incidental discovery of asymptomatic adrenal lesions. Requirement for surgical or medical intervention depends upon whether the lesion is benign or malignant, and whether it is functioning (secretory). Design: This was a retrospective cohort study of 420(178 male) patients discussed in a dedicated MDT meeting between September 2012 and May 2018. Results: Median (IQR) age was 56(46-67) years. Fifty-five patients were considered to have normal adrenal imaging. The remaining 365 had adrenal lesions with median diameter of 22(15-35) mm. Overnight dexamethasone suppression test was performed in 259 patients; 85 (33%) failed, of whom 30% had plasma ACTH levels <10 ng/l. Paired renin (plasma renin activity or direct renin concentration) and aldosterone measurements were available in 284; 48 (17%) had positive aldosterone/ renin ratio and suppressed renin. Twenty-eight (8%) had phaeochromocytoma, of whom 35% did not have elevated urinary or plasma metanephrines. Adrenalectomy was performed in 73 patients with resection of 26 adenomas, 12 adrenocortical carcinomas (ACC), 19 phaeochromocytomas, and 16 less frequent tumour types. Patients with ACC were younger than those with adenoma (36 vs. 57 yrs; p=0.001) and the lesions were significantly larger (117.5 vs 21mm; p<0.0001). Conclusion: Radiologic and Endocrine evaluation of adrenal lesions in a dedicated MDT setting enables appropriate diagnosis and management of malignant and functioning nodules, in addition to identifying patients who do not require prolonged follow up. Biochemical evaluation of these patients, however, was incomplete indicating a need for more structured pathways of investigation.

P41 The value of unenhanced CT in excluding the diagnosis of pheochromocytoma: A single centre experience

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Background: Recent ESE/ENSAT guidelines suggest that biochemical work up of pheochromocytoma might not be necessary in lesions with attenuation less than 10 HU on unenhanced CT. In contrast, the AACE/AAES Guideline recommends biochemical screening for pheochromocytomas in all patients with incidental adrenal lesions regardless of radiological characteristics. We describe a cohort of 36 patients with adrenal phaeochromocytoma. In addition we evaluate the outcome of routine biochemical screening in a large series of adrenal incidentalomas with unenhanced CT imaging. Results: The study group with phaeochromocytoma comprised 17 males and 24 females with a median age of 53 years (IQR 40-68). Median tumour size was 31mm (IQR 26.5-50). Median attenuation value on non-enhanced CT was 28 (IQR 15-30). Six patients (17%) had nonsecretory lesions with normal metanephrines levels but positive MIBG imaging. In the secretory lesions, the median normetanephrine level was 2 x ULN while the median metanephrine level was 3xULN. No patient with histologically confirmed pheochromocytoma demonstrated density of <10 HU on unenhanced CT imaging. 172 patients with low attenuation adrenal lesions (HU<10) were evaluated. One hundred and thirty four patients had urinary plasma or metanephrines measured. Two had abnormal results, although with urinary metanephrines <1.5 ULN. Interpretation: All pheochromocytomas in our series had density >10 HU on unenhanced CT. These findings support the recommendation that biochemical screening for pheochromocytoma should not be done routinely for adrenal lesions <10 HU. This has significant implications with regard to healthcare resources.

P42 Social Deprivation; A factor in glycaemic control and clinic attendance in a young Type 1 diabetic population.

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Social deprivation is associated with poorer health outcomes. The St James's Hospital catchment area has high levels of social deprivation. The young adult diabetes clinic caters for patients aged 18-25 years with diabetes. Whilst many live locally we also see a considerable number from outside the catchment from more socially affluent areas. We aimed to assess the impact of social deprivation on clinic attendance and glycaemic control in patients aged 18-25 with type 1 diabetes on MDI regimen over a 3 year period (2015-2017). 60 (25 male) patients were included in the analysis. On average this was a socially deprived group with a Pobal Deprivation index (PDI) score of 4.8 (1= extremely affluent, 8= extremely deprived). Mean HbA1c was 80.1+/-21 mmol/mol. Patients were divided into 2 groups; n=26 who had a PDI score $\leq$4 (socially affluent), and n=35 who a PDI score $\geq$5 (socially deprived). In the socially affluent group, mean HbA1c was 73.4+/-17.4mmol/mol. Patients in this group were more likely to have attended structured diabetes education (48%) and less likely to miss clinical appointments, with only 16% missing more than half of their appointments. In comparison, mean HbA1c of the socially deprived group was 80.5 +/-23mmol/mol, with only 23% of patients attending structured education and 34% missing over half their appointments. This study suggests that social deprivation as measured by the PDI may be an important factor in glycaemic control and engagement of patients. Targeted programmes for patients in this vulnerable at risk group are needed to improve glycaemic control.

P43 Micro-costing study: Direct Hospital Costs of Diabetic Ketoacidosis (DKA) in St James's Hospital

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One of the biggest challenges facing our health service is providing quality care with limited resources. DKA is a common medical emergency with a significant mortality. Non-compliance with insulin is a common precipitant of DKA but preventable with adequate education and support for patients and families. Internationally, a few studies have assessed the direct costs of DKA but no information is available within the Irish Health Service. Our aim was to assess direct cost per episode of DKA due to non-compliance in patients presenting over a 1 year period in 2014 who were treated on general medical wards excluding critical care areas. Patients with additional acute medical illnesses were excluded. Using the Qlik Sense computer programme and in-depth chart reviews, costs were calculated for each episode. 14 episodes of DKA were identified in 13 patients. Baseline characterises were; 54% female, mean age 29yrs, mean HbA1c 90mmol/mol and average pH of 7.14 on admission. Average length of stay was 4.14 days. 42% of patients had a history of substance misuse or mental health problems. The mean cost per episode of DKA was €2,913 (median €2,403). Costs were sub divided into Emergency Department (€416.23), Wards (€984.49), Medications (52.26€), Glucose and Ketone monitoring (€221.93), Investigations (€341.84) and Consults, Medical team and MDT input (€896.67). This study shows that significant hospital resources are being used to treat this potentially fatal but avoidable condition. Investment in strategies to prevent DKA in this vulnerable group could potentially be cost saving.

P44 A Case of Sporadic Pseudohypoparathyroidism type 1b

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We report a healthy 31 years old lady who presented with symptomatic hypocalcaemia. She had positive Chvostek and Trousseau signs. Her corrected calcium was 1.71mM (2.20-2.55), phosphate 1.44mM (0.87-1.45) and PTH 46.67pmol/l (1.45-8.18). TSH was 2.46mIU/L (0.38-5.33). Unusually, there was no family history of hypocalcaemia. She was commenced on Osteofos D3 to correct the hypocalcaemia. She then underwent molecular genetic testing. The first test confirmed the diagnosis of PHP1b. It demonstrated a significant loss of the maternal methylation pattern at several differentially methylated regions (DMRs) at the complex GNAS locus. This result could have been caused by an epimutation or paternal uniparental disomy of chromosome 20 (UPD20). Maternal samples were then sent to undertake UPD20 analysis. Microsatellite repeat analysis was carried out and the results were consistent with normal biparental inheritance. Therefore the methylation result previously obtained was likely due to an epigenetic mutation affecting the GNAS locus. It is important to test for UPD20 in such cases of sporadic PHP1b because if present, recurrence in family is essentially reduced to population levels. Pseudohypoparathyroidism type 1b (PHP1b) is the result of end-organ resistance to parathyroid hormone (PTH) and other hormones such as TSH in the absence of any features of Albright's hereditary osteodystrophy. Patients with PHP1b show imprinting abnormalities at the GNAS locus on chromosome 20. Typically PHP1b is an autosomal dominant disease and the molecular cause is well characterized. However, the molecular GNAS imprinting defects in sporadic PHP1b cases remain elusive.

P45 Hypercalcaemia due to hypervitaminosis D in a self-supplementing Multiple Sclerosis patient: a case report

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There is an increasing literature with regard to vitamin D supplementation in Multiple Sclerosis (MS). We report the case of a patient with MS who presented with symptomatic hypercalcaemia secondary to self-supplementation of vitamin D3 purchased online. A 45year-old male presented to the E.D. with eight days of nausea, vomiting, anorexia and constipation. He had MS, was wheelchair bound, and reported that he had not attended neurology follow-up for the past seven years. Initial bloods on admission showed severe hypercalcaemia (corrected calcium of 3.69mmol/L), and an acute kidney injury (Urea 14.1mmol/L, Creatinine 312μmol/L). Initial emergency management involved aggressive intravenous 0.9% NaCl rehydration. The patient admitted he had been taking 6 internet-bought supplements, one of which was vitamin D3 at a dose of 10,000IU daily for close to two years. His 25-OH-vitamin D level after serial dilution was 1617nmol/L. As further treatment for his severe hypercalcaemia he subsequently received prednisolone and calcitonin. Once some recovery of renal function was achieved he received IV zolendronic acid. Corrected calcium normalised to 2.55mmol/L and creatinine improved to 168mmol/L. He was discharged for follow-up in OPD two weeks later when he required readmission for further rehydration but not further additional treatment. At subsequent outpatient follow-up six months post initial presentation calcium and renal function have remained normal. This case highlights a lack of consensus guidance regarding safe vitamin D supplementation dosages and the importance of monitoring patients prescribed vitamin D supplementation in high doses, particularly as widespread prescribing in MS may become more common.

P46 The Clinical Management and follow-up of Adults with Turner's Syndrome in University College Hospital, Galway

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Background and Aim: Turner's syndrome (TS) or 45 XO is a condition in which a female is partly or completely missing an X chromosome. TS affects 0.025-0.05% of females and can involve multiple organs through all stages of life, necessitating a multidisciplinary approach to care. We aim to evaluate our practice compared to the clinical practice guidelines, which recommends the following: annual BMI, blood pressure, HbA1c, lipid profile, liver function, thyroid function, skin and teeth inspection; 3 yearly serum calcium, vitamin D, echocardiogram; 5 yearly audiometric evaluation and DEXA scan. As appropriate, renal ultrasound, ophthalmologic evaluation, ECG, liver ultrasound, fertility counselling, uterine ultrasound and coeliac screen. Methods: Online Patient Correspondence System was used to identify patients with TS in University College Hospital Galway (UCHG). Charts were ordered, reviewed and data was collected and analysed. Results: 16 patients with TS were identified. 2 paediatric patients were excluded. Of the 14 included, 3 patients were not under endocrine service follow-up and 1 patient had follow up in another hospital. The following are the compliance to management guidelines; 86% echocardiogram, 36% cardiac MRI, 95% blood pressure measurement, 71% lipids, 36% DEXA, 86% calcium, 50% vitamin D, 93% LFTs,

79% HbA1c, 100% thyroid function test, 64% coeliac screen, 71% renal ultrasound, 29% audiology testing, 36% fertility discussion, 64% HRT, 14% uterine ultrasound, 14% dermatology review, 0% orthodontic, ophthalmologic and psychiatric evaluation. Conclusion: We are planning to use a standardised proforma and re-audit the patients, to improve the management of TS in UCHG.

P47 Formal Visual Field testing in patients with Pituitary Macroadenomas in University College Hospital Galway

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Background and Aim: Pituitary tumours are the third most common primary intracranial neoplasm, accounting for approximately 15% of all intracranial neoplasms, and it has an annual incidence rate of 0.8 – 8/100 000. Pituitary macroadenomas can involve the optic chiasm and cause visual field loss. Best practice guidelines recommend formal visual field testing for patients with macroadenomas(>1cm). Methods: Online Patient Correspondence System was used to identify patients with pituitary macroadenomas in UCHG under endocrine service follow-up. MRI scan reports and formal visual fields (Humphrey 30-2) were reviewed. Result: 57 patients with pituitary macroadenomas were identified, 33 male and 24 female. Mean current age was 59.2 ± 18.3 years (range 15-89). 38(66.7%) were non-functioning adenomas, 10(17.5%) prolactinomas, 8(14.0%) acromegaly and 1(1.8%) silent gonadotroph adenoma. Average size on MRI was 2.1 ± 0.8 cm (range 1.0-4.0 cm). 28(49.1%) had suggested optic chiasm involvement reported on MRI. Of these, 4(14.3%) were symptomatic, 3(10.7%) had visual field defects and 1 was unreliable on visual field testing. 55(96.5%) of all patients had formal visual field testing. 3(5.5%) of the patients had visual fields typical of pituitary macroadenoma, with bitemporal visual field defect. 41(74.5%) had normal visual fields, 4(7.3%) had unreliable results and 7(12.7%) had visual deficit related to another condition. 2 patients did not have formal visual field testing because they were physically unable to do so. Conclusion: 96.5% of patients with pituitary macroadenomas in UCHG had formal visual field testing. 3(5.5%) had abnormal visual fields related to the pituitary tumour. All 3 patients initially presented to Ophthalmology with visual symptoms and had non-functioning adenomas.

P48 Factors predictive of HbA1c in insulin pump users in Galway University Hospital

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Background and aims:Insulin pump therapy in Type 1 Diabetes Mellitus (T1D) patients has been shown to improve glycaemic control, reduce hypoglycaemic episodes and improve quality of life compared to multiple dose injection therapy.There are no studies proving benefits of structured education(SE) prior to starting pump therapy.This study was to determine if pump therapy was beneficial in reducing HbA1c for adult T1D patients.Secondly,to determine factors predictive of HbA1c such as SE. Materials and methods:This was a retrospective cohort study on patients with T1D who started insulin pump from January 2014 to December 2017 in GUH.Data was gathered from the DIAMOND database and analysed with Student‘s t-tests. Results:72 patients; 41 females(31 males), mean age 41.5±12.4 years(range 16-69),average duration of diabetes 22.6±12.0 years(range 10-55).Average age at insulin pump start was 39±12 years.Average number of clinic visits per year before pump was 1.6 and after pump was 1.4.Baseline HbA1c 67.1±16.6 mmol/mol(range 59-126).25 patients were on continuous glucose monitoring pumps.60 patients underwent a SE programme(DAFNE).Overall, at each time point; at baseline, to 3,6,12 and 24 months post pump therapy,there was a trend toward reduction in HbA1c.There was no significant difference between the HbA1c of patients who had SE vs no SE.Patients who started pump therapy with a high HbA1c (≥ 75 mmol/mol) had a significant reduction in HbA1c at all time points. Conclusion:In the cohort of insulin pump users, there was no significant difference in HbA1c for those who had SE versus no SE.Patients with a high baseline HbA1c (≥ 75 mmol/mol) had a significant reduction in HbA1c but not for those starting with a lower HbA1c.Selected patients who have not attended a SE programme but have had 1:1 education from diabetes educators can benefit from pump therapy,as they may have elevated HbA1c.Other factors such as sex,age at diagnosis,duration of diabetes and number of clinic visits per year were not shown to be significant.

P49 Five Year Anthropometric Outcomes after Bariatric Surgery

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Introduction: Medium term outcomes in Irish patients undergoing bariatric surgery for treatment of severe obesity are not well described. We sought to determine changes in weight, body mass index (BMI) and percentage excess body weight (%EBW) in patients with severe obesity who underwent bariatric surgery. A secondary objective was to determine the timing of the weight loss nadir after surgery. Methods: We conducted a single-centre, retrospective cohort study, obtaining data relating to weight and height at the time of bariatric surgery and at subsequent clinic visits in 174 patients who underwent surgery in University College Hospital Galway between 2008 and 2017. Results: Over ten years, 174 bariatric surgical procedures were performed in 128 females and 46 males with a mean age at surgery of 45.6 (range 21-72) years. 155 patients had sleeve gastrectomy, 18 had laparoscopic adjustable gastric banding and one had Roux en Y gastric bypass. Anthropometric measures at different time points up to five years are presented only for patients who continued to attend our bariatric service (Table 1). By five years, 66% of patients were lost to follow up, consistent with other studies. Conclusion: Weight loss outcomes in our centre were consistent with those described elsewhere, with an absolute reduction of 75% in excess body weight by two years, in the 70% of patients who were still attending our service at that time. Longer term weight loss maintenance appears good. The weight loss nadir occurred between 12 and 24 months, as anticipated. The impact of these anthropometric changes on metabolic and health economic outcomes remains to be determined.

Table 1:

	Time (mths)	0	1	3	6	12	24	36	48	60
Weight(kg)	Mean	137.67	118.44	109.94	103.91	98.84	99.99	101.22	102.94	112.41
	SD	27.68	24.97	26.54	24.58	23.93	22.34	22.93	22.94	27.95
BMI(kg/m^2)	Mean	49.34	42.86	39.86	36.99	35.26	35.29	36.13	36.49	39.17
	SD	7.38	6.75	7.04	7.01	6.71	6.89	6.65	7.03	8.52
%EBW	Mean	97.38	64.45	46.11	35.57	28.55	21.77	13.82	9.77	8.79
	SD	29.51	26.99	28.16	28.06	26.86	27.57	26.61	28.12	34.08
% Follow-up		100	91	79	75	79	70	46	35	34

P50 Use Of Focus Groups To Assess The Attitudes, Needs And Expectations Of An mHealth App For The Management Of Exercise With Type 1 Diabetes

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Management of exercise with type 1 diabetes (T1DM) can be problematic for the patient. Also education in this area can be resource intensive and challenging for the health care professional. We used qualitative research to explore whether an mHealth app could be used to educate and inform our patient's in this complex area. Three focus groups were conducted with people who have T1DM (n=25). Mean age was 38 (SD 11.1) years and mean HbA1c was 7.4 (SD 1.4) %. Audiotapes were used and focus groups were transcribed verbatim. Qualitative analysis of the focus group data was performed using Interpretative Phenomological Analysis. From the themes that emerged there appear to be many frustrations and issues with currently available apps. Previously used apps were found to be burdensome, time consuming, complicated, and the data they received back to be overwhelming. Suggestions that will aid in the design of a T1DM and exercise app included tailoring advice to the individuals based on their profile and data entry, advice in the form of suggestions rather than specific figures and making the app uncomplicated and user friendly. Involving individuals with T1DM early in the design process ensures that our design satisfies the specific requirements of those looking to commence or increase exercise. If designed and developed successfully this will be the first app of its kind to take the needs and opinions of those with T1DM into consideration as well as getting the expertise of clinicians and health care professionals in this complex area.

P51 Prevalence of elevated body mass index and dysglycaemia in men receiving systemic therapies for metastatic prostate cancer

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Patients with metastatic prostate cancer are commonly treated with androgen deprivation therapy (ADT) and corticosteroids. These therapies are associated with increased risk of weight gain and dysglycaemia. There is currently no formal screening programme for the development of dysglycaemia in this cohort, as information on its prevalence is lacking. The aims of this audit were to estimate the prevalence of overweight/obesity and diabetes/pre-diabetes in a cohort of patients with metastatic prostate cancer attending the oncology day ward. A retrospective casenote analysis was performed of patients with metastatic prostate cancer attending the oncology day ward. Clinical (age, body mass index, type of treatment) and biochemical (haemoglobin A1C; HbA1c) data were recorded. Glycaemic status was determined as per the 2016 American Diabetes Association (ADA) guidelines for the diagnosis of diabetes (diagnosis). Among 36 men with metastatic prostate cancer, 79% were overweight/obese. 56% had pre-diabetes, 31% had diabetes (half being previously diagnosed). 14% had an HbA1c in the normal range. All patients received ADT and 78% had received steroids in the prior six months. 18% had castrate sensitive disease and 82% had castrate resistant disease. Among patients with castrate sensitive cancer, 2/3 had abnormal HbA1c values. High body mass index and abnormal glucose tolerance are common in men being treated for metastatic prostate cancer. Systemic therapies such as corticosteroids and ADT may be contributing to this. Greater awareness of these adverse health outcomes needs to be established and consideration should be given to developing formal screening programmes for diabetes in this patient cohort.

P52 Adalimumab induced hypertriglyceridaemia in a patient with psoriasis

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A 64-year old male was referred to the Emergency department with incidental hypertriglyceridaemia on routine testing. His past medical history was significant for psoriasis and hypertension. He was a non-smoker and consumed 30 units of alcohol per week. He had no family history of dyslipidaemia. His medications included topical Betnovate, Adalimumab 40 mg fortnightly and Aliskiren. Prior to commencing the TNF-α antagonist, he had mild hypertriglyceridaemia with fasting triglycerides (Tgs) of 4.08 mmol/l. A lipid profile checked 16 months after commencing Adalimumab revealed significant hypertriglyceridaemia with Tgs >50 mmol/l. He was admitted to hospital and treated with intravenous insulin and fenofibrate 200mg/day. Adalimumab was discontinued. There was no clinical or biochemical evidence of pancreatitis. Investigations including thyroid function tests, an autoimmune screen and computerised tomography of the thorax, abdomen and pelvis yielded no other cause for the hypertriglyceridaemia. His Tgs improved to 3.43 mmol/l on discharge and returned to 1.92 mmol/l 2 months later. A second trial of Adalimumab was initiated 6 months later but was

subsequently abandoned after 4 months following recurrence of his hypertriglyceridaemia. There have been 2 other cases of Adalimumab induced hypertriglyceridaemia reported in the literature and similar cases with other TNF-α antagonists. Hence, we would recommend regular surveillance of lipid profiles in patients receiving these agents, especially in those with pre-existing dysipidaemias.

P53 A case of metastatic medullary thyroid carcinoma presenting as ectopic Cushing's syndrome

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A 41-year old male presented to the Emergency Department with a 6-month history of back and hip pain. A skeletal survey revealed bilateral pubic rami fractures and magnetic resonance imaging (MRI) of the spine demonstrated multiple thoracic and lumbar fractures. Dual energy X-ray absorptiometry (DEXA) scan confirmed osteoporosis. Secondary work up for osteoporosis was undertaken and the patient was found to have adrenocorticotropic hormone (ACTH) dependent Cushing's syndrome. An MRI pituitary demonstrated no adenoma and a corticotropin releasing factor (CRF) test suggested ectopic ACTH secretion. The patient was commenced on Teriparatide for osteoporosis and Metyrapone to control the hypercortisolaemia. An MRI whole body and positron emission tomography (PET) scan demonstrated right neck adenopathy. A biopsy and subsequent lymph node dissection was performed and histology revealed a metastatic neuroendocrine tumour. Immunostaining was positive for calcitonin and thyroid transcription factor 1 (TTF1). Serum calcitonin was significantly elevated at 45,264 ng/l (<10). The patient proceeded to a total thyroidectomy and left neck dissection. Histology confirmed the presence of a 7mm medullary thyroid carcinoma. Post-operatively, the patient remained hyercortisolaemic despite Metyrapone therapy and his calcitonin levels rose to 86,222 ng/l. He is currently scheduled for Vandetanib therapy. Ectopic Cushing's syndrome occurs in only 0.7% of medullary thyroid carcinoma (MTC) cases and significantly impacts patients' morbidity and mortality. Isolated case reports suggest Vandetanib may be associated with improved outcomes in these patients.

P54 Cinacalcet use in Familial Hypocalciuric Hypercalcaemia 1and 3

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Familial hypocalciuric hypercalcemia (FHH) is a rare, autosomal-dominant disorder, felt to be benign[1]. We report two cases of FHH, associated with significant hypercalcaemia, which were successfully managed with Cinacalcet. Patient 1, a 60-year old male, was referred to the endocrine clinic with asymptomatic hypercalcaemia, dating back to 1999. Medical history was significant for morbid obesity, hypertension and gout. Family history was negative for hypercalcaemia. Investigations confirmed elevated serum corrected calcium (corr ca) 2.94 mmol/l, elevated parathyroid hormone (PTH) 23.4 pmol/l and low fractional excretion of calcium (0.0046). Genetic testing revealed a g➔a nucleotide substitution in exon 6 of CaSR gene, pathogenic for FHH1. Corr ca rose to 2.98 mmol/l and Cinacalcet was prescribed. Patient 2, a 50-year old female, was referred from the oncology services with hypercalcaemia since 2003. Medical history was significant for breast cancer and osteoporosis, for which she received IV bisphosphonate. Family history revealed that two maternal great aunts and her mother had hypercalcaemia. Biochemistry confirmed elevated corr ca 2.89 mmol/l, elevated PTH 7.2 pmol/l, and low fractional excretion of calcium (0.008). Genetic testing revealed a missense variant in exon 2 of the AP2S1 gene, pathogenic for FHH3. Significant hypercalcaemia (serum calcium 3.00 mmol/l) developed and Cinacalcet was prescribed. Corr ca in both patients remained stable between 2.7-2.8 mmol/l on Cinacalcet 30 mg/day. Cinacalcet should be considered for use in FHH when corr ca is 0.25 mM above the reference range or in those who are symptomatic.

P55 Availability of continuous subcutaneous insulin infusion therapy for patients with type 1 diabetes in Ireland: results of a National Survey.

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The aim of this study is to investigate the availability and accessibility of continuous subcutaneous insulin infusion (CSII) therapy for adults with type 1 diabetes (T1D) in Ireland. A national survey of all Irish diabetes clinics offering services to adults with T1D was conducted in 2017 (including questions on staffing resources, organisation of services, and reasons for no provision of CSII services). The questionnaire, based on similar published surveys, was translated into an Irish context. Descriptive statistics (%, numbers) were used to analyse the data. 47 (94%) of all diabetes clinics in Ireland (n=50) participated in the study (34 public and 13 private). One third of Irish diabetes clinics (n=15, 32%) do not offer services for those on, or wishing to commence, CSII. "Limited resources" (no trained dietitian [67%] or diabetes nurse specialist [60%], and clinical workload [53%]) were the main reasons for clinics' inability to provide CSII. Some clinics provide follow-up care, but not training to commence CSII (n=11), mainly because of heavy workload (82%) and/or lack of a trained dietitian (64%). The survey reported that 179 people had commenced CSII in the 12 months prior to data collection. Data were based on the respondents' "best estimates" (70%), or hospital/clinic database (30%). The results of this study suggest unequal access to CSII treatment across the country. Lack of trained staff (particularly dietitians) and perceived heavy workload were highlighted as the main barriers to provide CSII training and services in Ireland.

P56 Investigating the Impact of Diabetes Mellitus on the Outcomes of Hip Fracture Surgery

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The international literature base demonstrates that individuals living with diabetes mellitus (DM) are at increased risk of mortality and post-operative complications following hip fracture surgery (HFS) than non-diabetics. Studies investigating databases in American, European or Asiatic populations highlight the impact geography can have on the resultant investigation. We aim to quantify the impact DM has on HFS patients in a single university hospital. The HIPE dataset of fragility fractures occurring in Galway University Hospital from 2014-2016 were analysed and cross referenced with hospital laboratory and public databases. A database of 759 individuals was created including 515 females and 237 males, with a mean age of 78+/-12.2 years, of which 110 patients

had DM. The patient length-of-stay (PLOS) was comparable in all groups with patient age being the primary influencing factor. An extended PLOS correlated with an increased long-term mortality. A trend toward increased occurrence of sub-trochanteric fractures was observed in diabetics with fewer periprosthetic and intertrochanteric fractures. Patients with DM had a significant increased risk of post-operative mortality compared to non-diabetics. Males with DM where at a greater risk of death after HFS [HR 2.29, 95% CI 1.26-4.17. p=0.006] than females with DM [HR 1.69, 95% CI 0.99-2.91. p=0.056]. The presence of DM did not directly impact a patient's PLOS or increase the need for a re-operation. DM is associated with increased post-operative patient mortality and may influence the anatomical fracture pattern. This observation will support further investigation into the mechanical and biochemical changes occurring in the femur in individuals living with DM.

P57 Role of Donor factor in Liver Transplant Recipients' Body Mass Index (BMI)

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Orthotopic liver transplantation (OLT) is the accepted treatment for decompensated end-stage liver disease. The long-term outcomes however are affected by recurrent liver disease, side effects of immunosuppressive therapy, increased risk of malignancies and metabolic complications. The development of non-alcoholic fatty liver disease (NAFLD) is a common metabolic complication linked to increased body mass index (BMI) of OLT recipients. A retrospective study was undertaken to study the impact of donor adiposity on liver transplant recipients (n=55). Recipients of OLT had a mean BMI at transplant of 25.2 +/- 4.79 kg/m^2, and post-operatively at 6 months 27.4 +/- 5.06 kg/m^2, 12 months 28.2 +/- 5.74 kg/m^2 and 24 months 27.9 +/- 5.32 kg/m^2. The mean BMI for donors was 25 +/- 3.94 kg/m^2. Pearson correlation between donor and recipients' BMI at 6months yielded an r value of 0.3994 (p 0.0004), at 12 months 0.3362 (p 0.0039) and at 24months 0.4037 (p 0.0036). 21.8% of OLT recipients were diagnosed with diabetes prior to OLT and 60% (n=55) were still receiving corticosteroid therapy 6 months after OLT. Results suggest a correlation between donor adiposity and recipient BMI post OLT. Further recruitment is still undergoing.

P58 In-Hospital Glycaemic Control of Insulin-treated Patients – Are we at Target? An Audit of the Insulin Management Round

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Mater Misericordiae University Hospital (MMUH) is unique in that the endocrinology team adjusts the insulin doses of all diabetes inpatients daily on an 'insulin management round' (IMR). Target glucose range of 7.8–10.0mmol/L is advised for insulin-treated hospitalised patients[1]. We analysed characteristics of such patients in MMUH and whether glycaemic target was achieved. Over a one-week period (October 2017), 38 inpatients (mean age 59.9±4.9 years, 60.5% male) were listed on the IMR and data assessed. Mean glucose was taken as the daily average of five point-of-care (POCT) glucose readings. Clinically significant hypoglycaemia was defined as POCT glucose < 3 mmol/L. Data is presented as mean±SD. 18.4% had type 1 diabetes, 71.1% had type 2 diabetes (T2DM), 5.3% were steroid treated and 2.6% had cystic fibrosis related-diabetes. 84.2% were under medical care, 15.8% under surgical care and 18.4% under endocrinology care. Insulin prescriptions were 31.6% multiple daily injections, 42.1% twice-daily mixed insulin, 10.5% once-daily mixed insulin, 10.5% once-daily basal insulin and 5.3% on sliding-scale insulin only. 63% of T2DM patients were also on oral hypoglycaemic agents. Mean Hba1c was 68.5±21.7 mmol/mol. Mean POCT glucose was 9.7±3.2 mmol/L. For medical patients, the mean was 9.8±3.4 mmol/L, for surgical patients 9.3±1.8 mmol/L and for patients under endocrinology, 11.5±4.6 mmol/L (reflecting involvement in complex cases). Of 41 hypoglycaemia episodes, 29.3% were clinically significant. In our institution, insulin-treated inpatients are actively managed by the endocrinology service and glucose targets are being met. The IMR is a useful adjunct to care of the diabetes inpatient.

P59 Bolus 3% saline restores cognitive function more rapidly than traditional slow intravenous infusion of 3% saline in the emergency treatment of SIAD, with symptoms of cerebral irritation

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Acute hyponatraemia is a medical emergency with high mortality. Expert guidelines advocate treatment with intravenous boluses of 3% saline but there is a poor evidence base for this policy change. We retrospectively audited treatment of symptomatic hyponatraemia due to SIAD (n=57, age 22-76y) in Beaumont Hospital, comparing low dose (20ml/h) and bolus infusion of 3% saline.

	Bolus n=22	Continuous Infusion n=28	p
Baseline			
pNa (mmol/l, 133-145)	119 (108-124)	120 (114-125)	NS
GCS (3-15)	12 (8-14)	12 (5-14)	NS
Change pNa			
6h	6 (2-11)	3 (1-4)	**<0.0001**
24h	10 (6-13)	10 (6-12)	NS
Change GCS			
6h	3 (1-6)	1 (-2-2)	**<0.0001**
24h	3 (1-7)	3 (1-6)	NS
Treatment for overcorrection	5	0	0.008

Table: Results [expressed as median (min-max)]

Bolus 3% saline caused more rapid elevation of plasma sodium (pNa) at 6 hours, with a concomitant return of GCS to normal. Administration of a 3rd bolus was associated with greater need for dextrose/DDAVP to reverse overcorrection (OR 24; p=0.006). There were no cases of osmotic demyelination in either group. Four patients died; all in the infusion group (NS). Bolus 3% saline delivers faster elevation of pNa, with more effective restoration of GCS, without osmotic demyelination. Frequent electrolyte monitoring is required to prevent overcorrection.

P60 Utilisation of Gonadotrophin Releasing Hormone (GnRH) Aanalogue in Differentiating Ovarian Versus Adrenal Hyperandrogenism in Postmenopausal Women

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Postmenopausal hyperandrogenism is a relatively rare diagnosis resulting from excess androgen production from the adrenals or ovaries. The exclusion of malignant causes is a priority. Laboratory tests and imaging are utilised to help differentiate the source of excess androgens. We report two cases of postmenopausal hyperandrogenism in women aged 75 years and 67 years. Both cases presented with clinical features suggestive of hyperandrogenism which had developed gradually over the previous two years. Laboratory investigations confirmed a significant elevation in their serum testosterone levels. In both cases imaging did not reveal any abnormality of the adrenals or ovaries. To help differentiate an adrenal versus ovarian source a single dose GnRH analogue was given with measurement of testosterone and gonadotrophin levels pre and post. The reduction in gonadotrophins achieved by the GnRH analogue resulted in suppression of testosterone levels which suggested an ovarian source. Both patients proceeded to bilateral oophorectomy which was curative. Histology revealed a benign hilus cell tumour in one case and a benign Leydig cell tumour in the other. On further follow up for 2 years the patients remained free of hyperandrogenism features.

P61 A Retrospective Study of the Effectiveness of Switching to Ultra-Long Acting Insulin Analogues in Patients with Type 1 and Type 2 Diabetes

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The main objective of the study was to assess the clinical effectiveness of switching to insulin degludec (IDeg) and insulin glargine 300 units/ml (IGla300) from other types of basal insulin in patients with type 1 and type 2 diabetes under conditions of routine medical care. We identified 202 patients with type 1 and type 2 diabetes who were prescribed IDeg or IGla300. We retrospectively collected all relevant data using electronic notes and EPR system. Before the final analysis we excluded 43 patients who had vital data missing or were not on basal insulin before IDeg or IGla300 were commenced. In 143 patients (41 with type 1 diabetes) the indications for insulin change were: poor glucose control (N=102), severe lipohypertrophy, poor 24-hour coverage (N=11) or unspecified (N=30). After a median of 12 months, there was a significant improvement in glycaemic control (baseline HbA1c 79.6+/-1.8 vs follow-up HbA1c 74.2+/-1.9, p<0.001). The weight of the patients remained stable (baseline weight 89.8+/-2.6 vs follow-up weight 88.9+/-2.6, p=0.9). The total daily basal insulin dose reduced significantly (baseline basal insulin 45+/-3 vs follow-up basal insulin 37+/-3, p<0.001). Patients had a median of 5 visits for insulin titration during that period. In 16 patients, basal insulin was changed because of recurrent and/or severe hypoglycaemia. 9 patients (56%) experienced an improvement in frequency of hypoglycaemia. This study demonstrates that changing basal insulin to an ultra-long acting insulin analogue improves glycaemic control and may reduce the rate of hypoglycaemia.

P62 A novel CYP24A1 mutation – clinical and biochemical phenotypes

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Introduction: The active form of vitamin D is inactivated by 24-hydroxylase (CYP24A1). Inactivating mutations of CYP24A1 can lead to an accumulation of active vitamin D metabolites and consequently hypercalcaemia. Patient presentation is varied and includes mild-severe hypercalcaemia, hypercalciuria, nephrocalcinosis and nephrolithiasis. The aim of this study was to characterise the clinical and biochemical phenotypes in a family with monoallelic and biallelic mutations of CYP24A1 following identification of the proband with a novel compound heterozygous mutation of the CYP24A1 gene: c.1315C>T, p.R439C; c.823T>C, p.W275R. Methods: The proband and six family members underwent detailed clinical and biochemical evaluation. Laboratory measurements included serum calcium, parathyroid hormone (iPTH), vitamin D metabolites and spot urine calcium and creatinine. Results: The proband presented during pregnancy with vomiting and loose stool. She had routine laboratory tests which showed elevated adjusted calcium of 3.27 (URL in pregnancy 2.25) mmol/L, suppressed iPTH (<6ng/L), elevated 25(OH)D (264 (URL in pregnancy 55) nmol/L) and elevated 1,25(OH)D (293 (20-120) nmol/L). Ionised calcium was 1.55 (URL 1.25) mmol/L. The proband's brother had the same biallelic mutation with hypercalcaemia and hypervitaminosis D. Daughter and two nephews were heterozygous for c.1315C>T, p.R439C mutation, mother was heterozygous for c.823TC, p.W275R mutation and father was homozygous for c.1315C>T, p.R439C mutation. All were normocalcaemic with normal 25(OH)D. There was no history of nephrolithiasis. Conclusions: Interestingly, only patients with the novel c.1315C>T, p.R439C; c.823T>C, p.W275R mutations had elevated calcium and vitamin D metabolites while no family members had nephrolithiasis. This suggests that these mutations may be associated with a milder phenotype.

P63 Defining reference intervals for a serum Growth Differentiation Factor-15 (GDF-15) assay in a Caucasian population and its potential utility in Diabetic Kidney Disease (DKD)

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Background: Growth differentiation factor-15(GDF-15), a stress responsive cytokine, is a promising biomarker of renal functional decline in Diabetic Kidney Disease (DKD). This study aimed primarily to establish normative data and secondarily to evaluate the potential utility of GDF-15

in DKD using Roche Diagnostics electrochemiluminescence immunoassay (ECLIA) in an Irish Caucasian population. Methods: Following informed consent, 188 healthy volunteers and 128 participants with diabetes (72 with and 56 without DKD) were recruited to a cross-sectional study. Baseline demographics, anthropometric measurements and laboratory measurements were recorded. Blood for GDF-15 measurement was collected into plain specimen tubes kept at room temperature and processed (centrifugation, separation of serum, freezing at -80°C) within 1 hour of phlebotomy pending batch analyses. Reference intervals were determined using the 2.5th and 97.5th percentiles for serum GDF-15 concentration. Results: Of 188 healthy participants, 63 failed to meet study inclusion criteria. The reference interval for serum GDF-15 was 399ng/L (90% CI: 399-399)-1335ng/L(90% CI: 1152-1445). ROC curve analysis for DKD determined the AUC to be 0.931(95% CI: 0.893-0.959; P<0.001). The optimum GDF-15 cut-off for predicting DKD was >1136ng/L providing a diagnostic sensitivity and specificity of 94.4% and 79% respectively and positive likelihood ratio of 4.5:1(95% CI: 3.4-6.0). Conclusions: The reference interval for serum GDF-15 in a healthy Irish population using the Roche Diagnostics ECLIA was established and a preliminary determination of the potential of GDF-15 as a screening test for DKD was made. Further prospective validation with a larger DKD cohort will be required before the cut-off presented here is recommended for clinical use.

P64 A Case of Dapsone-Induced Methemoglobinemia and Chronic Hemolysis Causing Low Glycated Hemoglobin in a Patient with Diabetes Mellitus

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Glycated hemoglobin (HbA1c) is an important indicator of glycemic control in diabetes mellitus. There are number of situations, however, in which the HbA1c may not accurately reflect the true level of glycemia. We report the case of a 34-year-old male with a past history of Coeliac disease and Dermatitis Herpetiformis, the latter treated with Dapsone 100 mg once daily. He had Type 2 Diabetes for two years prior to presentation to our institution with osmotic symptoms and weight loss. Family history was positive for type 1 diabetes in his daughter and aunt. Body mass index was 23.3 kg/m^2. Despite hyperglycemic symptoms, in conjunction with elevated self-reported capillary glucose readings, his HbA1c (IFCC) was normal at 40 mmol/mol. Random blood glucose was elevated at 18 mmol/l. He was commenced on basal-bolus insulin. On follow up HBA1c had fallen to 34 mmol/mol. Glutamic acid decarboxylase (GAD) antibodies were not detected. Fructosamine was elevated at 401 μmol/L (205 – 285), hemoglobin was 14.1 g/dL (13.2 – 16.7), haptoglobin <0.24 g/L (0.7-16.7), reticulocytes 94 x 10^9/L (16-79), lactate dehydrogenase 260 U/L (135-250), bilirubin 10 μmol/L (0-21). Glucose-6-phosphate dehydrogenase screen was negative. A diagnosis of Dapsone-induced chronic hemolysis and methaemoglobinaemia was suspected. Dapsone-induced methemoglobinemia and chronic hemolysis, which may not be readily detectable on routine blood testing, can result in a falsely low HbA1c in patients with diabetes mellitus. Clinicians need to be aware of this and other situations where HbA1c is not a reliable indicator of glycemic control.

P65 Short-Term Outcomes of Radioactive Iodine Therapy (RIT) in patients with Hyperthyroidism

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Radioactive iodine therapy (RIT) is an effective treatment for hyperthyroidism. As short-term treatment effects can vary, a thyroid function test (TFT) 4 – 8 weeks after RIT is recommended. We aimed to assess short-term outcomes and adherence to TFT monitoring following RIT in patients attending Connolly Hospital. A retrospective review of charts and laboratory results of 63 patients receiving RIT between February 2014 and December 2017 was performed. 57 of 63 patients (90%) were taking anti-thyroid drugs prior to RIT. 15 patients (24%) were hyperthyroid (10 with FT4 > 30 pmol/L) and 48 (76%) were euthyroid prior to RIT. All patients had TFTs repeated at first visit post-RIT, but only 45 (71%) had TFTs within 4-8 weeks of RIT (Range: 1-60 weeks). 41 (65%) were euthyroid, 7 (11%) were hyperthyroid (mean FT4 63±31 pmol/L), and 15 (24%) were hypothyroid (mean TSH: 56±28 mIU/L) on first test post RIT; 6 of the hyperthyroid and 6 of the hypothyroid patients had their TFTs performed within 4-8 weeks of RIT. 3 of 48 patients who were euthyroid pre-RIT were hyperthyroid at first test post-RIT. One patient developed severe hyperthyroidism requiring hospital admission two weeks post-RIT. Overt hypo- or hyperthyroidism occurred in 35% of patients at first visit post RIT, and almost half of patients with overt thyroid disease did not attend for TFTs within 8 weeks of RIT. Optimization of the protocol for TFT monitoring post-RIT is required.

P66 A case of profound primary hypothyroidism in childhood causing a secondary hypopituitarism

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A 16 year old boy presented with lethargy, cold intolerance, postural dizziness and constipation. He was the second smallest in his class and was described as a poor eater. FT4 was <5pmol/L and TSH > 1000mIU/L and he was anaemic. He was born at 38 weeks uneventfully. Neonatal TSH was 2 mIU/L (normal). Growth charts demonstrated a decline in height and weight from the 50th c after 2 years. On examination he was 4' 11" and 35 Kg (both <3rd c).Blood pressure was 88/62.Thyroid examination, visual acuity and fields were normal. His voice was unbroken and he appeared under androgenised. Serum cortisol was satisfactory (447 nmol/L) and thyroxine 50 mcg/day was started (TPO antibodies negative and ultrasound normal). At three and eight weeks ft4 was 5.3 then 23.6 pmol/L while TSH dropped from 854 to 1.32mIU/L. Total cholesterol dropped from 7.1 to 2.5 mmol/L and liver function tests normalised. Pituitary profiles were also checked at three and eight weeks. Prolactin reduced from 948 to 225 mIU/L; testosterone (pm) increased from 4.9 to 14.2 nmol/L; IGF-1 increased from 12.4 to 32.3 nmol/L (20-71); GH was 3.2 and 2.0 ng/ml. A synacthen test at eight weeks was deemed satisfactory (218 at time =0 and 467 nmol/L at time =30minutes). Epiphyseal fusion was not demonstrated with left hand and wrist X rays and he was started on a trial of growth hormone treatment to improve final height. This is a rare case of profound primary hypothyroidism in childhood causing a secondary hypopituitarism.

P67 Vomiting and metabolic acidosis: mind the (delta) gap

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A 28-year-old awaiting outpatient oesophagogastroduodenoscopy to investigate recurrent vomiting, was admitted due to worsening symptoms. She had lost 10 kg in weight. She had a high anion gap metabolic acidosis (pH 7.19) with standard bicarbonate 11.7 mmol/L (reference range 21.0-28.0), β–hydroxybutyrate 5.9 mmol/L (<0.5), glucose 4.0 mmol/L (4.0-6.0), lactate 2.9 mmol/L (0.6-2.4), and mild acute kidney injury. She was admitted with presumed starvation ketoacidosis associated with vomiting, secondary to oesophagitis or gastro-oesophageal reflux disease. Treatment was with fluid resuscitation, intravenous 10% dextrose and anti-emetics. A lack of improvement lead to re-analysis of her initial investigations. The Δ anion gap / Δ bicarbonate was low at 0.92 (1.0-2.0). This suggested the combination of high- and normal-anion gap metabolic acidosis. There had been no significant diarrhoea. The serum sodium concentration fell to 121 mmol/L. There was a significant natriuresis with urinary sodium 139 mmol/L. Diuretics had not been administered, the acute kidney injury settled quickly and there was no suggestion of any intracranial pathology, so renal salt wasting seemed likely. Given that SIADH is a diagnosis of exclusion, assessment of the adrenal axis was mandatory. Serum cortisol was 28 nmol/L at 9am (166-507), and 30 nmol/L, 30 minutes post injection with 250 micrograms of tetracosactide (normal response is >450). Plasma adrenocorticotrophic hormone was markedly raised at 1140 ng/L (<46 ng/L). Anti-adrenal antibody testing was positive. A diagnosis of Addison's disease was made. She was commenced on corticosteroids and made a full recovery.

P68 Acromegaly in Ireland – clinical outcomes from the Irish Pituitary Study

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Acromegaly is a rare condition characterized by excessive Growth Hormone (GH) production. Due to the rarity of acromegaly, much of the data with regard to outcomes and treatment is based on registry studies. The aim of this study was to establish an acromegaly registry for patients with acromegaly in Ireland, initially including three centres; Beaumont Hospital, Cork University Hospital and St Vincent's Hospital. Written consent for inclusion was obtained from each patient. A chart, radiological and biochemical review was performed to identify the presentation, clinical features, diagnostic criteria and associated diseases. 183 patients (85 female) with acromegaly have been included in the registry to date. Mean age at diagnosis was higher in women than men at 45.1±26.1 vs. 39±27.7(p= <0.001). 72% had macroadenomas, of these patients 37.6% had cavernous sinus invasion. Co-morbidities were common with 26.8% of patients having diabetes mellitus and 56.8% hypertension at presentation. 75.3% of patients underwent surgical resection of the adenoma. 36.6% were taking somatostatin analogues, 21.4% dopamine agonists and 14.5% pegvisomant, at last follow up. 14.5% of the patients underwent radiotherapy, the majority underwent conventional fractionated radiotherapy. 31.4% of patients had discordant results at last follow up with a controlled of GH<2ug/l but an elevated IGF-1 (mean 1.19±0.8 above the upper limit of normal). These patients represent a cohort which there is no clear consensus regarding optimal management. This is the largest observational study to date in acromegaly in Ireland and provides initial insights into the management of acromegaly in Ireland.

P69 Adjunct GLP-1 receptor agonist use in patients with Type 1 Diabetes

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We sought to evaluate real world experience of adjunct GLP-1 receptor agonist (liraglutide) use in patients with Type 1 diabetes (T1D) within the St Vincent's University Hospital group in terms of weight, body mass index (BMI), glycosylated haemoglobin (HbA1c), total daily insulin dose (TDD), and adverse events. This retrospective audit used our dedicated diabetes database to identify patients with T1D on adjunct Liraglutide. The audit commenced in March 2018 and finished in April 2018. Fourteen patients were identified. Two brothers with monogenic diabetes were excluded. Eleven were female and one male; mean duration of diabetes was 21 years, mean age was 43.9 years, five were using insulin pump and 7 were treated with multiple dose insulin therapy. Eight had completed a DAFNE programme. Three were also on adjunct metformin therapy. Prior to starting liraglutide, mean BMI was 32.7 Kg/m^2, and mean HbA1c was 70 mmol/mol. Liraglutide was well tolerated within the cohort. No adverse events were seen. Average weight loss was 6.5kg; weight increased in 2 cases. Mean BMI reduced from 32.7 to 29.9 Kg/m^2; two had increased BMI. Mean reduction in HbA1c was 9.6 mmol/mol, but it increased in 5 patients. Mean reduction in TDD was 16.4 units. In conclusion, GLP-1 was well-tolerated in selected patients. Modest benefit of glycaemic control and weight loss were observed, but a subset of patients does not respond to this therapy. Discretionary use of GLP-1 in select cases may confer benefit in patients with T1D who are overweight.

P70 Circadian Rhythm Disturbance, as Indicated by Increased Night-Time Activity, is Associated with Higher BMI in Subjects with Type 2 Diabetes Mellitus

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The circadian rhythm synchronises various metabolic processes. Disruption to this rhythm has been shown to have deleterious metabolic consequences. Social jetlag (SJ) is a chronic form of circadian disruption, which affects a significant proportion of the population. SJ is the misalignment between the internal circadian clock and the external 'social' clock. Whether or not SJ also results in deleterious metabolic consequences needs to be determined. We performed a multilevel circadian and metabolic analysis on 31 subjects with T2DM and 27 age- and gender-matched controls. Continuous actigraphy (9.35 ±1 days) provided objective measurement of key variables that quantify the circadian rhythm. These include; L5, the average activity during the least active 5 hour period; M10, the average activity during the most active 10 hour period; and Amplitude, the difference between M10 and L5. Subjects with T2DM had an excess of SJ (0.96 hours vs 0.6 hours, p = 0.03) but actigraphy data revealed no differences in the key measurements of the circadian rhythm between T2DM subjects and controls. However, increased night-time activity (L5) was associated with higher BMI in subjects with T2DM (r = 0.499, p = 0.013) but not in controls. Subjects with T2DM had greater SJ than controls, and greater night-time activity on actigraphy was associated with a higher BMI in T2DM subjects. While directionality of these associations cannot be determined from these data,

we conclude that subjects with T2DM are more prone than control subjects to circadian disruption. This could have an adverse outcome on glycaemic control.

P71 An Audit of Acromegaly Management in a Single Centre: Endocrine Society Clinical Practice Guidelines (2014) Goals of Management as a Standard

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Acromegaly is a chronic disorder of growth hormone (GH) hypersecretion. Most recent Endocrine Society Clinical Practice Guidelines (2014) recommend targeting an "age-normalised" IGF1 value, and random GH of <1.0 μg/L aiming to reduce the considerable morbidity and mortality associated with the condition. We audited a cohort of patients attending a single centre for treatment of acromegaly to assess adherence to these treatment goals. Clinical notes and laboratory investigations were retrospectively reviewed. Forty-four patients with acromegaly were identified. Eight had transferred to other institutions; Four had died; Thirty-one remain in active follow-up. Notes were unavailable for the remaining patient. Nineteen patients have undergone at least one attempted surgical resection. Four have had radiotherapy in addition to surgery. Twelve are currently on no medical therapy. At the time of last measurement, nine (29%) patients achieved an "age-normalised" IGF1 value, and random GH levels <1.0 μg/L. Five (16%) achieved age-normalised IGF1 but had elevated GH (3.84 ± 2.61μg/L; mean±SD). Seven had GH levels <1.0 μg/L, but elevated IGF1 (1.44 ±0.26 xULN). Ten (23%) achieved neither target. Of these 10 patients, 2 were recently diagnosed, 1 is awaiting surgery, and 1 is being reassessed post radiotherapy. The remaining 6 are on medical therapy. Conclusion: A significant proportion of patients with acromegaly in our institution are not meeting accepted targets. These patients have been identified for early follow-up and decision-making regarding optimal follow-up.

P72 An Audit of Acromegaly Management in a Single Centre: Endocrine Society Clinical Practice Guidelines (2014) Guidance on Co-Morbidities as a Standard

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Acromegaly is a chronic disorder of Growth Hormone (GH) hypersecretion. The most recent Endocrine Society Clinical Practice Guidelines (2014) recommend evaluating all acromegalic patients for associated co-morbidities including hypertension (HTN), diabetes mellitus (DM), osteoarthritis (OA), and obstructive sleep apnoea (OSA). Colonoscopy is recommended at diagnosis to screen for occult neoplasia. All patients should be monitored for pituitary hormone deficiencies. We audited a cohort of patients attending a single centre for treatment of acromegaly to assess adherence to these guidelines, and to evaluate the burden of co-morbidities. Clinical notes and laboratory investigations were retrospectively reviewed. Forty-four patients with acromegaly were identified. Eight had transferred to other institutions; 4 had died; 31 remain in active follow-up and are included in this audit. Notes were unavailable for the remaining patient. Thirteen patients (42%) had HTN; 7 (23%) had DM; 6 (19%) had symptoms of OA, 2 of whom required arthroplasty; 5 (16%) had OSA. Documentation of OSA screening was absent from the records of 9 (29%) patients. Colonoscopy results were recorded in the notes of fifteen patients (48%), three of whom had tubular adenomas with dysplasia. Eleven were deficient in at least 1 anterior pituitary hormone; 4 were ACTH deficient, 7 had secondary hypothyroidism and 5 had hypogonadotropic hypogonadism. One had developed diabetes insipidus post-surgery. Patients with acromegaly in our institution have a significant burden of co-morbidities. Clear documentation of colonoscopy (although probably carried out) and OSA screening is incomplete. These patients have been identified for early follow-up and decision-making regarding optimal follow-up.

P73 Pneumocystis pneumonia occurring during the management of 2 cases of Cushing's Syndrome; a case for prophylaxis?

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Pneumocystis jirovecii pneumonia (PJP) is well recognised in HIV infected and transplant recipient populations and prophylaxis is standard practice. However PJP may also occur in rarer cases of immunodeficiency. We report 2 cases of Cushing's syndrome complicated by PJP. Patient 1 was a 30 year old Indian male who presented with 2 weeks of bloody diarrhoea, abdominal pain and lethargy. He was cushingoid and investigations showed severe hypercortisolism (urinary cortisol >266,786 nmol/24h) due to Cushing's disease. 48 hours after commencing metyrapone he developed type one respiratory failure and was admitted to intensive care. Laboratory results confirmed PJP, tuberculosis, cytomegalovirus, Influenza and streptococcal pneumonia. Following a life threatening illness, requiring prolonged antimicrobial therapy including cotrimoxazole, he was fit to proceed to pituitary surgery, and presently remains well. Patient 2 was a 59 year old man who presented with shortness of breath and peripheral oedema. CT imaging suggested adrenal adenocarcinoma with pulmonary and hepatic metastases. Urinary cortisol was 1357 nmol/24h and Cushing's syndrome was diagnosed. Mitotane was commenced however 10 days later he was diagnosed with PJP. Cotrimoxazole was later switched to clindamycin and primaquine because of a widespread skin rash. Although he recovered from PJP he died 3 months later. PJP occurs in Cushing's syndrome with severe hypercortisolism and typically after initiation of cortisol lowering therapy, implying an effect of immune reconstitution. The mortality rate is estimated to be 60-65%. PJP prophylaxis is not recommended in current guidelines. We propose that PJP prophylaxis should be considered in patients with severe hypercortisolism.

P74 An Illustrative Case of Craniofacial Fibrous Dysplasia

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We present a case of craniofacial fibrous dysplasia in a 20 year old male presenting with chronic right sided headache and facial swelling. Computerised tomography of the brain revealed fibrous dysplasia of right frontal, temporal and sphenoid bones. Nuclear medicine whole body scan showed no evidence of abnormal tracer activity elsewhere in the visualised skeleton. Bone turn over markers were elevated with P1NP (135.2ng/mL) and bone-specific alkaline phosphatase (30.9ug/L) but with normal serum adjusted calcium (2.37mmol/L) and phosphate (1.25mmol/L). There were no clinical or biochemical markers of associated endocrinopathies. Management has been with simple analgesia with recent consideration for bisphosphonates. Fibrous dysplasia is a sporadic genetic disease with prevalence of 1 in 30,000, presenting with bone deformity, pain or compressive symptoms arising from a missense mutation in the guanine nucleotide binding protein alpha stimulated activity

polypeptide 1 gene (*GNAS1)*. There is overproduction of fibrotic bone matrix and increased bone resorption most often affecting the craniofacial skeleton, long bones and ribs. Bisphosphonates are used to reduce pain and bone turnover markers. This case illustrates one end of the spectrum of this condition and challenges with management of symptomatic disease. Approximately 80% of cases are monostotic, typically presenting in the second or third decade of life, with craniofacial involvement in around 25%. Polyostotic cases may be a component of McCune-Albright Syndrome with associated endocrinopathies such as fibroblast growth factor 23 mediated hypophosphataemia, acromegaly, hypercortisolism, thyroid nodules, and precocious puberty. Active treatment with intravenous zoledronate is being explored for symptomatic management.

P75 An association study between Vitamin D (25OHD) levels and obesity in Ireland.

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The incidence of obesity has been increasing worldwide over the last three decades. Both vitamin D deficiency (VDD) and obesity are exceptionally common in Ireland. Vitamin D receptor (VDR) polymorphisms have been associated with obesity in other populations. In this study we aim to screen subjects for 25-hydroxyvitamin D (25OHD) level; evaluate its relationship with body mass index (BMI) and obesity; and to investigate the presence of TaqI (rs731236) genetic polymorphism in VDR gene. Serum 25OHD, total calcium, alkaline phosphatase, phosphate and lipids were analysed on the Abbott Architect ci8200. VDR TaqI gene variant in exon 9 (T/C) (rs731236) was determined using TaqMan® Assays. The software used for the statistical analysis was GraphPad Prism 5, Version 5.01. We analysed serum samples from 210 healthy adults (Irish Caucasians, age range, 29-65 years) for 25OHD. Significant negative correlation was found between BMI and 25OHD levels ($r^2 = 0.06$, $p = 0.0005$). 32 individuals were tested for presence of TaqI polymorphism in VDR gene. The adults with TC genotype had significantly ($p<0.0001$) high BMI (mean = 31±3.5 kg/m^2) in comparison to TT genotype (BMI: mean = 25±2.3 kg/m^2). Obesity is a growing problem in Ireland and may be one of the major factors in vitamin D "deficiency". We suggest that normal levels of 25OHD should take BMI into account. More extensive studies are needed to explain the relationship between high BMI and low 25OHD levels and to investigate whether TaqI VDR polymorphism plays a role in the prevalence of obesity in Ireland.

P76 Type-1 diabetes due to treatment with anti-programmed cell death-1 antibodies: a case report.

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Programmed cell death-1 inhibitors (anti-PD-1) have improved the prognosis for cancers, but are associated with endocrinopathies, most recently Type 1 Diabetes. Evidence for this association is limited to a small number of case reports, however. We highlight the case of a 52-year-old male, BMI 34 kg/m2, with a family history of Type 2 Diabetes, who presented with a one day history of nausea and vomiting. Blood results revealed severe diabetic ketoacidosis (pH 6.99, Glucose 41 mmol/l, HCO_3 5.3 mmol/L, serum ketones 4.9 mmol/L). He was treated according to protocol and required high insulin doses. Anti-glutamic acid decarboxylase and anti-islet cell antibodies were negative and anterior pituitary panel was normal. Fasting insulin (2.4 mU/l) and C-peptide (<0.01 ug/L) were low, HBA1c 67 mmol/mol. Past history included malignant melanoma (2014) which was surgically excised. When metastases were discovered (2017) Pembrolizumab was commenced. Random blood glucose level was normal (5.6 mmol/mol) three months prior. Primary hypothyroidism was diagnosed a few months into treatment on screening TFTs. 8 cases of diabetes occurring in association with anti-PD-1 have been reported in the literature, but only one case of DKA in association with Pembrolizumab monotherapy. PD-1 plays an important role in down-regulating T-cell inflammatory activity. PD-1 inhibitors inhibit this pathway, resulting in expansion of T cells, and potentially triggering an autoimmune response against pancreatic B-cells. This case should raise awareness of this potential anti-PD-1 side-effect. Considering the rapid onset, severity, and potential mortality of ketoacidosis, routine measurement of glucose is warranted in patients receiving anti-PD-1 drugs.

P77 Influenza vaccine uptake in patients with diabetes mellitus

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Patients with diabetes mellitus are at high risk for complications of influenza infection, even in the setting of good glycaemic control. The influenza vaccine is recommended yearly for all patients with type 1 and type 2 diabetes mellitus. We surveyed 75 consecutive patients anonymously in our diabetes clinic in February 2018. We asked whether they had received the influenza vaccine this year, whether they had been advised to get the vaccine, and which healthcare professional's advice would be most likely to influence them to obtain the vaccine. If they did not receive the vaccine we asked why. We received 68 valid responses. 46 of the total cohort had received the vaccine (68%). 26 of 43 males (60%) and 20 of 25 females (80%) received the vaccine. The healthcare professional most likely to have recommended the vaccine was the GP in 35 cases. Of the 22 patients who did not get the vaccine 12 (55%) reported a concern that the vaccine would make them unwell or give them influenza. 10 of this 22 also reported they would be most likely to be persuaded by their GP or practise nurse with only 7 reporting they would take the vaccine at the recommendation of their diabetes doctor or nurse. The overall uptake for the influenza vaccine was suboptimal at 68%. The primary care team may be more successful in advising patients to receive the vaccine, but our findings may also indicate more emphasis should be given to the influenza vaccine in diabetes clinics.

P78 Tumour-induced Osteomalacia: A Case Series

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Tumour induced osteomalacia (TIO) is a rare paraneoplastic condition with less than 400 reported cases in the literature. TIO results in an acquired form of renal phosphate wasting secondary to high levels of circulating fibroblast growth factor 23 (FGF23). The culprit lesion is typically a benign mesenchymal tumour, most commonly of mixed connective tissue origin, which secretes FGF23. Histology typically demonstrates low grade neoplasm with spindle and stellate cells, but characteristic alterations in the FN1 gene can be detected on fluorescent in situ

hybridisation if a biopsy sample is obtained. Surgical resection of this lesion can offer cure, but the localisation of the target lesion is often challenging and may prove the rate limiting step to surgical therapy. Bone scintigraphy and plain film imaging have poor specificity for this condition. MRI, FDG PET/CT and somatostatin imaging techniques can be used to localise the lesion. More recently, the use of gallium labelled somatostatin imaging techniques offers superior resolution to octreoscan, allowing the detection of smaller tumours, and thereby offering a surgical target and chance of cure from this debilitating condition. We describe three cases of TIO that illustrate the challenges of diagnosis, medical management, and tumour localisation. We also describe the bone and mineral changes in the immediate post-operative period following resection of the culprit lesion in one patient who underwent surgery following identification on Ga-DOTATOC PET/CT.

P79 A profile of referral sources and caseload mix of pituitary patients in a non-neurosurgical endocrinology centre

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Pituitary disorders are relatively rare, and it is recommended that all pituitary patients be referred to a tertiary centre to access specialist pituitary multidisciplinary care[1]. However as these patients present, for example with hyponatraemia, amenorrhoea and visual field disturbance, endocrinologists outside of specialist pituitary centres will encounter these patients in practice. We reviewed records of 135 pituitary patients attending SVUH diagnosis to assess the source of referral and case-mix in our unit. In 58/135(42.9%) of cases, it was not possible to identify the source of the original referral. Of the 77 patients(57%) of cases who had an identifiable referral source, the majority were referred from general practice(38/77), followed by other specialties within the hospital(21/77), other hospitals including Royal Victoria Eye & Ear (12/77), and a small number from other endocrine services(6/77). Hyperprolactinaemia (encompassing both micro- & macroprolactinoma, and idiopathic hyperprolactinaemia) was the most common referral (54/135, 40%).Non-functioning pituitary adenoma was the next most common (19/135), followed by congenital hypogonadotrophic hypogonadism 12/135 (8.9%). Acromegaly & Cushing's disease accounted for 11/135(8.1%) & 10/135(7.4%) respectively. While the more recently diagnosed of this cohort were generally referred on to a neurosurgical centre, a number of these patients were diagnosed and operated on in our institution historically, or referred back post operatively. Our study highlights that pituitary patients present to all endocrine centres from various sources; for optimum care it is important for endocrinologists to be comfortable with management of acute presentations & establish care pathways with surgical centres.

P80 Congenital Hypophosphatemia in Adults: Determinants of Bone Turnover Markers and Changes in Renal Phosphate Handling Following Total Parathyroidectomy

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Congenital hypophosphatemia (CH) is a collection of disorders that cause defective bone mineralisation manifesting with osteomalacia in adulthood. Bone turnover markers (BTMs) are surrogate measures of disease severity. We explored the utility of BTMs in 27 adults with CH: 23 had X-linked hypophosphatemia (XLH) of whom 2 were hypoparathyroid post total parathyroidectomy (PTx); 2 had autosomal dominant hypophosphatemic rickets (ADHR), and 2 had none of the known mutations. We measured the renal tubular maximum reabsorption rate of phosphate (TmP/GFR), fibroblast growth factor 23 (FGF23), parathyroid hormone (PTH), ionised calcium, 1,25-dihydroxyvitamin D [1,25$(OH)_2$D], and a panel of BTMs: serum bone-specific alkaline phosphatase (bone ALP), osteocalcin (Oc), and total procollagen type I amino-terminal propeptide (PINP), and carboxy-terminal telopeptide of type I collagen (CTX); and urine amino-terminal telopeptides of type I collagen (uNTX). After excluding 2 patients with XLH and PTx, the frequency of elevated BTMs abnormalities was: bone ALP (96%); CTX (72%); PINP (52%); uNTX (48%); Oc (28%). The strongest association with bone ALP was TmP/GFR. Those on phosphate supplements and alfacalcidiol had significant elevation in CTX. The 2 patients with XLH and PTx had normalization of TmP/GFR and near normalisation of BTMs despite marked elevation in FGF23. In conclusion, BTMs in our CH patients indicated that most have abnormalities consistent with osteomalacia and many have mild secondary hyperparathyroidism; and the primacy of PTH over FGF23 in renal phosphate handling is suggested by the 2 cases with XLH and PTx with normal TmP/GFR.

P81 Autosomal Recessive Osteopetrosis secondary to Carbonic Anhydrase II deficiency complicated by cranial diabetes insipidus and suprasellar mass

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A 48 year old female was referred to the metabolic bone clinic with a history of numerous fractures & maxillary osteomyelitis. Diffuse osteosclerosis, thickened facial and cranial bones, and calcification of the basal ganglia, internal capsule and caudate nucleus were noted on a prior CT, and the right maxilla had been eroded by a sclerotic bone-containing mass. A DEXA demonstrated Z score of +7.1 at the lumbar spine. Genetic analysis revealed a homozygous deletion/insertion mutation (c.[603_641delinsCACA]) on chromosome 8q21.2 confirming autosomal recessive osteopetrosis with renal tubular acidosis due to carbonic anhydrase II deficiency. She subsequently presented with polydipsia, polyuria, urine volume >3l/24hr, plasma sodium 152 mmol/l, plasma osmolality 317mOsm/kg and urine osmolality 122mOsm/kg. This resolved rapidly with oral dDAVP, confirming a diagnosis of cranial diabetes insipidus. Her anterior pituitary function was normal except for an elevated post fractionated prolactin 865 mU/L(75-381). MRI pituitary showed a 15mmx8mm enhancing suprasellar mass abutting the optic chiasm. Transphenoidal biopsy was unsuccessful due to sphenoid bone thickness but following representation with a new homonomous hemianopia and interval expansion on MRI, a craniotomy was performed. Biopsy showed gliosis and focal calcification engulfing pituitary tissue, but no evidence of neoplasm. Deactivating mutations in the gene encoding carbonic anhydrase II are associated with osteopetrosis, cerebral calcification (cortex and basal ganglia), renal tubular acidosis and developmental delay. There are a handful of reported cases of pituitary dysfunction in osteopetrosis, but to our knowledge this is the first case of diabetes insipidus associated with CAII deficiency reported in Ireland.

P82 A rare presentation of hypothyroidism in Cronkhite-Canada Syndrome

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We present a case of a 56 year old man who presented with diarrhoea, hyperpigmentation, onychodystrophy, alopecia, hypoalbuminaemia and peripheral oedema. There was a family history of coeliac disease and colon cancer. Laboratory investigations confirmed iron deficiency anaemia with negative coeliac serology. Biopsies during OGD and colonoscopy showed diffuse oedematous mucosa. Clinical features were in keeping with a diagnosis of Cronkhite-Canada syndrome. During his diagnostic evaluation he was diagnosed with severe hypothyroidism (TSH 160 mU/L, FT4 <5 pmol/l). He commenced treatment with levothyroxine 100 mcg with a good response. Cronkhite-Canada syndrome is a rare non-hereditary polyposis syndrome with ectodermal abnormalities and inflammatory changes within the gastrointerstinal tract with pan enteric polyposis. The estimated prevalence of 1 in 1,000,000. Many patients have a protein losing enteropathy due to the involvement of the small bowel. Management is focusssed on symptom control and supportive management with a primary goal of correcting fluid, electrolyte and protein imbalances with nutritional supplementation. Corticosteroids and other immunosuppressants are used to treat intestinal inflammation. The patient had a good response to treatment with prednisolone with resolution of gastrointestinal symptoms and ankle oedema. Associations between both benign and malignant thyroid conditions and polyposis syndromes are well recognised including Familial Adenomatous Polyposis, Cowden Syndrome, Gardner Syndrome, Peutz Jegher Syndrome, adenomatous polyposis coli and MUTYH (MutY Homolog gene) associated polyposis. However, to our knowledge there have been no previously reported cases of severe hypothyroidism presenting in Cronkhite-Canada syndrome. The patient awaits genetic assessment for further evaluation.

P83 Thyroid Assays can confuse, clinical acumen is required

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A 21 year old male diagnosed with hypothyroidism by his GP had aberrant thyroid function tests (TFTs), fT4 (16pmol/L) and TSH (30mIU/L). On commencement of Eltroxin, his fT4 initially rose and then returned to normal but TSH remaining elevated. Further thyroxine adjustment did not reduce TSH levels. Biochemical results and family history were not suggestive of TSH resistance or a TSHoma. Investigations for immunoassay interference started following discussions with the referring endocrinologist. TFTs initially analysed on the Abbott architect were reanalysed on the Roche E170 analyser but TSH remained elevated. Subsequent TSH dilution studies resulted in linear dilutions on both platforms. Antibody interference was not identified by either mode of investigation. Based on previous experience with Macro-TSH (mTSH) interference, PEG precipitation was performed to exclude mTSH. Patient serum was diluted 1:2 with 25% PEG to precipitate γ-fractions. The values of TSH in the supernatant and diluted sera were used for analysis based on the method of Hattori et al. The PEG-precipitable TSH (%), which represents the mTSH was calculated and found to be greater than 80% which is suggestive of mTSH in serum. This case highlights the difficulties associated with identifying immunoassay interference which sometimes requires a multifaceted approach. Clinical acumen is key to starting these investigations and close interaction between the clinical biochemistry laboratory and referring clinician is crucial to detecting antibody interference and preventing unnecessary patient treatment.

P84 The Development of a NeuroEndocrine Tumor Database for Improved Patient Care

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Clinical audit is an integral part of good patient care. Neuroendocrine Tumors (NETs), defined as epithelial neoplasms with predominant neuroendocrine differentiation, can arise in most organs of the body. They are rare neoplasms with an incidence of 0.2-2.5 cases per 100,000 population and a prevalence estimate of 35 cases per 100,000/year. They account for 0.5% of all cancers and 66% located in gastrointestinal tract. Endocrinologists are often involved with NETs management due to the hormone profile of the clinical disease. Therefore NET management is complex and usually involves multidisciplinary teams that also include oncologists, pathologists and radiologists. NETs are classified based on Grade and Differentiation, Clinical Syndrome or Tumor Site of Origin. Best practice international guidelines on the management of NETs exist both in the USA and Europe. The goal of this project was to integrate these international guidelines into a novel online NET patient database to ensure accurate audit and assessment of our NET patients to ensure optimum management per the latest recommendations. The online NET database that we have developed has detailed information with sections including Patient Demographics, Tumor Clinical Details, Pathology, Biochemistry , Imaging , Treatment and Follow-up, each containing 5-15 subsections depending on tumor location (e.g. thoracic, gastric, pancreatic etc) and subsequent guideline recommendations. Our developed database is fully Health Information and Quality Authority (HIQA) compliant and is only accessible within in the HSE intranet via bespoke login. To date it has comprehensively captured 43 NET patients whose cases have been reviewed and acted on.

P85 Is Exceptional Disease Control too Good to be True? - Revisiting a Diagnosis of Congenital Adrenal Hyperplasia

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The global incidence of Congenital Adrenal Hyperplasia (CAH), an autosomal recessive disorder caused by an enzyme defect of the steroidogenic pathway, is low (1: 10 000-16 000 live births). 95% of cases are caused by 21-hydroxylase gene mutation (CYP21A2). Genotyping is important in confirming the diagnosis or carrier state. Case: At four days old a female infant was diagnosed with salt wasting CAH following a history of poor feeding and a cyanotic episode. There was no evidence of virilisation. Her brother had CAH due to 21-OH deficiency with genetic confirmation. Basal 17-hydroxyprogesterone was 416nmol/L. She was immediately started on glucocorticoid and mineralocorticoid replacement. Throughout life she had exceptional disease control with persistently normal 17-hydroxyprogesterone despite a relatively low dose of steroid; Hydrocortisone 15mg total daily dose and Fludrocortisone 0.1mg daily and no adrenal crises. She underwent normal pubertal development, menarche at 13 years, regular menses and normal secondary sexual characteristics. Given this clinical picture and exceptional control the diagnosis was revisited. Short Synacthen Test was done after holding oral steroids which demonstrated basal 17 OHP 2.8 peaking at 5.1nmol/L at 60 minutes and normal cortisol response (basal 268nmol/L, peak 60 minutes 736nmol/L). She is off steroids for 1 year and remains well with normal biochemistry. She did not display signs of cortisol excess. Genetic testing

is awaited. This case highlights the importance of performing genotyping to confirm CAH despite a positive family history and biochemical evidence of disease. It also highlights that excellent disease control should prompt reconsideration of the diagnosis.

P86 Knowledge and Attitudes of Trainee Doctors in the Management of DKA and Compliance with current Protocol in a large University Teaching Hospital.

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Diabetic Ketoacidosis (DKA) is a diabetic emergency with associated morbidity and mortality. Current evidence supports a protocol-based approach to its management. Our survey was conducted in a tertiary university hospital, where patients with DKA are initially managed as part of unselected general medical take. Using diabetes consultation records, we identified 30 patients admitted with DKA to our hospital between October 2016 and October 2017. We audited adherence to the current DKA protocol. Concurrently, a survey was circulated to medical trainees to identify knowledge and attitudes towards DKA. Suboptimal compliance with DKA protocol was identified with respect to fluid resuscitation and adequate monitoring of potassium, with subsequent development of hypokalemia in eight patients. 33.33% of patients developed hypoglycaemia during intravenous insulin infusion, most commonly due to delayed cessation of fixed, weight-based doses of insulin infusion once ketonemia had resolved. 55 (29%) of medical trainees working in the hospital responded to our survey. 60% of respondents demonstrated poor knowledge of appropriate fluid resuscitation. 75% reported that checking potassium at the advised intervals was only achievable on wards where nursing staff perform phlebotomy. Only 45% of those surveyed recognized the need to switch to variable rate insulin when DKA resolved. Only 20% expressed confidence in performing the switch from IV to subcutaneous insulin. Fidelity to DKA protocols is often poor. We show that deviations mirror areas where physicians lack confidence. A multifactorial educational intervention has been proven to be effective at improving guideline compliance in DKA.

P87 A comparison of the glycaemic effects of dietary nitrate as whole salad leaves or beetroot juice in type 2 diabetes

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Observational studies have consistently demonstrated an inverse relationship between vegetable consumption and metabolic health as well as type 2 diabetes (T2DM) incidence/severity. Our group and others have reported broad clinical benefit of dietary nitrate (as beetroot juice; BRJ) in multiple populations. However, nitrate-rich BRJ has not proven beneficial in controlled trials among T2DM regarding blood pressure or glycaemia. We hypothesised that post prandial blood glucose levels would be blunted with consumption of nitrate-rich, salad leaves (as rocket) compared to BRJ. This was an acute, randomized, single-blind, controlled, crossover trial to assess the effect of nitrate-rich beetroot juice compared to nitrate-rich rocket. We recruited 7 subjects with T2DM (5 male; mean age=54y; mean BMI=31). In the morning on two separate occasions subjects underwent glucose tolerance testing and blood pressure monitoring in conjunction with either 70ml BRJ (6.45mmol nitrate) or 85g plain rocket leaves (6.58mmol nitrate). We compared changes in parameters between BRJ and rocket using paired t-tests. Post-prandial changes in blood glucose levels were lower in all 7 subjects following rocket compared to BRJ (+4.4mmol vs. +5.8mmol; p=0.0009). However, there were no differences regarding lipids or BP. This pilot study suggests that, in diabetics, the benefits of dietary nitrate may be best achieved with whole vegetables sources as opposed to juices.

P88 Diabetic Ketoacidosis with normal anion gap in a patient with Neobladder

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Diabetic Ketoacidosis is life threatening complication of diabetes. Non anion gap metabolic acidosis is less well known in diabetes than high anion gap metabolic acidosis. We report a case of 40-year-old gentleman who had background history of Spina bifida, neobladder- requiring self intermittent catheterization, recurrent urinary tract infections. He presented to emergency department with incidental finding of very high blood glucose. On questioning he complained of an ongoing history of nausea, vomiting and reduced appetite along with polyuria, polydipsia and he also described significant weight loss. His blood glucose was 38 mmol/l. Blood gas analysis showed hyperchloremic metabolic acidosis with with PH of 7.20, bicarbonate of 12 mmol/L, lactate 0.7 mmol/L, chloride 121 mmol/L and anion gap was 3 mEq/L. Blood ketones were 4.5mmol/L. No other cause of hyperchloremia was found. He was started on DKA regimen, his clinical status improved, and serum ketones normalised. Due to persistent hyperchloremic metabolic acidosis he was started on bicarbonate infusion and his metabolic acidosis resolved. Conclusion: It is very important for clinicians to be aware of the fact that DKA can present with normal anion gap. In patients presenting with DKA, but with a normal anion gap acidosis, clinicians should be vigilant and consider the possibility of other co-existing pathology leading to the normal anion gap acidosis.

P89 The efficacy and safety of sodium glucose co-transporter 2 inhibitor in patients with type 2 diabetes mellitus: a systematic review and meta-analysis

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Recent published meta-analyses on Sodium glucose co-transporter-2(SGLT2) inhibitor, compared SGLT2 inhibitor with placebo in the presence of other concomitant anti-hyperglycaemic agents, thereby, potentially attenuate its efficacy and safety effects. In this study, we assessed the efficacy and safety of SGLT2 inhibitor specifically in treatment-naïve patients with T2DM. According to PRISMA guidelines, eligible articles on phase 3 randomised controlled trials (RCTs) assessing the efficacy and safety of SGLT2 inhibitor in comparison with placebo in treatment-naïve T2DM patients were identified using PubMed, Cochrane Library and www.ClinicalTrials.gov databases. Specific outcomes of interest were: (1) reduction in HbA1c, fasting plasma glucose(FPG), 2-hour post-prandial glucose(2hPPG), and weight; (2) proportion of patients achieving HbA1c<7%; (3) changes in blood pressure and lipid profile; and (4) proportion of patients with urinary tract infection, genital infection, hypoglycaemia, pollakiuria, postural hypotension, dizziness, syncope, headache, adverse events related to volume depletion, bone fracture, ketoacidosis, death and discontinued due to any adverse events. Data were pooled using ten RCTs. Compared with placebo, SGLT2 inhibitor

was associated with a significant improvement in HbA1c (MD:-0.84%;95%CI:-0.99,-0.70; p<0.001), FPG(MD:-1.71mmol/l;95%CI:-2.00,-1.47;p<0.001), 2hPPG (MD:-3.39mmol/l;95%CI:-3.71,-3.06;p<0.001), weight (MD:-2.21kg; 95%CI:-2.68,-1.74; p<0.001), systolic blood pressure (MD:-3.79mmHg;95%CI:-4.85,-2.73;p<0.001), diastolic blood pressure (MD:-1.70mmHg;95%CI:-2.61,-0.79;p<0.001), HDL cholesterol (MD:5.92%; 95%CI:2.35,9.48; p=0.001) and triglyceride (MD:-5.61%; 95%CI:-10.48,-0.75;p=0.02). There was also a significantly higher proportion of those achieving HbA1c>7% with SGLT2 inhibitor (OR:4.01;95%CI:2.88,5.57;p<0.001). Despite a significant increase incidence of pollakiuria (OR:3.52;95%CI:1.37,8.99;p=0.009) and genital infections (OR:3.62;95%CI:2.02,6.49;p<0.001), there was no significant difference in drug discontinuation due to adverse events (OR:1.17;95%CI:0.66,2.08;p=0.59). In summary, SGLT2 inhibitor is efficacious and safe for treatment-naïve patient with T2DM.

P90 A survey of patient's perceptions and proposed uptake of a 'patient portal' in endocrine outpatients

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Background: Patient portals are online electronic medical record applications that allow patients to interact and communicate with their doctors. The uptake of this technology is on the NIECR roadmap. Aim of Study: To assess patient's perception and proposed uptake of patient portals in endocrine outpatients. Methods: Patients (n=75) attending three endocrine outpatient clinics were eligible to participate. After discussion at clinic, invited patients were contacted via e-mail to complete a confidential and anonymised online survey via 'survey monkey'. There were a total of 23 questions in the survey which included a mix of free text and categorical responses. The survey duration was over 6 months. Results: The survey response rate was 51/75 (68%), M33:F18. 46/51 (90%) had access to smart phones, 45/51 (88%) used the internet daily. 31/51 (60%) of respondents were aged between 18-45, 20/51 (40%) were aged ≥ 45 years. 50/51 (98%) reported they would use the technology if available. 47/51 (92%) felt engaging with a patient portal would enhance communication and understanding of their medical issues. Reported perceived applications of use included remote access and advice for test results and medical questions, arranging appointments, requesting prescriptions and health promotion. 90% of respondents said they would be content to access results even if abnormal. Possible barriers to adoption included data protection and understanding medical terminology. Conclusions: The overall response to the uptake of this technology was positive, although there were concerns regarding data protection. Perceived benefits included enhanced doctor-patient communication, optimizing workflow and improving patient engagement.

P91 An assessment of abnormal liver function tests in a cohort of unselected diabetic patients

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Prevalence of abnormal liver function tests (LFTs) in the general population is estimated at 8.1-9.8%. Abnormal LFTs are common in diabetes but few studies describe the prevalence. AST-to-platelet-ratio-index (APRI) and Fibrosis-4-score (FIB4) can be used to estimate degree of liver fibrosis. APRI score >1 has 76% sensitivity, 72% specificity for predicting cirrhosis. A score >0.7 has 77% sensitivity, 72% specificity for predicting significant fibrosis. A FIB4 score > 3.25 has 97% specificity and 65% positive predictive value for advanced fibrosis. A score <1.45 has 90% negative predictive value for advanced fibrosis. We retrospectively evaluated abnormal LFTs and calculated APRI and FIB4 scores for patients with diabetes attending a tertiary referral centre in the year 2016 using electronic records. Of 1777 patients, 1077 (60.6%) were male.1565 (88.1%) had Type 2 diabetes. 600 (33.76%) had at least one abnormal LFT. APRI and FIB4 scores could not be calculated in 734 (41.31%, unavailable platelet counts). Of the remaining 1043 (58.69%), 30 (2.88%) had an APRI score >0.7, 17 (1.63%) ≥1. 265 (25.41%) had a FIB4 ≥1.45 and <3.25, and 18 (1.73%) ≥3.25. This study demonstrates a high prevalence of raised LFTs in the diabetic population with ALT the most commonly raised LFT. A small but significant cohort of patients had APRI and FIB4 scores suggestive of cirrhosis and liver fibrosis. APRI and FIB-4 scores have potential as routine screening tools for liver disease in diabetes in conjunction with history and clinical examination, but require addition of platelet count to routinely measured blood tests.

P92 A Challenging Case of Hypoparathyroidism in Autoimmune Polyendocrine Syndrome Type 1

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Autoimmune polyendocrine syndrome type 1 (APS-1) is a rare monogenetic disorder of the Autoimmune Regulator (AIRE) gene, that affects between 1:9000 and 1:130000 people. It has a broad range of manifestations with hypoparathyroidism being the second most common. We present the case of a 19 year old woman who was diagnosed with APS-1 aged five with hypoparathyroidism and a genetic mutation for the AIRE gene. On transfer, she was taking 2.8g elemental calcium in the form of calcium carbonate and 9 mcg of one alpha after several admissions for hypocalcaemia in the preceding months. A diagnosis of pernicious anaemia was made and she was switched to calcium citrate which does not require stomach acid for absorption. Her serum calcium stabilised in normal range on a dose of 750mg elemental calcium and was discharged. However she required readmission six weeks later following further symptomatic hypocalcaemia which did not respond to treatment despite increases in her oral supplementation. Twenty-four hour urinary calcium returned a result of 1.25mmol which suggested non-compliance with medications or malabsorption, with a known history of small bowel bacterial overgrowth (SBO). Due to her admission being complicated by sepsis and external social pressures we initiated direct observation of her medications and empiric treatment for SBO simultaneously. Her serum calcium returned to normal range and repeat twenty-four hour urinary calcium one day later was 10.15mmol. While the cause of her hypocalcaemia is unclear, non-compliance is suspected and this case highlights the need for a multidisciplinary approach in these complex patients.

P93 Glucose measurement using point of care (POC) testing compared to central laboratory testing during the Oral Glucose Tolerance Test (OGTT)

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Introduction: The Oral Glucose Tolerance Test (OGTT) is poorly reproducible. Inadequate inhibition of glycolysis is a likely contributor. The objective was to assess point of care (POC) glucose analysis by comparing OGTT results obtained following WHO guidelines to those obtained using the ABL90FLEX® blood gas analyser (BGA), and the Accu-Chek®Inform II Glucometer to those obtained using the central laboratory. Methods: Following informed consent, 12 volunteers were recruited. All underwent an OGTT (8/12 twice) with venous and capillary blood for glucose measurement collected while fasting and 2h-post ingestion of 75g anhydrous-glucose. Venous blood was collected at each time point into the following blood collection tubes (BCT), fluoride-Oxlate (Fl-OX) immediately placed in an ice slurry and analysed within 30mins of phlebotomy (WHO recommended method), FL-Ox at RT and NaF-EDTA-Citrate (FC) and analysed as per standard laboratory practice. Table1: Glucose results using 4 different methods compared to the WHO recommended specifications.

Method	Fasting Plasma Glucose mmol/L Median (IQR)	Fasting Plasma Glucose mmol/L/(%) Median Difference	2h Plasma Glucose mmol/L Median (IQR)	2h Plasma Glucose mmol/L/(%) Median Difference
WHO	5.47 (0.62)	-	5.64 (2.40)	-
FL-OX	4.90 (0.60)	-0.57 (10.4)	5.15 (2.13)	-0.49 (8.7)
FC	5.45 (0.68)	-0.02 (0.4)	5.85 (1.80)	+0.21 (3.7)
BGA	5.25 (0.68)	-0.22 (4.3)	5.80 (1.83)	+0.16 (2.8)
Glucometer	5.50 (0.75)	+0.03 (5.5)	5.90 (1.58)	+0.26 (4.6)

Total allowable error analytical goal for plasma glucose <5.5%

Conclusion: The FC or BGA methods demonstrate good agreement with the WHO recommended method.

P94 Maintaining glucose integrity ex-vivo: Comparison of Citrate-Fluoride-Oxalate with Fluoride-Oxalate additives to stabilize plasma glucose.

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Introduction: Implementing recommended pre-analytical standards to ensure the quality of glucose results that minimize the potential for misdiagnosis and mismanagement of patients cannot be overstated. The Clinical Biochemistry Laboratory at Galway University Hospital supports a large demographic area. Prolonged delays to receipt of samples for glucose measurement are not uncommon. The study objective was to assess the stability of glucose in two different blood collection tubes (BCT), fluoride-oxalate (Fl-Ox) and citrate-fluoride-oxalate (FC-Mix) stored at room temperature (RT) and 4^0C over 8.5 days. Methods: Venous blood samples were collected from 9 participants into 9 Fl-OX BCT, (immediately placed in an ice slurry and analysed within 30mins of phlebotomy (WHO recommended method)), 9x 25Fl-Ox and 9x 25FC-Mix BCT stored at 4°C or RT as per standard practice. Glucose was measured using the hexokinase assay on the Cobas® 8000 platform at baseline and every 24h for 5 days followed by every 12h for a further 3.5 days. A glucose difference of ≤0.26 mmol/L from results determined using the WHO method was analytically insignificant. Results: Volunteer plasma glucose concentrations ranged from 5.39-33.4mmol/L. Glucose decreased by >0.26 mmol/L in blood collected into Fl-OX and stored at either 4°C/RT within 24h of phlebotomy. The FC-Mix BCT maintained glucose within 0.20mmol/L over 8.5 days when compared to the WHO recommended method. Conclusion: Glucose in FC-Mix BCT stored at 4°C/RT demonstrated the best agreement to results determined using the WHO specifications. These findings suggest that the FC-Mix BCT effectively inhibit glycolysis and should be in routine use.

P95 Polyarthritis and relapsing Panniculitis in a case of on Occult Primary Pancreatic Neuroendocrine Tumour

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Pancreatic panniculitis (PP), first described by Chiari in 1883, is characterised by subcutaneous fat necrosis and can occur in 2-3% of patients with pancreatitis or other pancreatic conditions (e.g. pancreatic neuroendocrine tumours). Patients with PP usually present with erythematous, tender, subcutaneous nodules on the lower limbs with propensity for ulceration. It is possible for a rare triad of pancreatitis, panniculitis, and polyarthritis (often referred to as "PPP syndrome") to occur. The exact pathogenesis in unknown, but is thought to result from direct secretion of pancreatic enzymes to the bloodstream leading to systemic fat necrosis, particularly in subcutaneous fat tissue, bones, and joints. We present the unique case of a 69 year-old male, referred for investigation of weight loss and anaemia with pancreatic panniculitis (biopsy confirmed) on both shins and polyarthritis, who was found to have 2 large hepatic metastases from an unidentified primary. The pathology on histology was a well differentiated neuroendocrine tumour with a Ki-67 index of 20%. He had an excellent response to neoadjuvant etoposide and carboplatin, and subsequently underwent successful right hepatectomy and wedge resection of all measurable disease. Panniculitis and polyarthritis also subsided post treatment of liver disease and maintenance therapy with subcutaneous somatostatin analogues. On surveillance imaging 3 years later, a pancreatic primary became radiologically apparent, with concurrent re-emergence of panniculitis. The patient developed multiple new hepatic metastases (Ki-67 index of 50% on biopsy), which again responded excellently to etoposide and carboplatin. Again, panniculitis resolved with treatment. He remains stable on NET surveillance.

P96 Changes in sCD163 Following Roux-en-Y Gastric Bypass (RYGB) in Obese Diabetic Patients

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Background: Obesity is a chronic inflammatory condition and is a major risk factor for Type 2 Diabetes Mellitus (T2DM). Soluble CD163 (sCD163) is a marker of macrophage activation, the immunological component that is

integral in the development of insulin resistance associated with obesity. Roux-en-Y Gastric Bypass (RYGB) is a proven intervention to achieve significant sustained weight loss. The aim of this study was to investigate the relationship of sCD163 with weight and HbA1c parameters in the context of RYGB. Methods: Twenty-one obese diabetic patients (57% females) who had RYGB operation were followed up for 52 weeks. Anthropometric parameters were assessed pre- and post-op. Serum sCD163 were measured using enzyme-linked immunosorbent assays (ELISA). Results: All were on anti-diabetic medications pre-RYGB. Baseline age (mean±SD) was 54.39 ±7.15 years, Body Mass Index (BMI) was 42.30±4.60 kg/m^2, HbA1c was 61.57±21.61 mmol/mol and sCD163 was 76460.64±18538.32 pg/ml. Post-operatively, BMI reduced to 29.7±4.71 kg/m^2 post-RYGB ($p<0.001$), HbA1c to 42.43 ±15.20 mmol/mol ($p<0.001$) and sCD163 to 63514.23 ±19179.44 pg/ml ($p<0.001$) . Only 23% of participants were still on anti-diabetic medications at 52 weeks. Higher levels of sCD163 correlates with higher HbA1c pre-operatively (r=0.45, $p=0.04$) but not with BMI. Post-operative reduction in sCD163 showed weak correlation with the changes in HbA1c (r=0.24, $p=0.42$) and no correlation with BMI (r=0.15, $p=0.52$). Conclusion: Significant improvement in sCD163 following RYGB in obese T2DM patients correlates weakly with changes in weight and HbA1c. This suggests that the mechanism of weight loss and diabetes improvement after RYGB may involve immunological and not anatomical changes alone.

P97 Permanent Hypoparathyroidism in an Irish Patient Population: An audit of Adherence with ESE Guidelines

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Treatment of hypoparathyroidism represents a significant therapeutic challenge: calcium supplementation in the absence of PTH's anti-calciuric effect may produce hypercalciuria which can give rise to nephrocalcinosis, renal calculi and renal impairment. It is therefore recommended that serial serum Ca^{2+} and urine excretion rates are monitored to tailor therapy and maintain serum Ca^{2+} at the lowest asymptomatic level. A database of all patients with permanent hypoparathyroidism attending SVUH was created containing patients' most recent serum Ca^{2+} and urinary Ca^{2+} excretion measurements (24hr urine collection or calcium creatinine ratio). These results were then compared to the ESE Guidelines on Hypoparathyroidism. A total of 32 patients were identified; 72% were females with a mean age of 47. 57% of patients were found to have an ionised Ca^{2+} above the recommended limit of 1.15mmol/L (1.17 +/- 0.12). 58% were found to have hypercalciuria either on 24hr collection or Ca^{2+}/Cr ratio. Due to a lack of sex specific reference ranges for 24hr collections, two women were incorrectly labelled as having normal calcium excretion. 30% of patients did not have urine calcium excretion measurements within the past 2 years as is recommended. This audit highlights the need for strict monitoring of urine Ca^{2+} excretion in addition to serum Ca^{2+} levels to tailor supplemental therapy and reduce the risk of complications associated with hypercalciuria.

P98 A rare case of isolated adrenal Post Transplant Lymphoproliferative Disorder (PTLD) of classic Hogdkin's Lymphoma subtype

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We describe a rare case of PTLD isolated to the adrenal gland. To our knowledge, this is the first case of classic Hodgkin's lymphoma (cHL) of PTLD subtype isolated to the adrenal gland. PTLD is a life-threatening complication of Haematopoietic Stem Cell Transplant (HSCT) and solid organ transplant. A 59 year old man developed a right adrenal mass 9 months following HSCT with a sibling allogeneic HLA matched donor for intermediate risk Acute Myeloid Leukaemia using Slavin protocol. Post-transplant course was complicated by thrombocytopenia and skin graft versus host disease (GVHD). Immunosuppression regimen included Tacrolimus 0.5mg daily and Prednisolone 10mg. Rituximab was included for EBV reactivation. Rising EBV levels prompted imaging which showed a rapidly growing solitary adrenal lesion which was highly metabolically active on PET. Following adrenalectomy, pathology was consistent with cHL. To date he has received 4 cycles of brentuximab/vedotin consolidation therapy and PET CT has been negative for disease after the third cycle. Primary adrenal lymphoma is a very rare disease and in the vast majority of cases comprises non-Hodgkin's lymphoma. The disease is often bilateral and causes adrenal insufficiency. Classic HL is a very rare subtype of PTLD and adrenal involvement itself is rare in the PTLD setting with only two cases described followed HSCT.Immune dysfunction and reactivation of EBV have been postulated to play a role in genesis of primary adrenal lymphomas.

P99 Screening for Diabetes in High Risk Patients – Which Tests?

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The oral glucose tolerance test (oGTT) is the gold standard test for diagnosis of diabetes and pre-diabetes. Recently, glycated haemoglobin (HbA1c) has also been approved as a diagnostic test. Optimal test selection, to reliably and economically diagnose diabetes/pre-diabetes, is contentious. In the U.K., the NICE guideline for type 2 diabetes identification, recommends using fasting plasma glucose or HbA1c or oGTT. Previously, we had retrospectively looked at concordance between these diagnostic tests in samples analysed at our laboratory over a 2 year period 2010/2012 (derivation study). Based on that data we proposed an algorithm of tests for diagnosis of diabetes/pre-diabetes, in non-acute patients at increased risk of diabetes. We hypothesized that a twotest method - both HbA1c and fasting plasma glucose initially, proceeding to oGTT only where screening suggested pre-diabetes, would result in a low number of false negatives and limit requirement for OGTTs. In our two year derivation cohort, this algorithm had sensitivity of 99% for diagnosis of diabetes and specificity for diabetes/pre-diabetes of 90%. If every patient had had an oral glucose tolerance test, 2 patients classified as normoglycaemic by this algorithm would have been found to have diabetes, and 25 patients would have been found to have impaired glucose tolerance. In our verification cohort, the single test screening recommended in the U.K. NICE guidelines would have given a lower sensitivity for diagnosis of diabetes – 84% for HbA1c (cutoff: HbA1c≥42 mmol/mol) and 87% for fasting plasma glucose (cutoff: Glu≥5.5 mmol/L), compared to 95% for our protocol.

P100 A Challenging case of Hyponatraemia in Pregnancy

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Hyponatraemia is challenging to manage during pregnancy. We report the case of a 31 year old nulliparous female with serum sodium 131mmol/L prior to pregnancy. Between 8-12 weeks she was admitted on two occasions with Hyperemesis Gravidarum. Sodium levels dropped at 8 weeks reaching a nadir of 120mmol/L although the patient was asymptomatic. She was taking Folic acid 5mg and Cyclizine 50mg. Investigations revealed a 9am cortisol of 238nmol/L rising to 882nmol/L 30minutes post Synacthen, Free T4 17.0pmol/L, TSH 1.17mU/L, Serum OSM 247mOSM/kg, Urinary OSM 607mOSM/kg, Urinary Sodium 96mmol/L. Lipids and Blood Glucose were normal. Management was limited and consisted of fluid restriction initially with the addition of slow sodium

tablets. Outpatient follow-up showed no significant improvement throughout pregnancy (maximum sodium 126mmol/L). Spontaneous delivery occurred at 35 weeks gestation with no obvious complications. She delivered a healthy male weighing 2640grams. The infant's sodium was normal at 142mmol/L. Follow up of mothers sodium three weeks post-delivery showed spontaneous improvement to 132mmol/L. In a normal pregnancy, the average plasma-osmolality decreases by 5-10 mOsmol/kg and the sodium concentration decreases by 5mmol/L. It is thought that normal pregnancy 'resets' the osmotic set point for Anti Diuretic Hormone (ADH) release which causes serum sodium and osmolality to decrease. Serum osmolality reduces early in pregnancy around 8-10weeks and reaches a nadir that is maintained until the end of pregnancy. This case highlights a deterioration in serum sodium during pregnancy in a chronically hyponatraemic patient. Treatment options are largely supportive throughout pregnancy if the patient is asymptomatic.

P101 Comparison of Nocturnal Salivary Cortisol Measurement using the Roche Generation II and IBL ELISA Assays to screen for Cushing's Syndrome

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We previously reported that nocturnal (11pm) salivary cortisol (NSC), measured using the IBL ELISA kit, was highly discriminative in identifying patients with Cushing's Syndrome (CS). However, the labour intensity of the test, and the need for batch analysis of samples, limits its use in the routine screening for CS. In contrast to the IBL assay, Roche provide an automated Electrochemiluminescence Immunoassay for salivary cortisol which is less labour intensive and offers the potential of a more rapid turnaround time. The aim of this project was to compare the automated Roche assay with the IBL assay. Nocturnal salivary samples were obtained from 52 patients undergoing investigation for CS (8 CS+, 44 CS-). Cortisol was measured in each sample using the Roche and IBL assays and to correlate results and determine an optimal cut-off for the Roche assay. Between batch imprecision for the Roche assay was 8.7% for a level of 11.5 and 5% for 29.2 nmol/L. Within batch imprecision <1.95% at levels of 8.0 and 26.7 nmol/L. Correlation between Roche and IBL assays r^2-0.933. On ROC curve analysis (Roche), area under curve was 0.956 ($p < 0.001$) with an optimal cut-off of 7.0nmol/L to identify CS (sensitivity 100%, specificity 93.2%). This is close to cut-off values provided by Roche of <7.56nmol/L and <11.3nmol/L, 95th and 97.5th percentiles respectively. In conclusion, the Roche automated assay meets performance requirements and we plan to introduce it into routine screening for Cushing's Syndrome. Further evaluation of the diagnostic characteristics of the assay will also be assessed.

P102 Boarfish (*Capros Aper*) and Atlantic Salmon (*salmo salar*) protein hydrolysates contain bioactivities that modulate food intake in mice

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Fish proteins could be a potential source of functional food components that could have beneficial metabolic effects on appetite and body weight. Protein hydrolysates generated by food grade enzymes Alcalase/Flavourzyme on boarfish and salmon muscle trimmings, or Pepsin/Corolase on salmon skin gelatine, were investigated for their satiating effects in HsdOla:TO adult male mice (8-14 week old) trained to eat for 3 h per day. Groups of mice (n=8) were trained to eat for a period of 3 h per day (10.00 h to 13.00 h) following a gradual reduction in food intake from 24 h, 10 h and 6 h over a 3 week run in period. Prior to food presentation in trained mice (at 10.00 h), protein hydrolysates (50 – 100 mg/kg body weight) dissolved in 0.9% saline was administered by oral gavage. Subsequently food intake was weighed at 30 min intervals up to 180 min. Food intake was compared to control mice given physiological saline and results were assessed for significance using ANOVA between groups. Boarfish protein hydrolysates at 50 and 100 mg/kg/bw failed to reduce food intake versus controls. Salmon skin collagen hydrolysates promoted a reduction in food intake at 90 min only ($p<0.05$) at a dose 50 mg/kg/bw, whereas at 100 mg/kg/bw the reduction was retained from 90 to 180 min ($p<0.05$). The salmon muscle trimmings hydrolysate however evoked a potent reduction in food intake from 30 min ($p<0.05$) up to 180 min ($p<0.01$ – $p<0.001$) at both 50 and 100 mg/kg/bw, resulted in an overall 30% reduction in food intake at 180 min versus the saline control group. In conclusion, this study has shown that both the source of fish protein, as well as the hydrolysis enzymes, can affect the bioactivity of this potential functional food component that could be used for weight management.

P103 Trimester specific reference ranges for thyroid function tests using new Roche Cobas E analyser and effects of iodine status

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The American Thyroid Association recommends that local population and trimester specific reference ranges be established in those without thyroid disease or thyroperoxidase (TPO) antibodies and with optimal iodine intake. We previously demonstrated mild iodine deficiency in a cohort of pregnant women in N Ireland with low urinary iodine concentration (UIC) and iodine creatinine ratio (ICr) and corresponding high thyroglobulin (Tg) across all trimesters. We wished to establish local reference ranges using the current Roche Cobas E immunoassay analyser and assess for any impact of iodine status in this same cohort. Those with thyroid disease and TPO Abs were excluded. Samples were drawn from 210, 116 and 130 women in 1st, 2nd and 3rd trimesters respectively. Mean free thyroxine levels were 15.1, 13.1 and 12.3 pmol/L and 95%CI ref ranges were 11.5-18.7; 10.2-16.0 and 9.5-15.1pmol/L respectively ($p<0.05$). Corresponding TSH ref ranges were 0.1-4.1, 0.6–3.9 and 0.7–4.3mIU/L ($p<0.05$). These compare to our quoted non-pregnant reference ranges of fT4 (12-22 pmol/L) and TSH (0.27-4.2 mIU/L). There was no significant difference in TSH or fT4 between those with a UIC above and below 150μg/L (cutoff for iodine sufficiency in pregnancy). FreeT4 was marginally higher in those with ICr <150 μg/g creatinine but only in the 1st trimester (15.3±1.9 vs 14.8 ±1.7,$p=0.03$). TSH was lower in those with Tg ≥10 μg/L in all trimesters (1st:1.3 vs1.7; 2nd: 1.7 vs 2.2; 3rd: 1.7 vs 2.3 mIU/L) ($p<0.05$). These results were unexpected and of uncertain significance but may reflect a compensatory mechanism in those with mild chronic iodine deficiency.

P104 Differentiated Thyroid Cancer in 512 Consecutive Patients Attending a Single Centre: Risk-Stratification, Therapeutic Strategy and Response

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Histopathologic classification of differentiated thyroid cancer (DTC) informs staging, risk-stratification and therapeutic strategy. Current best practice includes application of the 2015 American-Thyroid-Association (ATA-2015) Risk-Stratification-System and dynamic assessment of response years-1 and -5 post-treatment. This study addressed: - Therapeutic strategy based on guidelines available at year of diagnosis; therapeutic response following retrospective application of ATA-2015 criteria for risk stratification and therapeutic response and finally patient status. Treatment choice and therapeutic response were evaluated in 512 DTC patients (diagnosed 2006-2016). Risk stratification was based on clinicopathologic features using ATA-2015 criteria. Response to RAI and total thyroidectomy was classified as biochemical+structural complete response (excellent response), biochemical incomplete response BIR), structural incomplete response (SIR) and indeterminate response. For patients who were treated with Radioactive Iodine (RAI), year-1 TSH-stimulated thyroglobulin (Tg) was assessed, followed by unstimulated Tg and neck imaging annually for 5yrs. For those who had undergone thyroidectomy only, unstimulated TG and neck imaging were assessed annually for 5 years. 75.8% of patients were designated low-risk, 12.6% intermediate-risk and 11.7% high-risk. 36.8% received RAI. At year-1, 51% achieved excellent response; 20% BIR; 13% SIR; 16% indeterminate response. At year-5, 72% achieved excellent response; 15% BIR; 13% SIR. 98.1% were alive at final analysis. In summary, retrospective application of ATA-2015 guidelines demonstrated 76% of DTC patients to be low risk with a similar proportion having an excellent response to therapy. A greater proportion received RAI than would be indicated by ATA-2015 guidelines. Although 28% had evidence of active disease 5 years post-treatment, mortality rates were similar to the background population.

P105 Thyroid cancer in Ireland: The experience of Irish tertiary referral centre over a ten-year period

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The histopathologic classification informs staging, risk-stratification, treatment choice of thyroid cancer. This study set out to set out to review: Patient demographics including age, sex and ethnicity; Histological subtypes of DTC recorded over a 10-year period and temporal trends, if any of each subtype over the 10-year period. Patients who underwent thyroidectomy for thyroid cancer over a 10-year period (2005-2016) at a tertiary hospital were identified. 612 histology reports were reviewed and classified into papillary thyroid cancer (PTC), follicular, medullary and anaplastic subtypes as well as subtypes associated with higher risk (tall cell, diffuse sclerosing as the WHO classification guidelines. Patient samples collected with disease recurrence or non-primary tumours were excluded from the dataset. The incidence of each histological sub-type was examined on a year-to-year basis. The cohort was primarily female (70.4%, 29.6% male) and of Irish ethnicity with a significant ethnic cohort from Eastern Europe. 612 thyroid cancers were identified. Each variant was represented as follows: 525/612 (86%) papillary, 48/612 (8%) follicular, 18/612 (3%) anaplastic, 14/612 (2.3%) medullary and 5/612 (0.8%) poorly differentiated variant. Within the papillary subtype, there were 7 variants – papillary (144/525, 27%), follicular (163/525, 31%), multiple histological subtypes per thyroid (76/525, 14%), tall cell (12/525, 2.2%), solid (7/525, 1.3%), diffuse sclerosing (4/525, 0.76%) and hurthle cell (1/525, 0.2%). The absolute annual numbers increased from 28 in 2005 to 81 in 2016. The relative change in the reported histological subtypes in later years could be influenced in part by the change in the patient population ethnicity.

P106 Obstructive Sleep Apnoea in a Bariatric Population

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Obesity is associated with multiple medical co-morbidities, including sleep disordered breathing such as obstructive sleep apnoea (OSA) and obesity hypoventilation syndrome (OHS). Timely access to sleep assessment is limited, and patients are often referred only if they are symptomatic, despite the known causal link between body mass index (BMI) and OSA[1]. Data on the prevalence of OSA and OHS at the extreme end of obesity is limited. We investigate the prevalence of sleep disordered breathing in all-comers to an Irish ambulatory weight management service. Methods:We referred 56 patients from the St. Columcille's weight management service for ambulatory sleep studies, regardless of symptoms. Results: The mean BMI in this group was 52.9 kg/m2. There was an overall OSA prevalence of 90.9%, with 77.4% of patients commenced on positive airway pressure (CPAP). Within BMI groups, there was an increasing OSA prevalence, at 92.6% in the BMI 50-60 kg/m2, and 100% in the BMI >60 kg/m2. CPAP was commenced in 80% and 100% of these groups, respectively. 45% of patients with BMI >60 kg/m2 has concomitant OHS. Conclusions:This data suggests that the prevalence of OSA is much higher than reported in the BMI >50 kg/m2 population, without an increase in symptomatology, and that possibly this criterion alone should indicate referral for a sleep assessment.

P107 Real World Experience of Denosumab in a Regional Osteoporosis Service

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Osteoporosis is a significant global health and economic burden with increased risk of bone fracture, morbidity and mortality. Denosumab, a novel monoclonal antibody, inhibits osteoclast-mediated bone resorption and increases bone mineral density (BMD), with reductions in vertebral, non-vertebral and hip fracture risk. We undertook a retrospective audit of the clinical outcomes of patients with osteoporosis treated with Denosumab in a regional osteoporosis service. We identified 529 patients (95% female; mean age 72.8 years; 35-98 years), who had at least one dose of Denosumab administered for the treatment of osteoporosis. The mean number of Denosumab doses administered was 4.9 (range: 1 to 12). At the time of analysis 330/529 patients had completed a pre- and post-treatment DXA. The mean observed BMD change at around 18 months at the lumbar spine was +8.2% and at the hip was +3.8%. While a majority have transitioned to shared care administration of treatment within primary care (53.1%), 19.7% continue to attend hospital clinics to receive treatment. During follow-up, there were 66 deaths (12.5%). The remaining 14.7% switched to an alternative treatment or were discharged. This audit demonstrates the clinical effectiveness of Denosumab in improving bone mineral density in a real life setting in an ageing, co-morbid population. There has been recent progress with uptake of shared care administration in primary care. As part of a quality improvement programme we have recently developed a dedicated Denosumab database and day-case treatment clinic for those remaining under hospital follow up.

P108 Metformin use and its association with Vitamin B12 deficiency

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Metformin is the recommended first line drug in the treatment of type 2 diabetes mellitus and often implicated in causing vitamin B12 deficiency with chronic use. This is a retrospective study assessing the prevalence of hypovitaminosis in 75 patients with type 1 and type 2 diabetes on

metformin and the relationship between the dose of metformin, duration of treatment and vitamin B12 concentrations. Results show that 10.6% of subjects had serum B12 concentrations fall below the reference range during the treatment period. Notably however, there is a significant reduction in vitamin B12 concentration level in 70% of the subjects, albeit not below the reference rate and this was positively correlated with dose and duration of metformin use. It is important for clinicans to monitor B12 concentration in this cohort. This is in stark contrast with the "Glucophage" patient information leaflet which describes the incidence of this "rare side effect" to be 1:10,000.

P109 Diabetic ketoacidosis at Tallaght Hospital – investigating the safety and effectiveness of the introduction of new guidelines, 2012 to 2017

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Introduction: A new ketone-driven protocol for the management of diabetic ketoacidosis (DKA) was introduced in Tallaght Hospital in 2014. Retrospective audits were performed yearly, before and after the introduction of the new guideline. We present a comparison of the data from before the introduction (2012-13), with three annual periods after the introduction (2015, 2016, and 2017). Methods: The audits included all patients discharged with a primary diagnosis of DKA (from HIPE coding). Information was collated on a standard proforma and analysis was carried out using Microsoft Excel. Results: Demographic data was fairly stable, with an increasing average age (35 in 2012 to 45 in 2017). Glycaemic control was poor; HbA1C averaging 9.6 to 10.9%. The new protocol improved use of serum ketones (4.5% in 2012 to 100% in 2017) and VBG (70% in 2012 to 98% in 2017). Continuation of long-acting insulin was slow to improve (24.2, 64.6, 53.1 and 95% across the cohorts). Adverse events fluctuated, with hypoglycaemia and hypokalaemia peaking in 2016, but improving in 2017. Commencement of treatment improved initially (IV fluids and insulin commencing 20 minutes and 75 minutes earlier respectively from 2012 to 2016) but this deteriorated in 2017. Intravenous insulin duration shortened with the new protocol, although this didn't result in shortened LOS. Discussion: A new ketone-driven protocol has been implemented with relatively little adverse outcomes, and improvement in some aspects of care. Further efforts are required to improve speed of treatment and reduce rates of hypokalaemia, time on IV insulin, and overall LOS.

P110 Impact of Diabetes Mellitus on Bone Marrow Progenitor Cell Number, Proliferative Capacity and Differentiation Capability

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Abnormal bone mineral density, altered bone architecture and delayed bone fracture repair are complication of type 2 diabetes mellitus (DM). Bone marrow isolated from murine models of DM contains significantly fewer multi-potential progenitor cells (MSCs) with reduced differentiation capacity as compared to non-diabetic isolates. A return to glucose homeostasis does not restore the capacity of MSCs isolated from a hyperglycaemic environment, indicating the milieu selectively depletes specific populations of MSCs. This study proposes that alterations in human bone marrow MSC number and capacity in individuals living with DM contributes to the pathology underlying DM-associated osteopathy. Although cells isolated from individuals living with DM and age matched controls displayed comparable numbers of mononuclear cells (MNC) in the marrow, a 30% reduction in median CFU-F numbers was observed in samples isolated from individuals living with DM indicating a decrease in the quantity of MSCs in the host marrow. Further, MSCs isolated from individuals living with DM contained nearly half of the number of osteogenic clones as non-DM samples, indicating an impact of the DM environment on MSC potential to maintain bone homeostasis. Finally, MSCs isolated from the DM environment exhibited a 14% increase in doubling time in later passages, indicating a lesser capacity to divide in response to an injury stimulus. Together, these data indicate a biologically significant impact of the DM environment on MSCs residing within the bone marrow that may underpin DM-associated osteopathy.

P111 Health literacy Audit in the Centre for Diabetes, Endocrinology and Metabolism, University Hospital Galway

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Forty per cent of Irish adults have limited health literacy. Furthermore there is evidence that there is frequently a mismatch between the literacy demands of health services and the literacy capacity in those with limited health literacy. To facilitate patient engagement health services need to become more literacy friendly. Staff awareness and training in health literacy are essential steps in this process. This audit assesses how health literacy friendly the diabetes services are University Hospital Galway. The study design was descriptive and involved administration of the health literacy audit tool designed by the national adult literacy agency (NALA). The audit tool was administered using survey monkey software. Descriptive statistical methods were used using the online survey tool. Fourteen staff completed the survey, a response rate of 50%. Five participants (36%) agreed that they did not understand what health literacy means or know how many people in Ireland have limited health literacy. Only 1 participant (7%) agreed that he/she was familiar with the Plain English language style guide. Only 2 participants (14%) agreed that concept words, such as normal range, were avoided. Three participants (21.4%) agreed that jargon specific to the health service has been identified and an easy way to explain these words has been circulated. Nine participants (64%) agreed that staff ask patients if they have any questions. There is poor awareness of health literacy and guidelines on good communication practices. This audit raises awareness and identifies areas for change to make our service more health literacy friendly.

P112 Evaluation of Structured Education Programme for Patients with Type 1 Diabetes

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Structured education plays a major role in the empowerment of patients with type one Diabetes Mellitus (T1DM). This study aimed to determine the changes in glycaemic control, weight and quality of life over a one year period in 55 patients who completed the Berger structured education programme. Weight, height, body mass index (BMI), haemoglobin A1c (HbA1c), Problem Areas in Diabetes (PAID) score and knowledge of disease score was recorded at entry, and six months after the Berger course. Data is expressed as mean±standard deviation. Results were analysed using paired t testing. Twenty-seven (49.1%) were female. Mean age 42.6±10.7 years, with mean duration of disease 21.7±10.7 years. Results are depicted in table 1.

Table 1

	Mean weight (kg)	Mean HbA1C (mmol/mol)	Mean BMI (kg/m$^{2)}$	PAID score (points)
Starting value	83.2±15.9	67±12	28.71±4.6	33.5±21
6 months value	82.4±4.7	64.3±11.34	26.2±8.75	Data to follow
Improvement in measurement	0.8±3.6	2.6±8.6	0.3±1.3	Data to follow
P value	0.15	0.04	0.16	Data to follow

Improvements were also seen in baseline knowledge scores from 45.9±8.7 (maximum 63) points to 53.3±5.2 points at six months. In summary, small, statistically significant improvements were noted in HbA1c and PAID scores at six months.

P113 A Retrospective Analysis of the Audiometric Analysis of a Cohort with Turner Syndrome

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Turner Syndrome (TS) is a multi-systemic genetic condition in females caused by partial or complete deletion of one X chromosome. It affects approximately 25-50 per 100,000 live births. International guidelines recommend audiometric screening at diagnosis and every five years in adulthood. This retrospective review aims to assess the patterns of hearing loss in a cohort of adult females with confirmed TS attending a tertiary referral centre. Of thirty-three patients only nine (16.7%) had unimpaired hearing. Twenty-four patients had hearing abnormalities and one patient failed to attend for assessment. Eighteen patients demonstrated a sensorineural hearing loss pattern. Only one patient displayed solely conductive hearing loss and five patients had a mixed pattern. Mean age of patients with hearing loss was 39.3±10.6 years (versus 35.1±12.6 years in the total population and 23.7±7.4 years in the population with normal hearing). This is consistent with the natural history of TS whereby recurrent otitis media leads to cochlear damage. Patients with hearing loss displayed more cardiac abnormalities (45.8% vs 22%; p=0.67) and thyroid function abnormalities (50% vs 44%; p=0.77) than TS patients with normal hearing. Of the patients with normal hearing one patient had a 45XO karyotype and the remaining eight were all mosaic karyotypes. In the group with hearing impairment four patients had 45XO karyotype, twelve had mosaic patterns and the remainder had an unknown karyotype. In conclusion, greater awareness is needed among physicians regarding the prevalence, severity and prognostic implications of hearing impairment in patients with TS.

P114 Diagnosis and optimal medical management of patients with maternally inherited diabetes and deafness (MIDD)

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Background: Maternally inherited diabetes and deafness (MIDD) is a rare disease affecting approximately 1% of all diabetics. The clinical characteristics normally associated with this disease include sensorineural hearing loss, macular pattern dystrophy, cardiomyopathy, and diabetes. This study aims to identify clinical phenotype and insulin secretory response to glucose. Methods: We retrospectively studied 33 patients from 23 different pedigrees with MIDD, all of which were identified from the Mater-MODY cohort database. Audiograms, ECHO's and biochemical markers including Hba1c, Lactate, Creatinine Kinase(CK) and 2 hr OGTT's were performed and analysed. Results: 23 (72%) patients have diabetes with 1 pre-diabetic and 9 non-diabetics. The mean age was 49.7(±12.8)y/o and BMI is 23.5(±3.2)kg/m^2. 28 patients (84.8%) were found to have sensorineural hearing loss. 8 patients (24.2%) developed cardiomyopathy. 14 (42.4%) patients had 2-hr OGTT's which showed glucose (mmol/L), insulin (pmol/L) and C peptide (pmol/L) mean level at baseline / 120mins as follows: 7.8 (±4.3) / 13.3 (±7.7), 63.3 (±25.8) / 297.3 (±170.8), and 570.6 (±201.4) / 2318.7 (±1224.8). 31 (93.9%) patients had HBa1c with mean of 66.4 (±18.6) mmol/mol. 13(39%) patients had metformin discontinued. 14(42.4%) patients are on insulin alone. 5(35.7%) are on insulin and OHA's. 4 (12.1%) are on sulphonylurea alone. Conclusion: There is a wide phenotypic variability seen in MIDD which can lead to misdiagnosis and induction of inappropriate therapy. These patients also have a good insulin secretory response seen on OGTT. However, 54% of patients have ended up on insulin with mean HBa1c of 66.4mmol/mol indicating diabetic control remains brittle.

P115 A Qualitative Study on the Perception of Diabetes Mellitus-Related Osteopathy in Individuals Living with Type 1 and Type 2 Diabetes Mellitus

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Individuals living with diabetes mellitus (DM) can develop early onset osteoporosis and are at an increased risk of bone fracture. Skeletal health can be influenced easily with diet and exercise. However, DM-related osteopathy is not emphasized in the public information campaigns on the American Diabetes Association, Diabetes UK, Diabetes Ireland or International Diabetes Federation websites. This investigation aims to assess the perceptions of patients living with type 1 (T1DM) and type 2 (T2DM) diabetes mellitus, and their baseline knowledge on DM-related osteopathy. A survey was administered to individuals with T1DM (N=102, 44% females, 56% male) and T2DM (N=80, 36% females, 64% males) in attendance at the Galway University Hospital Diabetes Centre. Respondents had T1DM for a mean of 21 years and T2DM for a mean of 12 years. Participants were asked to identify DM-related complications, including bone thinning and bone fracture. Respondents were primarily concerned about developing DM-related retinopathy, nephropathy and amputations, but not osteopathy. Interestingly, only 28%(T1DM) and 22% (T2DM) of respondents identified both, bone thinning and bone fractures, as potential DM-related complications. When asked for their primary source of DM-related information, diabetes specialists and internet where identified. When comparable questions were asked of DM-related healthcare professionals, about 57% of respondents did not recognize osteopathy as a potential complication of T1DM and T2DM. This study demonstrated a low-level awareness of the impact

of T1DM and T2DM on bone health. The deployment of patient-interactive activities or educational modules may enhance the future health of individuals living with T1DM and T2DM.

P116 Proteomic and micro RNA biomarker discovery to identify novel markers of left ventricular diastolic dysfunction in patients with diabetes

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P117 Audit of the follow up and management of low bone mineral density in patients with gender dysphoria

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An increasing number of people with gender dysphoria [GD] in Ireland are being treated with puberty-suppressing and cross-sex hormonal treatments. To date, a consensus on the effects of these treatments on bone mineral density [BMD] has not been reached. Retrospective data was collected on 46 GD patients who attend St Columcille's Hospital, Loughlinstown [SCH] and who have undergone a Dual-energy X-ray Absorptiometry (DXA) scan. The current protocol for assessment, follow-up and treatment of reduced BMD at SCH was also reviewed and compared against current best practice guidance. 36 patients were male-to-female [MtF] (78.3%) and 10 female-to-male [FtM] (21.7%). The mean age was 38.7. 58.7% of the population had osteopenia or osteoporosis, with a higher proportion of MtF patients (63.9%) compared to FtM patients (40%). 3 of 6 patients (50%) aged 16-18 years had osteopenia or osteoporosis. Follow-up DXA scanning was recommended for 30 patients (65.22%), and treatment recommended for 23 patients (50%). Compliance with recommendations was 3.3% for follow-up, and 30.4% for treatment. There was 0% compliance with treatment recommendations in the 3 patients aged 16-18 years. Our study shows a lack of consistency in the bone management of GD patients at SCH. This patient population would greatly benefit from a clear protocol for follow-up and treatment of low BMD. A specific targeted policy should be implemented for adolescent patients, with monitoring every 1-2 years during the suppression and initiation of puberty currently recommended. The service should utilize future additional resources in implementing these changes to achieve better bone management.

P118 Type 1 diabetes mellitus and challenges ahead

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The demands of daily management, blood glucose variability and potential complications pose challenges in management of T1DM. This audit was undertaken among adult patients attending diabetes service, at Midlands Regional Hospital Portlaoise, to provide clinical profiles of T1DM patients and to inform on areas of emphasis for future service planning and delivery.

Data from case notes of 106 T1DM adults (mean age 39.9±14.4 years; 60% males, mean duration of diabetes 15.5±13 years), was collected during their diabetes clinic attendance in 2017. Of the cohort, 39.6% were overweight (BMI 25 to <30 kg/m^2) and 24.5% obese (BMI ≥30 kg/m^2). 20% had HbA1c <53 mmol/mol, 25.5% had HbA1c 53 to 63 mmol/mol, 30% had HbA1c 64 to 75 mmol/mol and 24.5% had HbA1c >75 mmol/mol. 66% were within blood pressure target (<140/90mmHg). 103 of patients used basal bolus insulin regime, 2 on premixed insulin and one on insulin pump. Only 10.4% did carbohydrate counting to adjust insulin doses. 20.8% had documented hypoglycemic unawareness. 25.5% had microalbuminuria, 21.7% had background retinopathy, and 11.3% had proliferative retinopathy. Nine were at moderate risk for diabetes foot disease, four at high risk and one had active foot disease.7.5% had coronary artery disease. Our preliminary data on T1DM cohort in the rapidly increasing population in the Midlands, demonstrated that suboptimal glycaemic controls and hypoglycaemic unawareness are significant challenges. This audit highlights the areas of emphasis in future service delivery, such as measures to improve access to structured-education programme and use of continuous glucose monitoring and insulin pump.

P119 Transformation of a Large Prolactinoma into a Lactosomatotroph Adenoma

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Background: Synchronous co-secretion of pituitary hormones by the same tumour is well recognized. However, metachronous pituitary hormones secretion has been very rarely described. Here we present the case of a patient diagnosed with a prolactinoma which subsequently co-secreted growth hormone (GH). Case: A 21-year-old lady presented with headaches, facial pain and secondary amenorrhea. Prolactin was 3479mIU/L (50-530). She had normal pituitary function and serum IGF-1 level with no features of acromegaly. A pituitary MRI demonstrated a large pituitary lesion with optic chiasm impingement and cavernous sinus invasion which initially involuted with high dose Cabergoline therapy. Prolactin and menstruation normalised. Subsequent MRIs showed tumour progression. Serial IGF-1 measurement showed a progressive rise which corresponded to onset of mild acromegalic features. An OGTT confirmed GH hypersecretion (nadir 8.9 ng/ml). Lanreotide autogel was added with significant symptomatic improvement and near normalization of IGF-1 level. A repeat MRI after 3 months of therapy demonstrated significant tumour involution away from the optic chiasm. Conclusion: This case describes an unusual transformation of a pituitary adenoma into a co-secretor over time. It highlights the need to reconsider the initial diagnosis when pituitary tumours do not respond as expected to medical therapy.

P120 A remarkable case of Thyrotoxicosis initially caused by Graves' disease followed by a TSH-oma

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Background: Graves' disease is the commonest cause of thyrotoxicosis while thyrotropin producing pituitary adenomas (TSHoma) are very rare

and represent 2-3.5% of all pituitary adenomas. Coexistence of a TSHoma and Graves' disease has been very rarely reported. We present a case of a lady with a TSHoma initially presenting with primary thyrotoxicosis, likely Graves' Disease. Case: A sixty-eight year old lady was referred to our department with thyrotoxicosis, a fT4 of 20.4pmol/L (7.0-16.0) and a TSH of <0.02mIUL (0.50-4.20). A technetium pertechnetate scan was consistent with Graves' Disease. She was treated with carbimazole for 18 months and remained clinically and biochemically euthyroid. After stopping carbimazole her fT4 started to rise but with normal TSH. This was confirmed on multiple platforms. A TRH stimulation test demonstrated a flat TSH response and a pituitary MRI showed pituitary microadenoma. Prolactin, IGF-1 and other pituitary profile were normal. She had a 11C-Metionine PET/CT and SPGR MRI scan which demonstrated high activity on the left lateral side of the pituitary fossa consistent with a functioning adenoma. She was treated with cabergoline and octreotide but failed to tolerate either. For now the patient has decided to manage this lesion conservatively. Conclusion: This is a very unusual case of thyrotoxicosis caused by two different processes in the same patient. This case highlights the need to reconsider the diagnosis of a TSHoma when faced with discordant thyroid function tests. It also highlights the utility of 11C-Methionine PET/CT scans in the diagnosis of functional endocrine tumours.

P121 An analysis of patient factors that may influence the improvement in glycaemic control gained in type one diabetics completing a Dose Adjustment for Normal Eating (DAFNE) course

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Introduction: Dose Adjustment for Normal Eating (DAFNE) has been shown to reduce hypoglycaemia and improve quality of life in patients with Type 1 diabetes (T1DM). This study attempts to highlight patient characteristics that confer a greater benefit from DAFNE in terms of glycaemic control. Methods: A retrospective chart review was performed on all patients who completed DAFNE. Data collected included sex, HbA1c levels (from 10 years pre-DAFNE until latest available), age at diagnosis and at time of DAFNE. SPSS was used (paired and independent sample t-test) to assess for differences between groups. Results: 351 patients were included (58.1% male). There were no significant differences between the HbA1c results before (8.4 ±1.3% (mean ± SD)) and after DAFNE (8.4 ±1.1% (p=0.73)). In the cohort of patients with poor diabetes control, as defined as a HbA1c of >9.0% (n=97) there was a significant improvement in HbA1c pre-(10.0 ± 0.9%) and post-DAFNE (9.3 ±1.1% (p=<0.05)). There was a significant improvement between pre-DAFNE HbA1c (8.7 ±1.2%) and post-DAFNE HbA1c results (8.5 ±1.1% (p<0.05)) in patients <15 years-old at time of diabetes diagnosis (n=65, 18.5%). There was no significant improvement across any other age groups. Duration of diabetes prior to DAFNE had no significant impact on glycated haemoglobin following completion of DAFNE. Conclusion: DAFNE confers a number of benefits to patients with T1DM. In relation to improvement in glucose control in our centre those patients with a baseline HbA1c of >9% prior to the DAFNE course have the greatest reduction in blood glucose levels.

P122 Understanding of Diabetic Footcare and Footwear in Patients with Diabetes

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Diabetic foot disease is a serious and preventable complication of diabetes, and a financial burden on healthcare providers. Patient education and awareness of foot care, including hygiene and appropriate footwear, is vital in preventing diabetic foot ulceration. We prospectively studied 143 outpatients (93 male, 51 female, mean age 62 years) attending the diabetes clinic at Connolly Hospital over 10 weeks. Patients were interviewed one-on-one. A questionnaire focusing on engagement in foot self-care, foot risk behaviours and recognition of appropriate footwear was completed. Participants engaged in a mean (± standard deviation) of 3.5 (± 1.7) from 7 appropriate foot care behaviours, and a mean of 1.8 (± 1.3) of 7 risky foot behaviours. Most (120/143) engaged regularly in between 1 and 3 foot risk behaviours, despite prior foot care education in many. Participants were unable to consistently choose appropriate footwear from provided photographic examples. Better foot care scores were found in patients who reported having had previous foot care education (mean care score 3.8 v 3.2, P=0.04), those who had previous experience of a foot ulcer (4.4 v 3.2, P <0.01), and those who visited the podiatrist regularly (4.3 v 3.1, P = 0.016). This study highlights deficits in awareness and practice of appropriate foot care behaviours in outpatients with diabetes. Although knowledge scores were better in patients with prior ulceration, those who reported previously receiving education, and those attending regular podiatry visits, scores in these patients were also suboptimal. Alternative methods of patient education need to be explored.

P123 Insulin Errors In An Irish Teaching Hospital: Can Staff Education Reduce Them?

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Insulin administration errors can cause hyperglycaemia, ketoacidosis, or profound hypoglycaemia, precipitating seizures, coma and death. In April 2016, an audit in our hospital found a 7% over-all error rate in insulin administration (incorrect dosing and omission), below international rates of 19 to 27%. Education among medical and nursing staff on diabetic ketoacidosis, hypoglycaemia, hyperosmolar hyperglycaemic state, types of insulin and appropriate dosing/administration was triggered. This re-audit aims to reassess the prevalence of insulin administration errors in the same institution following staff education. The administration of insulin to 25 patients was audited in December 2017 Patients in the emergency department, cystic fibrosis unit, intensive care unit, day ward and those on intravenous insulin were excluded. Median age was 70 years (IQR 55.8-80), 68% men (n=17). Of 695 doses prescribed, 686 (99%) were administered. Eight of nine omitted insulin doses were short-acting (novorapid) and one was basal (degludec). Compared to the initial audit, there was no error due to incorrect dosing (1.3% vs 0%, p=0.0027 95%CI 0.18-0.82). Moreover, the over-all error rate has reduced from 7.1% to 1.3% (p=0.0335 95%CI 0.03-0.83).

The initial audit of insulin administration errors at St Vincent's University Hospital highlighted more favourable results than reported internationally. A re-audit after insulin education among staff has shown an even more impressive reduction in this prevalence, therefore, maximizing clinical care from an acceptable to an exemplary level. Staff education is ongoing, including proposal of online modules and revision of current insulin prescription sheet, to maintain insulin error rates to a minimum.

P124 Screening for Diabetes in Patients with Chronic Pancreatitis: the Belfast Trust Experience

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Aim of Study: To screen for diabetes mellitus (DM) through HbA1c in patients with chronic pancreatitis (CP) within the Belfast Trust. Background: Patients with chronic pancreatitis are at risk of developing diabetes, earlier diagnosis with subsequent multi-disciplinary input has the potential to improve clinical outcomes. Methods: Clinical and laboratory data of patients with CP were obtained through NIECR and specialist clinics. Patients were invited to have a blood test for HbA1c. Newly diagnosed patients with diabetes were invited to attend a dedicated BCH specialist CP-DM clinic for follow up. Results: A total of 89 CP patients were identified; M54:F:35, mean age 52 years, range 12-90 years. Aetiology of CP included alcohol 52/89 (58%), gallstones 18/89 (20%), idiopathic 10/89 11%, 2 were genetic, 1:post ECRP, 1:IgG autoimmune, 1:medication induced, 1: lipoprotein lipase deficiency 1:mumps, 1:IVDU and 1:pancreatic divisum. No patients had pancreatic carcinoma. Mean duration of CP was 9 years, range 3-30 years. 15/89 (16%) of patients underwent previous pancreatic surgery/resections. Recent mean BMI was 25.1 range 14-40 kg/m^2. 62/89 (70%) patients had HbA1c performed. Mean HbA1c was 42 mmol/mol, range 27-97mmol/mol, 42/62 (68%) had normal HbA1c (< 42 mmol/mol) 13/62 (21%) had pre-diabetes (42-47mmol/mol) and 7/62 (11%) had diabetes (≥ 48 mmol/mol). Conclusions: Of those that participated in the screening program around one third of patients with CP had glycaemic control in the pre and diabetic range. Potential opportunities for improving screening rates for diabetes in this cohort could include regular yearly testing at gastrointestinal and hepatobiliary clinics.

P125 COMP-ANG1 Stabilizes Hyperglycaemic Disruption of Blood-Retinal Barrier Phenotype in Human Retinal Microvascular Endothelial Cells

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Diabetic retinopathy (DR) is the leading global cause of blindness in working individuals. Characteristic features of DR include elevated microvascular endothelial leakage, inflammation, and neuroglial dysfunction. In view of limitations associated with existing therapies, improved DR treatments are warranted. COMP-Ang1 has been reported to exhibit vasonormalization and neuroprotective properties. The objective of this study was to investigate the ability of COMP-Ang1 to reverse blood-retinal barrier (BRB) destabilization resulting from hyperglycemic challenge *in vitro*. Human retinal microvascular endothelial cells (HRMvECs) were exposed to glucose at normoglycemic (5.0 mM), pre-diabetic (15 mM), and diabetic (30 mM) concentrations for 1, 6, 12, 24 and 48 hours in the absence and presence of 100 ng/ml recombinant COMP-Ang1. Post-treatment, cells were harvested for analysis of tight junction gene expression by qPCR. Cells were also monitored for paracellular permeability and production of reactive oxygen species (ROS) by transendothelial marker exchange and dihydroethidium flow cytometry, respectively. Glucose treatment of HRMvECs decreased mRNA expression of tight junction proteins (VE-cadherin, occludin, claudin-5, and zonula occludens-1) in a dose- and time-dependent manner. Glucose treatment increased HRMvEC permeability and induced ROS production. Co-treatment of cells with COMP-Ang1 significantly reduced the injurious impact of glucose on BRB properties and ROS induction. COMP-Ang1 can partially block the pro-oxidant actions of glucose on HRMvECs and help to normalize glucose-mediated injury to HRMvEC barrier properties. These studies highlight the potential value of COMP-Ang1 as a DR therapy and provide a useful model for quantitatively assessing the efficacy of COMP-Ang1 treatment regimens.

P126 Indirect ISE versus Direct ISE Measurement of Serum Sodium Concentration in a Series of 150 Cases of Profound Hyponatraemia ≤ 120 mmol/L

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When measuring serum sodium concentration [Na^+], two laboratory techniques are available: indirect and direct ion-selective electrodes (ISEs). We compared indirect and direct ISE measurements of serum sodium concentration to determine if disparity existed between the two methods and, if so, to what degree. Laboratory databases were searched for serum sodium concentrations ≤ 120 mmol/L from July 2016 – June 2017. All episodes measured using both techniques were compared, and the difference correlated with total protein and albumin concentrations. A total of 170 temporally-related indirect and direct ISE measurements were identified. Differences between the techniques were calculated by subtracting the direct from the corresponding indirect ISE reading. The average difference was + 0.46 mmol/L (range -8.7 mmol/L – +8.6 mmol/L, standard deviation 2.81 mmol/L). This was not statistically significant. For samples with normal albumin concentration (35-50 g/L), the average difference was -0.77 mmol/L (standard deviation 2.58 mmol/L). For samples with low albumin concentration (≤ 34 g/L), the average difference was + 1.18 mmol/L (standard deviation 2.46 mmol/L). This difference of -0.77 mmol/L and +1.18 mmol/L was statistically significant (p = 0.001). For samples with normal total protein (66 – 87 g/L), the average difference was -1.4 mmol/L (standard deviation 2.81 mmol/L). For samples with low total protein (≤65 g/L), the average difference was 1.16 mmol/L (standard deviation 2.62 mmol/L). This difference of -1.4 mmol/L and +1.16 mmol/L was statistically significant (p = 0.001). Conclusions: Serum sodium concentration differs when measured by indirect and direct ISE, and becomes larger when albumin and/or total protein are low. Clinicians should be aware of this and should ideally use one method when evaluating and monitoring hyponatraemia.

P127 Congenital pancreatic hypoplasia presenting with adult onset diabetes mellitus in association with skeletal abnormalities and congenital heart defect: a case report

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Agenesis of dorsal pancreas is a rare condition involving congenital malformation of either part or whole of the dorsal pancreas. Affected cases can present with a range of conditions including hyperglycemia and congenital

heart defects. We report a case of 21 year old woman who was referred with a new diagnosis of diabetes mellitus based on asymptomatic glycosuria during a routine G.P. visit. Her hba1c was 61mmol/l and her C-peptide levels were found to be 2.8 micro gram/l (1.1-4.1). Her insulin levels were 19.7 milliunit/l (2-25) and anti-glutamic acid decarboxylase and anti-islet cell antibodies were negative. She has a history of ventricular septal defect, coarctation of aorta and bicuspid aortic valves since birth. She also has thoraco-lumbar scoliosis. Both of her parents have type 2 diabetes mellitus. She underwent ventricular septal defect and coarctation of aorta repair when she was aged 1. Whilst being investigated for a possible liver abnormality magnetic resonance imaging revealed a normal liver however the absence of most of the neck, body and tail of the pancreas was noted. It was concluded after multi-disciplinary meeting that the cause of her diabetes is likely pancreatic hypoplasia and she was started on oral hypoglycemic agents with a low threshold for initiating insulin therapy. In conclusion pancreatic hypoplasia should be considered as a cause of diabetes in patients with a history of congenital heart disease. Inclusion of radiological imaging in assessing young patients with diabetes should be considered.

P128 Audit of radioactive iodine in the treatment of thyrotoxicosis at St.Vincents University Hospital

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Radioactive Iodine^{131} (RAI) is used as a definitive treatment for thyrotoxicosis. An audit of outcomes of RAI at SVUH from January 2007 until July 2017 was undertaken. Retrospective chart review of patients with thyrotoxicosis who received RAI was performed. Records for 379 patients (84.6% female), of 681 who underwent RAI treatment at SVUH, were reviewed (56% ascertainment); mean age at treatment was 55 years. Graves' disease was a more common indication for RAI (n=224; 59%) than Multinodular Goitre (n=150; 39.5%). Anti TPO antibodies were measured in 102 of the Graves' patients (45.5%) and were positive in 77.4%; TRAb antibodies were checked in 62 patients (27.6%) and were positive in 67.7%. The mean RAI dose for Graves' patients was 323 MBq (SD 67.6); 67.8% became hypothyroid; 17.4% euthyroid and 14.7% had persistent thyrotoxicosis. The mean time to final thyroid status was (4; SD 3.46, 4; SD 3.31, and 2;SD 2.83) months respectively. In the MNG cohort anti TPO antibodies were recorded in 32.6% and were positive in 48.9%. As per SVUH policy, a higher RAI dose was used in MNG (Mean 491MBq;SD 40.01); 30.6% were hypothyroid by 11 months; 52.6% euthyroid by 5 months and 16.6% had persistent thyrotoxicosis by 3 months post-RAI. Twenty-two patients received a second dose of RAI (mean 453 MBq; SD 86.53); 6 became euthyroid, 13 hypothyroid and 3 remained thyrotoxic. Two patients experienced deterioration in thyroid eye disease managed with steroids, radiation and surgery. In this large cohort, RAI was well-tolerated and effective for management of thyrotoxicosis.

P129 Clinical experience of Insulin Degludec in Challenging Diabetes

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Insulin Degludec is basal insulin with unique mode of action conferring an ultra-long duration of action and lower risk of hypoglycaemia. We prescribe it mainly in challenging diabetes cases. We audited data prospectively by collecting information on HbA1c and total insulin dose. We evaluated 57 patients (T1D=34; T2D=23). The descriptive statistics comparing T1D and T2D were as follows respectively (data presented as median; *p* value): age in years (61,65; p=0.239); duration of diabetes in years (22,23; p=0.172); HbA1c in mmol/mol (75,83; p=0.055); total daily insulin dose at baseline in units (44,102; p<0.001); body mass unit in kg/m2 (26.9; 34.9; p<0.001) and duration of degludec in months (10,10; p<0.978). To date, 30 patients have returned for repeat HbA1c with a mean decline of 9.0 mmol/mol (p=0.008) and a mean total daily insulin dose reduction of 14.7 units (p<0.001). The reductions in both HbA1c and insulin dose were significant in T2D (p=0.035 and P<0.001, respectively) but lesser significance was seen in T1D (p=0.052 and p=0.003, respectively). Data was not collated on severe hypoglycaemia or diabetes ketoacidosis. W noted that the use of insulin degludec was of great help in managing T1D in cognitively impaired elderly patients and in Down syndrome both in the community and in residential care. In conclusion, insulin degludec is a valued formulation of insulin for use in challenging cases with either T1D or T2D.

P130 Review of outpatient care among young adults with type I Diabetes in University Teaching Hospital

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The management of young adults with type 1 diabetes (TIDM) carries challenges to the patient, health care providers and to families. Review of outcomes from a young adult diabetes clinic in St.Vincent's University Hospital was undertaken from January 2015 – December 2017. A total of 119 patients with TIDM attended the diabetes services. 62% (74) attended young adult clinic and results are focused on this cohort. Mean age of patients was 22(SD 2.65) years with males being 55%. 14 % (11) were on continuous insulin infusion pump while the rest were on multiple daily insulin injection regimen. 34% of the patients completed DAFNE course. Mean HbA1c was (71 mmol/mol; SD 22.2) (8.6%). Our cohort differs from that of other Irish and UK centres, Galway Group mean Hba1c 81 mmol/mol (9.6%) and the Scottish diabetes survey, Hba1c 73-85 mmol/mol(8.8 -9.9%). Complication rates were recorded at 27% plus one death. There was no significant association between the average HbA1c and missed clinic appointments (Hba1c of 73.8 vs 69) similar to the Galway Group. HbA1c was no better in those attending the young adult clinic vs those in other diabetes clinics (HbA1c of 71 vs 67.5 mmol/mol), however there was a trend towards better attendance. We have described a challenging cohort of young adults with TIDM.The high complication rate in this population is worrying and necessitates better approaches to support this group long term.

P131 Acute Diabetic Neuropathy precipitated by tightening of glycaemic control - case series and review

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We present three cases encompassing some of the less common presentations of diabetic neuropathy, and highlight a potentially underappreciated link between tightening of glycaemic control and acute diabetic neuropathies. Case1: A 56 year old male with poorly-controlled Type 2 Diabetes (T2DM) was commenced on basal-bolus insulin. He presented six weeks later with a diffuse painful sensory neuropathy and postural hypotension. He was diagnosed with treatment-induced neuropathy (TIN, insulin neuritis) and obtained symptomatic relief from Pregabalin. Case2: A 67 year old male with T2DM and chronic hyperglycaemia presented

with left lower limb pain, weakness and weight loss shortly after achieving target glycaemia with oral anti-hyperglycaemics. Neurological examination and neuro-electrophysiological studies suggested diabetic lumbosacral radiculo-plexus neuropathy (DLPRN, diabetic amyotrophy). Pain and weakness resolved over time. Case3: A 58 year old male was admitted with blurred vision diplopia and complete ptosis of right eye, with intact pupillary reflexes, shortly after intensification of glucose-lowering treatment with an SGLT2 inhibitor as adjunct to Metformin. He was diagnosed with pupil-sparing third nerve palsy secondary to diabetic mononeuritis which improved over time. We present three cases of acute diabetic neuropathy. While all three acute neuropathies have been previously well-described, all are rare and require a high index of clinical suspicion as they are essentially a diagnosis of exclusion. Interestingly, all three of our cases are linked by the development of acute neuropathy following a significant improvement in glycaemic control. This phenomenon is well-described in TIN, but not previously highlighted in other acute neuropathies.

P132 Isolated 3rd Nerve Palsy a rare presentation of Pituitary Macro-adenoma

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Background: An isolated oculomotor nerve palsy is very rarely the presenting sign of a pituitary adenoma, usually associated with visual field defects. We report a case of pituitary macroadenoma with isolated 3rd nerve palsy without any other neurology. Case: An 80 year old gentleman presented to AMAU with a 6 month history of intermittent headaches without any associated symptoms. His past medical history included hypertension and high cholesterol. He was smoker with 40pack years. Examination was unremarkable except partial ptosis of right eyevisual field, visual acuity were normal as well. Initial routine serum chemistry was unremarkable. CT scan of the brain with contrast and MRI brain showed a pituitary macroadenoma with suprasellar extension. Hormonal studies were normal. It was diagnosed as non functional pituitary macroadenoma. Repeat scan 3 months later showed significant reduction in size of tumor with recovery of 3rd nerve. Discussion: Isolated oculomotor nerve palsy is very rarely the presenting sign of a pituitary adenoma. It may occur slowly due to mechanical compression or rapidly secondary to pituitary apoplexy. Majority of cases are associated with visual field defects. When correctly diagnosed and treated, the third nerve dysfunction appears to be reversible. Literature review revealed only few cases of pituitary macroadenoma without a visual field defect or other neurological abnormality have been reported. Our case was unique in that only a partial ptosis of one eye without any other neurology or visual field disturbance was present.

P133 Biochemical testing for Phaeochromocytoma: the role of plasma metanephrines and plasma catecholamines

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The Endocrine Society guidelines recommend first line screening for pheochromocytoma using plasma free or urinary fractionated metanephrines with the latter being preferred in our service. Although negative results rule out phaeochromocytoma, it is not uncommon to see borderline results which require further investigation. In this situation we have historically relied on the clonidine suppression test (CST) and measurement of plasma catecholamines. However, plasma metanephrines offer a simpler and cheaper alternative. We compared results for plasma metanephrines with CST results. Twenty-six patients have been investigated to date with urinary metanephrines, supine plasma metanephrine and CST. Results demonstrate concordance between supine plasma metanephrine and CST results when both were normal (n=17). Nine had abnormal supine plasma metanephrine results, 7 of which also had abnormal CST confirming the biochemical diagnosis of phaeochromocytoma. In the remaining 2 patients with abnormal supine plasma metanephrines one had equivocal CST (although the patient was on Imipramine and adrenal imaging was negative and there was a low suspicion of phaeochromocytoma) and the other had a normal CST and negative imaging and phaeochromocytoma was excluded. These preliminary results from 26 patients demonstrate that in the diagnosis of phaeochromocytoma plasma metanephrines are an appropriate test in patients with elevated urinary metanephrines. If this is normal then a CST is not required and phaeochromocytoma can be excluded. CST can be reserved for cases where supine plasma metanephrines are abnormal but diagnostic uncertainty remains.

P134 Pituitary Apoplexy; a case series

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Background: Pituitary apoplexy is a rare complication of pituitary adenomas resulting from sudden haemorrhage or infarction. Traditionally, it is considered a neurosurgical emergency but some cases can be managed conservatively. The aim of this study was to analyse the clinical presentation, therapeutic management, endocrine and neuro-ophthalmic sequelae and recurrence following pituitary tumour apoplexy. Patients, symptoms and outcome: 12 cases were identified (11 males), 8 non-functioning, 1 somatotroph, 1 lactosomatotroph, 1 silent gonadotroph and 1 lactotroph adenomas. Eleven patients presented with headache, 7 with ophthalmoplegia. 4 with visual acuity/visual field defects. 1 with photophobia. Three patients were managed conservatively while 9 underwent pituitary surgery. Ophthalmoplegia fully resolved in 4 patients (one with conservative management) and improved in 2 patients with no improvement in 1 patient. Visual acuity/visual field defects fully resolved in 3 (one with conservative management), and improved in remaining patient. The rate of ACTH, TSH, GnRH, GH, and AVP deficiencies were 9/12, 9/12, 8/12, 6/12 and 2/12 patients, respectively. 1 patient had tumour regrowth and underwent a second surgery and one patient had recurrence of hyperprolactinaemia. Conclusion: The neuro-ophthalmic complications following pituitary apoplexy are common and recover/improve in most patients. Multidisciplinary input is required to determine need for conservative vs surgical management. Hypopituitarism is very common post-apoplexy. Some patients have tumour or secretory relapse with long term follow-up.

P135 Aspirin use in diabetic patients in Cork

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Type 2 Diabetes mellitus (T2DM) is a chronic condition associated with an increased cardiovascular disease (CVD) risk. There is unanimity in international guidelines regarding aspirin use as secondary CVD

prevention, but the use of aspirin for primary prevention remains uncertain. This study aims to determine if aspirin is given appropriately to diabetic patients in Cork for CVD primary or secondary prevention. In addition, this study hopes to evaluate whether there are differences in aspirin prescribing according to whether patients attend primary or secondary care settings. The medical records of T2DM patients aged over 18 years who were diagnosed before January 2016, and attending Elmwood General Practitioner Centre and Cork University Hospital Diabetic outpatient clinics (n=400) were reviewed. There were 90 patients exclusively attending primary care and 310 patients attending shared care. Overall, 49.0% (n=196) of patients were prescribed aspirin, of whom 42.3% were using it for secondary prevention. Aspirin was used significantly more in patients attending shared care ($p<0.001$). 10.8% CVD patients, all attending shared care, met guidelines for, but were not prescribed aspirin. According to the Irish College of General Practitioner guideline, 43.5% patients without CVD were on aspirin inappropriately (15.2% among primary care and 48.1% of shared care patients). A significant number of patients, who should have been prescribed aspirin for secondary prevention, were not, in contrast to a substantial population who did not meet criteria for aspirin, but were prescribed this agent for primary prevention.

P136 Adrenal suppression and recovery following long term glucocorticoid use for non-endocrine disorders

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Context: Chronic use of exogenous glucocorticoids (GCs) is known to cause suppression of the hypothalamic pituitary adrenal (HPA) axis. However, little data are available on the prevalence of this entity and the recovery of the HPA axis afterwards. Methods: We performed a retrospective analysis to determine the prevalence of adrenal suppression due to long term (> 1 month) GCs use for non-endocrine disorders. The HPA axis integrity was assessed using the Short Synacthen Test (SST). Patients with suboptimal cortisol responses were serially followed up until the SST normalised or end of February 2018. Patients were placed on low dose hydrocortisone before the SST. Results: 493 patients underwent SSTs in our unit between May 2011 and February 2018 for the investigation of the HPA axis. Of those, 33 were on chronic GC treatment. 22 of the 33 (66 %) had a suboptimal SST response (8 oral, 9 inhaled, 5 topical GCs). 8 of 22 (36.5%) recovered the integrity of their HPA axis, with a median time to normalization of 9 (range 3-46) months, while 14 (63.5%) did not after a median follow up of 33 (range 9-60 months). None of the normal response patients developed an adrenal crisis with a median follow-up of 10 (range 3-41) months after discontinuation of Hydrocortisone. Conclusion: Adrenal suppression due to chronic GC treatment is common and it may take several months for HPA axis recovery in some patients, while many patients do not recover the HPA axis even after prolonged discontinuation of the GCs.

P137 Unusual Presentation of a Pancreatic Neuroendocrine Tumour – Case Report

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Context: Malignancy-related hypercalcemia is a relatively common paraneoplastic syndrome, but has only been described in a few cases of neuroendocrine tumours (NET). Case illustration. We report the case of a 64 year-old woman admitted with nonspecific abdominal discomfort, weight loss and fatigue. She was found to have severe hypercalcemia - calcium 4.07 nmol/L (normal: 2.2-2.6nmol/L). The PTH level was appropriately suppressed 10 pg/ml (normal: 5-50 pg/ml), with a normal 25-hydroxyvitamin D: 65.5pg/ml (normal: 50-90pg/ml). Serum and urine protein electrophoreses were both normal. Abdominal CT showed a large mass at the tail of the pancreas and numerous hyperdense hepatic lesions, suggestive of metastatic dissemination. Isotope bone scan, OGD and colonoscopy were unremarkable. A CT-guided liver biopsy demonstrated a well differentiated Neuroendocrine Tumour (NET) with a proliferation index (Ki-67) of 6%. A whole body octreotide scan confirmed the above findings. Chromogranin A was elevated at 369 ng/ml (normal: 19.4-98ng/ml). Other biochemical markers related to a diagnosis of NET were within normal range. In relation to the hypercalcemia, PTHrP levels were within normal range but 1,25-dihydroxy vitamin D was elevated at 202 pmol/L (normal: 48-190 pmol/L). Calcium corrected with hydration and intravenous bisphosphonate. The patient was referred to the neuroendocrine service in St Vincents for surgical resection and further treatment. Discussion: The secretion of PTH-rP is the most common cause of malignant hypercalcemia. However, in this case, the etiology of the hypercalcemia appeared to be the secretion of 1,25-dihydroxyvitamin D by the underlying pancreatic NET.

P138 Prevalence of Erectile Dysfunction in an Irish Hospital Diabetes Clinic

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Studies have shown that erectile dysfunction (ED) is an indicator of poor cardiovascular outcomes among diabetic patients and is associated with an inferior quality of life. The National Institute for Health and Care Excellence guidelines recommend discussing ED as part of patients' annual review. We audited 50 patients attending a mixed hospital diabetes clinic using a self-administered international index of erectile function (IIEF) questionnaire. The audit was approved by the hospital audit committee. Age, HbA1C level, blood pressure, medications and the duration, type and treatment of diabetes were assessed and analysed. Additionally, the patients were asked about the impact of ED on their quality of life. Four patients refused to participate. The prevalence of ED was 89.2%, and only 10.6% of patients were on treatment for it. The mean age was 58.2, the mean HbA1c was 56.25 mmol/mol for patients without ED, and 64.22 mmol/mol for patients with ED. The mean duration of diabtes was 6.8 years for patients without ED, and 9.89 years for patients with ED. 82% of patients were on antihypertensives. 78.2% of patients would prefer a healthcare professional mentions this problem initially and ED negatively influenced the quality of life and relationships in 36.9% of patients. Finally, 86.9% of patients would accept help if it were available. To conclude, ED is common in our diabetic patients and not captured in routine care in our clinic. ED should be more efficiently screened particularly as the majority of patients would like to be assessed on this issue.

P139 Audit of Young adult diabetes care in Tallaght University Hospital and Naas General Hospital

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Glucose control is frequently suboptimal in Young adults with type 1 diabetes. We conducted an audit of Young adult diabetes care in Tallaght Hospital (TUH) and Naas Hospital (NGH). In TUH, 141 patients

were attending the Young Adult Clinic (YAC). 58% of patients were male, with a mean age of 20.4 (±2.45) years. The clinic attendance rate was 64% and 86.5% of patients had attended the YAC in the previous 12 months. 61% of patients had been reviewed by the diabetes nurse and 35% had been reviewed by the dietitian within 12 months. 17.7% had attended structured education. 36.2% of patients were using CSII and 60.2% were on basal bolus insulin therapy. The mean HbA1c of the YAC was 76.0 (± 20.4) mmol/mol. 29 (20.6%) patients had been admitted with Diabetic ketoacidosis (DKA) since moving to adult services and 8.5% of patients had diabetic retinopathy. In NGH, 29 patients were identified between 16-25 years of age, with a mean age of 20.4 (±1.82) years. Clinic Attendance rate was 50.5%, with 44% of patients attending the DNS and 20.7% attending the dietitian within 12 months. 24% of patients had attended structured education. 24.1% were on CSII and 64% of patients were on basal bolus therapy. The mean HbA1c in NGH was 81.4 (±22.2) mmol/mol. A total of 8 (27.59%) patients had developed DKA and 24% patients had diabetic retinopathy. Novel strategies are required in order to improve clinic attendance, glucose control and rate of complications in this vulnerable group of patients.

P140 Characteristics of a cohort of patients diagnosed with Type II diabetes under the age of 45 attending two Irish tertiary referral centres

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The Global increase in Prevalence of Type II diabetes has been described as "an epidemic". Of particular concern is younger age at diagnosis. Early intensive management of Type II diabetes is recognised to reduce complications. This retrospective study aimed to establish demographics of patients with Type II diabetes, diagnosed below the age of 45 attending outpatients services across two tertiary referral hospitals, and to examine BMI and ethnicity in relation to early age of diagnosis. DIAMOND records and electronic lab records were interrogated. 456 patients were diagnosed (262 males). Median age at presentation: Male; 33.58 (SD 5.26): Female; 32.61 (SD 6.35). Median BMI: Male: 31.03 kg/m^2 (SD 6.41 kg/m^2); Female: 34.69 kg/m^2 (SD 7.41 kg/m^2) Ethnic non-Irish BMI: 31.82 kg/m^2 (SD 5.94 kg/m^2); Ethnic Irish 33.09 kg/m^2 (SD6.30 kg/m^2). Ethnic non-Irish age of presentation: 31.99 years (SD 5.62); Ethnic Irish 30.71 (SD 6.53) Average HbA1c at presentation male: 59.48 mmol/mol (SD 20.90); female: 61.62 mmol/mol (SD 21.84). LDL male: 2.54 (SD 0.95); female: 2.70(SD 0.88).

Blood pressure male: 130/81mmHg; females: 129/79mmHg. Retention of patients within the system was 75.8%. This study demonstrates that a significant number of patients attending a tertiary referral service are diagnosed below the age of 45. Age and BMI at presentation differs between ethnic groups and genders. Dropout rate from the service is high. Establishing patient demographics for this cohort forms the basis for establishing a dedicated clinical service to match the patient needs of younger persons with Diabetes.

P141 A pilot "mobile" multidisciplinary diabetes clinic at the bedside in the dialysis unit- responding to our patient's needs

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Patients with diabetes receiving haemodialysis are frail with multiple comorbidities. We identified that many patients were missing essential diabetes and screening assessments due to difficulties attending appointments around dialysis sessions. The standard model of care was not meeting the needs of this patient cohort. As a potential solution we have introduced a mobile diabetes clinic at the bedside in the dialysis unit. Our dialysis unit provides maintenance haemodialysis to 182 patients. 35% (n=63) have diabetes. 51 patients (mean age 67.5 years) were reviewed by the diabetes team in the dialysis unit. 90.2% (n=46) had type 2 diabetes. Mean HbA1c and duration of diabetes were 69.0mmol/mol and 19.7 years respectively. 66.7% were treated with insulin. 51% had diabetic nephropathy (n=26). 27.5% were not receiving regular diabetes review. Patients are frail and described difficulty travelling to appointments. 88.2% required assistance with transport and 72.5% used a mobility aid or wheelchair. Mortality during this period was 12.7% (n=8). 37.3% of patients had not attended retinal screening in the previous year and we now offer retinal screening in the dialysis unit. 17.6% had not received a foot check within the past year. 21.6% had active foot disease and were reviewed by podiatry onsite. Feedback has been overwhelmingly supportive from patients, carers and the MDT. Our data demonstrates a frail cohort with multiple complications who require specialist input from the diabetes multidisciplinary team. We responded to our patient's needs and initiated a mobile diabetes clinic, ensuring they had access to the specialist care they require.

P142 Improving attendance at retinal screening in patients with diabetes on maintenance haemodialysis: Results of an audit and introduction of a change in method of provision of screening.

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The diabetic eye screening programme (DESP) offers all patients with diabetes an annual appointment at their general practice. Patients with diabetes who undergo maintenance haemodialysis have complex healthcare needs and we suspected that many patients missed their screening appointments. We sought to assess the frequency of missed screening. In response we describe our service change to address missed screening in this cohort.

Our dialysis unit provides maintenance haemodialysis to 182 patients. 35% of these patients have diabetes. A questionnaire was completed by 54 patients with diabetes and results cross-referenced to retinal screening service data. Subsequently, the retinal screening service now provide retinal screening in the dialysis unit. 46% had not received eye screening or ophthalmology assessment within the last 12 months. Of these, 25% stated it was due to the retinal screening appointment clashing with dialysis session or another hospital appointment, 25% were discharged from ophthalmology review due to non-attendance and 12.5% were unable to travel to the appointment. 73% (19 of 26) had retinal screening performed in the dialysis unit with 26% (5 of 19) referred urgently to ophthalmology for sight-threatening disease. The prevalence of missed diabetic eye screening in haemodialysis patients is of major concern. The current model of retinal screening provision does not fit the needs of this cohort of patients. In response, we have altered our service by bringing screening to the patients. We highlight a high-level of advanced eye disease in this cohort and speculate that this will prevent potentially avoidable eye complications.

P143 Three cases of Cushing's syndrome due to ectopic ACTH secretion in metastatic malignancy: is this a terminal event?

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We present three cases of Cushing's syndrome due to ectopic ACTH in patients with malignancy. All three had hypokalaemia at presentation. Diagnosis was based on clinical features and morning ACTH and cortisol concentrations. Case one presented with fatigue, hypokalaemia ([K+] 1.9 mmol/L) and a new diagnosis of diabetes mellitus (DM) on a background of known neuroendocrine lung malignancy. Endocrinology were asked to review with respect to treatment refractory hypokalaemia. She was clinically Cushingoid. ACTH was 989 ng/L, cortisol 3319 nmol/L. She was discharged for palliative care, on metyrapone, oral potassium and spironolactone. Case two presented with hypokalaemia ([K+] 2.1 mmol/L) and a new diagnosis of DM on a background of small cell lung carcinoma. Endocrinology were asked to review with respect to treatment refractory hypokalaemia. She was clinically cushingoid. ACTH was 216 ng/L, cortisol 2971 nmol/L. She was commenced on metyrapone and died within 2 weeks. Case three presented with hypokalaemia ([K+] 2.6 mmol/L). She was diagnosed radiologically with lung carcinoma with liver metastases. Endocrinology were asked to review with respect to treatment refractory hypokalaemia. She was clinically Cushingoid. ACTH was 162 ng/L, cortisol was 2244 nmol/L. She was treated with metyrapone and oral potassium. She died within 3 weeks of presentation. We present three cases of Cushing's syndrome due to ectopic ACTH secretion in the presence of malignancy. All three had classical presentations with two associated with rapid death. We suggest that clinical suspicion and morning ACTH and cortisol concentrations are sufficient to confirm the diagnosis, allowing rapid palliative treatment.

P144 The inclusion of a type 1 diabetes young adult patient and public involvement panel to develop a health behaviour change intervention: the *D1 Now* Study

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Young adulthood can be a challenging time for type 1 diabetes (T1D) self-management. The aim of the current research is to form a patient and public involvement (PPI) Young Adult Panel (YAP) of 18-25 year olds with T1D and involve them in all aspects of the *D1 Now* study to develop a behaviour change intervention to improve engagement with health services and diabetes self-management. Through a selection process, a panel of 8 was selected in Galway in 2016. Following initial training in committee skills and research methods, YAP members became part of the research team. They were represented on the study steering group, developed research topic guides and materials, and reviewed and interpreted research findings. They contributed to an international consensus conference on service delivery for young adults and wrote sections of a grant application. Another PPI YAP was established in Dublin in Spring 2018 to work collaboratively with the Galway YAP and research team on the next phase of the study involving intervention optimisation (intervention components are tested and refined using iterative feedback cycles). The study has demonstrated that the successful methodology employed to form a meaningful PPI panel in Galway was replicable as is evidenced by the newly formed Dublin YAP. YAP members have been actively involved in co-designing the D1 Now intervention to improve service engagement and self-management of young adults with T1D. Through the formation of the YAP, we have demonstrated that involving young adults with T1D in healthcare research is feasible, productive and replicable.

P145 Management of hyperglycemia in GCK-MODY Pregnancies

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Genetics and hyperglycaemia play an important role in foetal size in GCK pregnancies. Current recommendations are to treat GCK-MODY pregnant women with insulin if foetal ultrasound shows macrosomia. There is concern that insulin treatment could result in restricted foetal growth in GCK-MODY infants. A retrospective chart review of 28 Irish-Caucasian women with GCK-positive mutations was conducted. Data on birthweight, mode of delivery, diabetes treatment during pregnancy was collected in 105 pregnancies. Genotyping of 25 offspring was performed and a presumptive diagnosis of GCK was made in another 12 offspring with fasting blood glucose of >5.6 mMol/mol. There were 13 mutations from 14 pedigrees with 79 live births and 26(24.8%) miscarriages (background 15%). Insulin was commenced in 38.1% pregnancies at week 8[1-20.75]. Delivery gestation was 39[38-40] weeks and median birthweight was 3.71[3.33-4.13] kg. 27(34.2%) babies were macrosomic at delivery and 3(3.8%) were small for gestational age (SGA). Birthweight in unaffected GCK-offspring (n=16) was significantly higher than affected (n=21) 4.23[3.8-4.58] vs 3.55[3.18-3.71](p=0.003). Birthweight in insulin-treated unaffected offspring (n=9) was 4.5[4.09-4.64] kg vs 3.86[3.3-4.5]kg,(p=0.176) in untreated (n=7). Insulin treatment in affected offspring (n=3) resulted in birthweight of 3.9[3.5-3.98] kg vs 3.5[3.18-3.63]kg,(p=0.467) in untreated (n=18). Macrosomia was not reduced by insulin and SGA occured only in the untreated affected GCK group.

There were higher rates of miscarriages in GCK-pregnancies. GCK unaffected offspring had higher birthweight with 68.8% macrosomia. Treatment with insulin did not improve macrosomic rates in GCK-unaffected babies. These data highlight the need for additional studies to determine optimal management for GCK-MODY pregnancies.

P146 Screening for Diabetes among acute stroke patients using HbA1C in an Acute General hospital in Ireland

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Introduction: Diabetes mellitus is a risk factor for stroke and is very common in acute stroke cases ranging from 15% to 44%. Until 2010, there were two options for type 2 diabetes screening: fasting plasma glucose (FPG) and the oral glucose tolerance test (OGTT). In 2010, the American Diabetes Association adopted hemoglobin A1c (HbA1C) as a third screening option. The advantages of HbA1C over other measures of glycemia are: (1) no requirement for fasting, (2) not effected by acute illness or bed rest, and (3) less day-to-day variation than with plasma measures of glucose. Objective: To evaluate the proportion of patients presented with stroke who were screened for diabetes using HbA1C in an acute peripheral hospital in Ireland. Standard: According to American Stroke Association and American Diabetes Association, standard practise is to screen all patients presenting with stroke by testing FPG, OGTT and HbA1C. HbA1C supersede all other parameters for reasons outlined above. Methodology: This is retrospective review of all patients from the stroke registery that were admitted with acute stroke to St Luke's General hospital, Kilkenny, from August 2016 to September 2017.

Patients who are known to be diabetic/pre-diabetics were excluded. The remaining patients were checked if they were screened for diabetes on admission using HbA1C. Results: 100 patients were admitted with acute stroke from 8/2016 to 9/2017; 4 were excluded due to early death/discharge, and 17 (17.7%) were excluded because of previous Diabates diagnoses. Of the remaining 79 patients, only 17 (21.5%) were screened for Diabetes on admission using HbA1C. Conclusion: 78% of acute stroke patients were not screened for diabetes using HbA1C. We recommend adopting HbA1C for screening as acute strokes are usually complicated by stress hyperglycemia and stroke related complications (dysphagia) in addition to day-to-day plasma glucose variations.

P147 Glucose monitoring in hospital patients on oral steroids

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Introduction: We undertook an audit evaluating the frequency of blood glucose monitoring in hospital patients on oral steroids. Method: The audit was conducted prospectively over a one month period on a combination of medical and surgical wards in Beaumont Hospital, Dublin. All patients on oral steroid therapy >5.0 mg of Prednisolone, or an equivalent dose of alternative synthetic glucocorticoid were included. Results: A total of 107 patients were identified, 85 of whom had no previous history of diabetes while 22 had a diagnosis of diabetes. Prednisone was most commonly used in 47 patients followed by dexamethasone in 36 patients, hydrocortisone in 19 patients, Methylprednisolone in 2 patients, Budesonide in 2 patients and Fluticasone in 1 patient.

	Pre-existing diabetes	No pre-existing diabetes
Capillary glucose never checked	4/22(18.1%)	34/85(40%) 23/34 (67.6%) were in surgical wards
Glucose reading more than 12 mmol/L	10/18(55.5%)	14/51(27.4%)
Frequency of checking Glucose not adequate/ not escalated	3/10(30%)	11/14(78.5%)
No treatment given for glucose reading above 12 mmol/L	3/10(30%)	11/14(78.5%)

Recommendations: In our hospital diabetes guidelines exist which recommend the measurement of capillary blood glucose in all patients on oral steroids. Our audit found out that capillary blood glucose is not adequately checked throughout the hospital particularly on surgical wards and if steroid induced hyperglycaemia is identified the appropriate treatment is frequently not given. Resource is required to ensure the ongoing education of ward based staff in the management and recognition of steroid induced hyperglycaemia.

P148 Continuous subcutaneous insulin infusion (CSII) in the management of IgE mediated insulin allergy

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Despite the advancement of recombinant human insulins with their reduced immunogenicity, insulin allergy remains a rare and challenging problem in the management of diabetes mellitus. We report the case of a 65-year-old man with a twelve-year history of type 2 diabetes whose medical management included oral hypoglycaemic agents and insulin therapy. The patient reported a progressive intolerance to insulin(NovoMix 30) which he attributed to the development of localised swelling, tenderness and puritis at the site of administration. Symptoms arose immediately after injection persisting for 2-4 hours. Specific IgE to human insulin was elevated at 1.35(<0.34 kUA/l), both skin prick and intradermal allergen testing was positive to a variety of insulin preparations but negative to excipients confirming a diagnosis of IgE mediated allergy to insulin. Following the suspension of insulin, the efforts made to optimise glycaemic control with oral therapy were unsuccessful and his $HbA1_c$ increased to 93mmol/mol, this was accompanied by osmotic symptoms. In an attempt to improve glycaemic control and desensitise, insulin pump therapy was initiated using an Omnipod® system (Novorapid 100unit/ml) delivering low dose insulin at an initial rate of 0.05 units/hour. Interval monitoring included clinical assessment, RAST testing and dose titration. After 6 months, insulin doses had increased to 30 units/day, $HbA1_c$ had improved to 73mmol/mol, IgE to human insulin reached its nadir at 0.58 kUA/l and the patient was symptom free. We demonstrate the successful use of CSII in the management of insulin allergy offering an alternative to conventional immune desensitisation in patients with moderate allergy.