Irish Nephrology Society Annual Scientific Meeting

Abstract Book 2017

Free Communications

FC-01: Title: Increased glycolytic metabolism in monocytes in response to anti-myeloperoxidase antibodies

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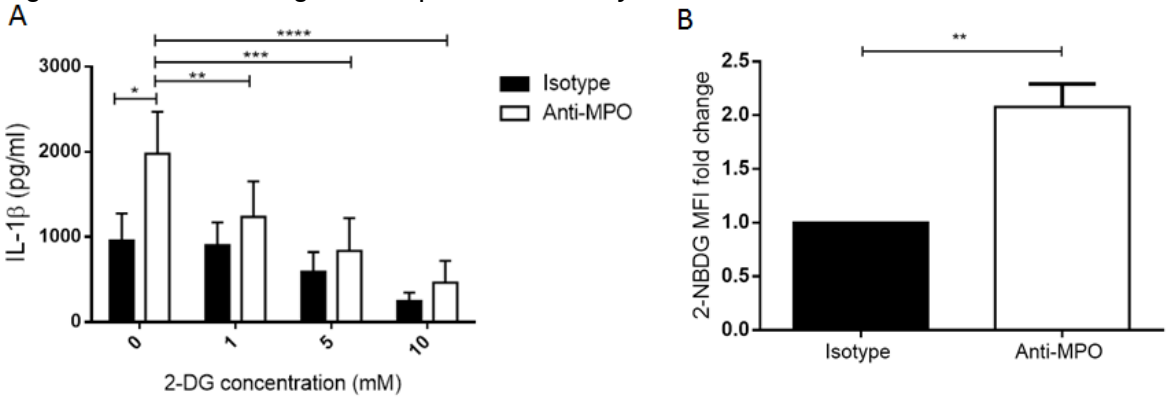
Background: Anti-neutrophil cytoplasmic antibody (ANCA)-associated vasculitis (AAV) is the most common cause of rapidly progressive glomerulonephritis in adults. ANCA are pathogenic, binding to myeloperoxidase (MPO) or proteinase 3 on neutrophils and monocytes with pro-inflammatory effects. However, the role of monocytes in disease is poorly understood. We hypothesised that stimulation of monocytes with ANCA results in metabolic reprogramming.

Methods: We used a previously validated model in which monoclonal antibodies (mAb) stimulate bead-isolated primary human monocytes to secrete pro-inflammatory cytokines. The relative importance of different metabolic pathways for cytokine production by monocytes in response to anti-MPO was tested using metabolic inhibitors. Glucose uptake was measured by flow cytometry using 2-(N-(7-nitrobenz-2-oxa-1,3-diazol-4-yl)amino)-2-deoxyglucose (2-NBDG), a fluorescent glucose analogue.

Results: Anti-MPO mAb-induced production of IL-1β and IL-6 is strongly inhibited by 2-deoxyglucose, an inhibitor of glycolytic flux. Conversely, inhibition of oxidative phosphorylation with oligomycin leads to a significant increase in anti-MPO-induced production of IL-1β, but not of IL-6. Using an optimised 2-NBDG uptake assay, we show that anti-MPO mAb induce a significant increase in glucose uptake in monocytes.



Anti-MPO stimulation of monocytes induces increased reliance on glycolysis. (A) Inhibition of glycolysis with 2-dexyglucose attenuates IL-1β production by anti-MPO stimulated monocytes. (B) Stimulation with anti-MPO results in increased 2-NBDG uptake in monocytes.

Conclusions: These data indicate that monocytes exhibit increased reliance on glycolytic metabolism in response to anti-MPO mAb, suggesting that metabolic reprogramming of monocytes plays a role in AAV pathogenesis. In the context of other autoimmune diseases, such as systemic lupus erythematosus, in which targeting metabolic pathways has emerged as a promising therapeutic avenue, we provide preliminary evidence that manipulation of metabolic pathways might be a therapeutic target in AAV.

FC-02: Title: Post-Transplant IgA Nephropathy: Donor-related and *de novo* Disease

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Background : The impact of either post-transplant *de novo* IgA deposition or donor-related IgA deposition on transplant outcomes is unclear. The aims of this project were to:
(1) Examine post-transplant outcomes in the setting of IgA deposition that is deemed to be either donor-related or *de novo*
(2) Compare patient and graft outcomes in these cohorts to the outcomes of all other Irish transplants performed during a similar time period

Methods: All transplant biopsy records from 1/1/1982 to 31/12/2013 were reviewed to identify those with post-transplant IgA deposition. A detailed retrospective chart review was performed to identify those in whom the IgA deposition was deemed donor-related or *de novo* (as opposed to recurrent). The National Kidney Transplant Service database was accessed to facilitate a comparison of patient and graft outcomes in these cohorts and all other renal transplant recipients.

Results: Fifteen cases of post-transplant IgA deposition were deemed to be donor-related; all were histologically and clinically mild and were identified at a mean of 27 days post-transplant. Eight cases were deemed to represent *de novo* IgA deposition; these cases were identified at a mean of 8.4 years post transplant. There were no differences in patient or graft survival in these groups compared to all other transplants performed during a similar time period. Cox regression multivariate analysis did not identify either donor-related IgA deposition or *de novo* deposition as a contributing factor to patient or graft survival.

Conclusions: Both donor-related and *de novo* IgA deposition were uncommon in our review of 'for-cause' transplant biopsies. Neither condition was found to impact on patient or graft survival. This is an important consideration for patient counselling in selected future cases.

FC-03: Title: Utility of measurements of urinary soluble CD163 & MCP1 in the identification of subtle renal flares in ANCA-associated vasculitis

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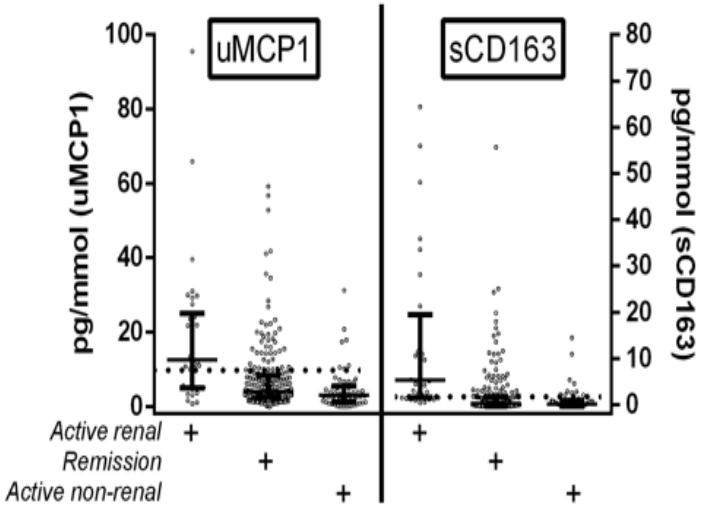
Background: Prior work has shown that urinary soluble CD163 (usCD163) displays excellent biomarker characteristics for detection of active renal vasculitis using samples that included new diagnoses with highly active renal disease. This study focused on use of usCD163 in detection of the more clinically relevant state of mild renal flare, and to compare the results of testing of sCD163 directly to testing of urinary monocyte chemoattractant protein 1 (uMCP-1).

Methods: Patients with AAV (n=88) were identified within a serially-sampled longitudinal multi-center cohort. Creatinine-normalised usCD163 and uMCP-1 levels were measured simultaneously by ELISA. usCD163 and uMCP-1 levels before, during, and after a flare of renal vasculitis were compared to levels during remission and active non-renal AAV.

Results: Samples were available from 320 study visits including times of active renal vasculitis (34), remission (278), and active extra-renal vasculitis (54). Mean creatinine levels in remission and during renal flare were 1.01 mg/dl (SD 0.47) and 1.43 mg/dl (SD 0.61), respectively. usCD163 levels were higher in patients with active renal vasculitis compared with patients in remission and those with active extra-renal vasculitis, with median values of 5.2 ng/mmol interquartile range (IQR) 1.5-19.4ng/mol), 0.8ng/mmol (0.1-2.5ng/mmol) and 0.6ng/mmol (0.1-1.6 ng/mmol), respectively ($p<0.001$). uMCP-1 levels were also higher in patients with active renal vasculitis compared with patients in remission and those with active extra-renal vasculitis, with median values of 12.6pg/mmol (IQR 5.1-25.1), 2.4pg/mmol (4.1-8.5) and 3.1pg/mmol (1.2-5.5), respectively ($p<0.001$, Fig 1). The proposed diagnostic cut-off for usCD163 and uMCP-1 was 1.2ng/mmol and 10.0pg/mmol respectively. Using this cut-off, the specificity of usCD163 and uMCP-1 in identifying renal vasculitis flare was 91% and 80%, respectively. The addition of uMCP-1 to usCD163 does not further increase the specificity. usCD163 and uMCP-1 levels are moderately correlated ($p<0.001, r^2 =0.36$), suggesting that additional information may be obtained from sequential modelling that incorporates traditional biomarkers.



Conclusion: In the context of subtle renal vasculitis flare, both usCD163 and uMCP1 levels are tightly associated with active renal disease in AAV.

FC-04: Title: Targeting Diabetic Kidney Disease Using Pro-Resolution Therapeutics

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Background: There is a growing appreciation that diabetic kidney disease (DKD) is a state of unresolved low-grade inflammation within the kidney that results in progressive scarring leading to eventual organ failure. Recent insight into the endogenous control points by which the inflammatory response is regulated has highlighted the role of pro-resolving mediators, including Lipoxins (LXs) in actively promoting the resolution of inflammation. We investigated the potential of LXs as therapeutics in the diabetic apolipoprotein E knockout ($ApoE^{-/-}$) mouse model of DKD.

Methods: $ApoE^{-/-}$ mice were randomly divided into control and streptozotocin-induced diabetes groups. Mice in both groups were randomly divided into vehicle (2% ethanol), endogenous Lipoxin A4 (LXA_4) and synthetic 15(R)-Benzo-LXA_4 analogue groups. LX administration (twice-weekly via I.P.) commenced from week 1 (prevention study) or 10 weeks after disease onset (delayed intervention study), and animals were followed for up to 20 weeks.

Results: Diabetic $ApoE^{-/-}$ mice administered vehicle presented with declining kidney function, as evidenced by increased urinary albumin, as well as diabetes-induced glomerular expansion. However, in diabetic $ApoE^{-/-}$ mice administered LXs (LXA_4 or Benzo-LXA_4) there was evidence of renoprotection, including significantly reduced glomerulosclerosis and albuminuria. At the molecular level, the increase in renal cortical collagen (*COL1, COL3, COL4*), alpha-smooth muscle actin (*α-SMA*), transforming growth factor beta 1 (*TGF-β1*), *ICAM-1, VCAM-1, MCP1, IL-6 and TNF-α* seen in diabetic $ApoE^{-/-}$ mice was significantly attenuated by both LXA_4 and Benzo-LXA_4. Importantly, these renoprotective effects were also evident in mice administered LXs 10 weeks after disease onset, where kidney disease is established. Finally, global transcriptome profiling of renal cortical tissue has defined LX-response pathways, including key mitochondrial, *VEGF* and *PKC* pathways, further clarifying the mechanism of LX-action.

Conclusions: LXs protect against diabetes-associated inflammation and fibrosis, and these data support a novel therapeutic approach for treating DKD.

FC-05: Title: ANCA Stimulation of Monocytes Leads to an Immediate Change in Their Cellular Metabolism

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Background: Renal damage is one of the most clinically significant features of ANCA vasculitis (AAV), occurring in 80-90% of patients. This frequently manifests as rapidly progressive glomerulonephritis (RPGN) which can lead to end-stage renal disease within a very short period if not properly addressed. AAV is characterised by the presence in most patients of autoantibodies directed against myeloperoxidase (MPO) or proteinase-3 (PR3) (ANCA). Both neutrophils and monocytes express the MPO and PR3 antigens. The effect of ANCA on neutrophils has been extensively studied, however, less attentions has been paid to the role of monocytes. We have previously shown that stimulation of monocytes with anti-MPO results in increased pro-inflammatory cytokine release suggesting a pathogenic role for monocytes in ANCA vasculitis. Interestingly, anti-PR3 antibodies did not lead to increased pro-inflammatory cytokine production. Changes in cellular metabolism (particularly a switch to aerobic glycolysis) have recently been shown to be important in the immune response, and targeting these pathways has been postulated as a potential treatment in autoimmunity. Here we investigated the effect of ANCA on the metabolic profile of monocytes isolated from healthy donor blood.

Methods: Monocytes were isolated from healthy donor blood. Changes in metabolism were measured using a Seahorse extracellular flux analyser. Changes in cytokine production post ANCA stimulation in response to various compounds were assessed by ELISA.

Results: Our results reveal that stimulation with ANCA does in fact result in increased glycolysis in monocytes. However, rather than a 'switch' to glycolysis, we also detected significantly upregulated oxidative respiration along with an increase in the overall respiratory capacity of the cells. Interestingly, these changes occur within minutes following exposure to ANCA. Cells treated with anti-PR3 antibodies displayed different oxygen consumption kinetics compared to those treated with anti-MPO, which we propose is linked to the differences we have previously shown in terms of inflammatory cytokine production. In order to further investigate further the mechanism by which metabolic pathways may be involved in inflammatory cytokine production in response to ANCA, we have used a number of pharmacological inhibitors to selectively block elements of glucose metabolism. Using CPI613 to inhibit pyruvate dehydrogenase (PDH) we have found that PDH activity is required for IL-1β production. PDH represents a major point-of-no-return in the metabolism of glucose. In addition, we have found that cellular reactive oxygen species (ROS) play a key role. Further analyses indicate that while mitochondrial ROS is partially required, NADPH oxidase appears to be a key player in this inflammatory pathway.

Conclusions: Taken together, these data indicate an important role for the upregulation of glucose metabolism and oxidative respiration in the pro-inflammatory activation of monocytes in response to ANCA. This could potentially lead to important new targets for clinical intervention in these diseases.

FC-06: Title: Global transcriptome profiling identifies genes associated with declining renal function.

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Background: Chronic Kidney Disease (CKD) represents a significant health and economic burden. It is estimated that 20% of people over 45 years of age in Ireland now have CKD[1]. In the age of precision medicine, identification of renal transcriptome changes offers a wealth of information on the molecular drivers and signalling pathways underlying the pathophysiology of CKD. We have generated global transcriptome profiles from renal biopsies of a cohort of patients with CKD recruited to the North Dublin Renal Biobank (NDRBB), an ongoing multi-centre biobank involving collaborators at Beaumont Hospital and the Mater Misericordiae University Hospital, Dublin. Here, we investigated the relationship between renal gene expression and clinical parameters of kidney function with the objective of identifying key molecular drivers and novel biomarkers.

Methods: Patients were recruited to the NDRBB with either abnormal renal function, haematuria, proteinuria or were undergoing transplant surveillance and subsequently required biopsy. Urine, serum and one-third of a second core at time of renal biopsy tissue were acquired. We performed Illumina RNA-Seq gene expression profiling on renal biopsies (n=44: 23 native/21 allograft). Using this phenotypically heterogenous cohort of patients, gene expression was correlated with clinical parameters [tubulointerstitial fibrosis (TIF) score, eGFR, serum creatinine, glomerular basement membrane thickness]. Follow-up clinical data (serum creatinine 3-5 years post-biopsy) was used to identify transcript expression predictive of disease progression. Gene expression analysis was performed using multiple approaches (DESeq/correlation analyses; statistical significance cut-off FDR $P<0.05$). Molecular pathway analysis was performed using Ingenuity Pathway Analysis software.

Results: Patients were categorized into groups based on degree of renal disease (as determined by TIF, eGFR, creatinine changes, GBM thickness and requirement for renal replacement therapy). Transcriptome data filtering and quality control was performed, identifying approximately 25,000 transcripts robustly expressed in renal tissue across all biopsies. Subsets of transcripts were identified that were significantly associated (FDR $P<0.05$) with these parameters of kidney disease. Pathway analyses identified enrichment for pro-inflammatory signalling (e.g. T-cell infiltration, TNF-α, NF-κB, IFN-γ, CD3) in both native and allograft samples. Key transcripts significantly associated with renal decline in these patients during a 3-5 year follow-up period (as assessed by serum creatinine measurements) included NF-κB, TCR, BCR, TNF-α,TLR7. Activation of T and B cell signalling pathways were significantly associated with renal decline in both populations of patients ($P=1.06E^{-4}$).

Conclusions: Transcriptome profiling of a cohort of patients recruited to the NDRBB identifies a strong pro-inflammatory signal in renal tissue. Studies are ongoing to identify key molecular targets and biomarkers of CKD progression, which may offer potential for innovative therapeutic strategies.

1: Kidney Disease Clinical Patient Management System, obtained from National Renal Office Health Service Executive, Mill Lane, Palmerstown, Dublin 20.

The authors gratefully acknowledge the contributions of Helen Doherty and colleagues at the Clinical Research Centre, Royal College of Surgeons in Ireland Education & Research Centre, Beaumont Hospital, Dublin.

FC-07: Title: Is it a BIG problem? Obesity and Kidney Transplantation

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Background: The global obesity epidemic has implications for kidney transplantation. The prevalence of an elevated body mass index (BMI) in patients with end stage renal disease (ESRD) is increasing disproportionally, since not only is obesity more common in the general population but the association between obesity, hypertension, and type 2 diabetes mellitus means such individuals are more likely to develop chronic kidney disease. It is well established that kidney transplantation offers a survival advantage when compared to dialysis for patients with ESRD. Whether obese patients are 'suitable' for transplantation remains a matter for debate with conflicting reports regarding the impact of obesity on graft and recipient survival, and post-transplant complications. We assessed the impact of BMI at the time of transplantation on graft and recipient survival at a minimum of 10 years post-transplant, and the incidence of new onset diabetes after transplant (NODAT), cardiovascular disease, and malignancy.

Methods: All consecutive adult kidney transplant recipients who received first, deceased donor kidney transplants in Northern Ireland between May 1986 and May 2005 inclusive were included in the analysis. Follow-up continued until November 2016. Donor characteristics, clinical variables and outcomes on all recipients are prospectively recorded on the Northern Ireland Kidney Transplant Database.

Results: There were 529 eligible patients, of whom 2 patients were lost to follow-up due to emigration and were excluded from analysis. BMI was available for 328 (62%) of the patients eligible. The median age at transplantation was 41 years, 216 (66%) recipients were male, mean BMI was 25.0 kg/m^2. Median follow up time was 16.7 years (range 11.8–36.8 years). The median graft survival was 111 months (range 0-347 months), and recipient survival was 200 months (range 16-363 months). There was no association with recipient BMI in multivariate analysis. Obese recipients were significantly more likely to develop NODAT but the incidence of cardiovascular disease was comparable in patients across all BMI categories. Cancer was significantly less common in recipients with a higher BMI.

Conclusions: Obese kidney transplant recipients have an increased risk of NODAT. However, this neither translates into an increased risk of cardiovascular disease, nor does it impact long term graft or recipient survival. Obese patients should not be excluded from transplantation solely on the basis of BMI alone. Rather it should be considered as part of individual risk stratification, based on other co-morbidity and considering the risk of death on maintenance dialysis treatment.

FC-08: Title: Assessing awareness and attitudes of healthcare professionals on the use of biosimilar medicines: A survey of physicians and pharmacists in Ireland

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Background: An increasing number of biosimilar medicines are becoming available for prescribing. The objective of this survey was to describe awareness of and attitudes to biosimilars amongst physicians and community pharmacists.

Methods: The physician sample consisted of General Practitioners (GPs) and medical specialists who practice in areas where biological medicines are used. Physicians were invited to complete an online questionnaire. Community pharmacists received a postal questionnaire.

Results: Responses from 109 medical specialists, 268 GPs and 125 community pharmacists were analysed. The majority of medical specialists (85%) and pharmacists (77%) claimed to be either very familiar or familiar with the term biosimilar, whereas many GPs (60%) were unable to define or had never heard of the term. One in five of the respondents thought that biosimilars were the same as generic medicines. Many physicians (42%) did not have definite opinions on whether biosimilars could be used interchangeably with their originator medicines. Medical specialists who currently prescribe biosimilars (n=43) were more likely to do so on treatment initiation (67%) than switch a patient from an originator medicine to a biosimilar (28%). The majority of medical specialists were opposed to pharmacist led substitution of biological medicines but some thought it could be appropriate if agreed with the clinician in advance.

Conclusions: The survey findings describe awareness of biosimilars amongst different healthcare professionals and this will aid in the design of future educational initiatives. The findings also highlight the attitudes of healthcare professionals to biosimilars so informing regulators, policy makers and industry.

FC-09: Title: SPRINT in Older Adults in Ireland- Injurious falls in community dwelling individuals meeting inclusion for SPRINT ≥ 75 were 5 times more common than that reported in the trial.

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Background: The a priori ≥ 75 years subgroup analysis of SPRINT did not find a difference in injurious falls with an intensive systolic BP lowering strategy. Whether similar injurious falls rate might be expected outside of a clinical trial context merits consideration.

Methods: We aimed to look at the generalizability of SPRINT for those aged ≥ 75 using data from the Irish Longitudinal study on Ageing (TILDA), a prospective cohort study representative of the population over 50 years. We subsequently report the prevalence of outcomes of interest over follow up in community dwelling individuals aged ≥ 75 years meeting inclusion for SPRINT at a mean follow up of 3.4 years. We also performed a post hoc assessment of the observed power of the ≥ 75-year subgroup of SPRINT for injurious falls.

Results: We found that approximately 25.9% (N=1401 of health assessment sample, Figure 2) of community dwelling TILDA health assessment participants aged over 50 years met final inclusion for SPRINT. Based on the 2011 census the population over 50 years in Ireland was 1,273,087, therefore approximately 329,730 community dwelling individuals in Ireland met inclusion criteria for the trial. The proportion of health center assessment sample meeting inclusion-aged ≥ 75 years was 8.9% (113,305 community dwelling individuals in Ireland). 27.3% of those aged ≥ 75 meeting final inclusion for SPRINT reported an injurious fall at follow up, (compared to 5.5% in the standard care arm of SPRINT). The post-hoc power to detect a difference in injurious falls in the ≥ 75-year SPRINT subgroup was low (approximately 10%).

Conclusions: Injurious falls appeared to be at least 5 times more common in community dwelling individuals than that observed in the standard care arm of SPRINT over similar temporal follow up. SPRINT ≥ 75 may not be reliable for generalisation of the falls risk associated with intensive SBP lowering to community dwelling older people. The threshold at which the potential benefits of intensive SBP lowering outweigh the risks ought to be individualized.

FC-10: Title: Graded Association between Kidney Function and Impaired Orthostatic Blood Pressure Stabilisation in Older Adults

Authors: Mark Canney[1,2], Matthew DL. O'Connell[1], Donal J. Sexton[1,2], Neil O'Leary[1], Rose Anne Kenny[1], Mark A. Little[2], Conall M. O'Seaghdha[3]
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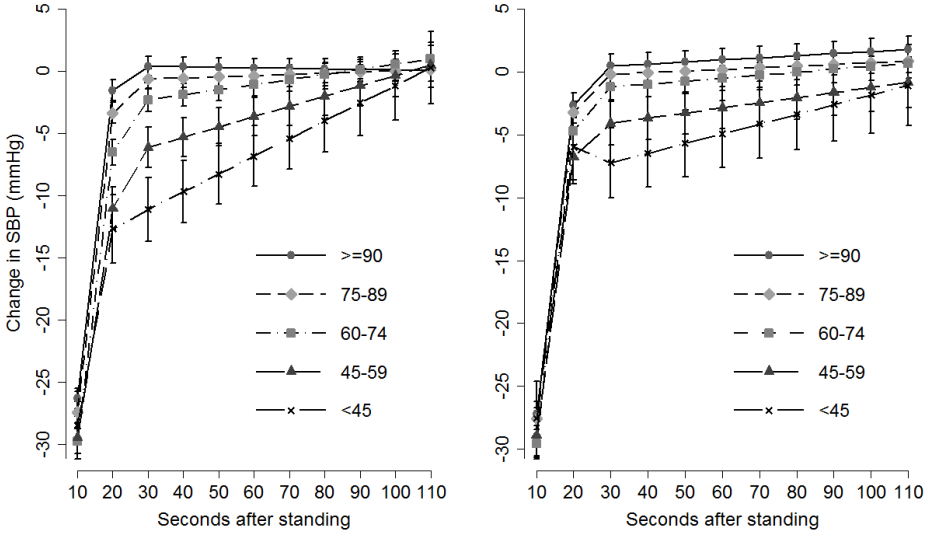
Background: Impaired orthostatic blood pressure (BP) stabilization is highly prevalent in older age and is a predictor of end-organ injury and falls. We sought to characterise the relationship between postural BP responses and the kidney.

Methods: Cross-sectional analysis of 4204 participants from The Irish Longitudinal Study on Ageing, a national cohort of community-dwelling adults aged ≥50 years. Beat-to-beat systolic (SBP) and diastolic BP (DBP) were measured during a 2-minute active stand test. The primary predictor was cystatin C estimated glomerular filtration rate (eGFR) categorized as follows (mL/min/1.73m^2): ≥90 (reference, n=1414); 75-89 (n=1379); 60-74 (n=942); 45-59 (n=337); <45 (n=132). We examined the association between eGFR categories and (1) sustained orthostatic hypotension (OH), defined as a SBP drop ≥20mmHg +/- DBP drop ≥10mmHg at each 10-second interval from 60-110 seconds inclusive; (2) pattern of BP stabilization, characterized as the difference from baseline in mean SBP and DBP at 10-second intervals.

Results: Mean age was 61.6 years, 47% were male and median eGFR was 82mL/min/1.73m^2. After multivariable adjustment, participants with eGFR<60mL/min/1.73m^2 were approximately twice as likely to have sustained OH (p=0.008 for trend across eGFR categories). We observed a graded association between eGFR categories and impaired orthostatic BP stabilization, both in unadjusted (Fig 1, left panel) and adjusted analyses (Fig1, right panel).

Conclusion: We report a novel, graded relationship between diminished eGFR and impaired orthostatic BP stabilization. Mapping the postural BP response merits further study in kidney disease as a potential means of identifying those at risk of hypotension-related events.



FC-11: Title: PREVALENCE AND CORRELATES OF VASCULAR ACCESS USE AMONG HAEMODIALYSIS PATIENTS IN THE IRISH HEALTH SYSTEM

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INTRODUCTION: Central venous catheters (CVC) are associated with substantial morbidity and mortality when compared with an arteriovenous (AV) fistula or graft. Information on patterns of vascular access use among haemodialysis (HD) patients in Ireland is lacking. The aim of this study was to describe the patterns of vascular access use among HD patients in the Irish health system.

METHODS: We used data from the National Kidney Disease Clinical Patient Management System (KDCPMS). Data on vascular access use along with demographic characteristics, primary cause of ESKD, comorbid conditions, and hospital group affiliation were extracted for prevalent adult HD patients, who were receiving dialysis in December in 2016. We only included patients who were on dialysis for at least 3 months, and receiving dialysis in units with full KDCPMS functionality. Vascular access assignment was determined from dialysis session records in December 2016. Comparisons between groups were conducted using chi-square and t-tests while multi-variable logistic regression explored associations using adjusted odds ratios (AOR) and 95% Confidence intervals (CI).

RESULTS: Data were available for 1,278 adult prevalent HD patients in 2016. Average age was 65(SD 15) years, with 30% of patients age 75 years or older, and 63% were male. Prevalence of hypertension, diabetes and atherosclerotic heart disease were 53%, 26% and 18% respectively. The prevalence of catheter use was 52% overall and this did not change from 2015 to 2016. Catheter use was more common in women than men (61% vs 47%), patients > 75 years (59% vs 48%), patients with diabetes (54% vs 46%), and varied significantly across Hospital Groups (from 46% in Group D to 67% in Group B, p=0.015). In multivariable analysis, adjusting for age, sex, comorbid conditions and hospital networks, the likelihood of catheter use (vs arteriovenous access) was significantly greater for older patients > 75 years (vs < 45 years) [AOR 1.55, 1.06 -2.28], women [AOR 1.89, 95% CI 1.48-2.37], and patients with diabetes [AOR 1.33, 1.01 - 1.77] and significantly lower for patients with hypertension [AOR 0.75, 0.59 - 0.94]. No significant differences were observed across Hospital groups following adjustment.

CONCLUSIONS: Tunnelled dialysis catheters are the predominant type of vascular access among prevalent HD patients and are associated with advancing age, women and diabetes. Although variability exists across hospital groups, this was explained by differences in patient-related factors. The availability of national data on vascular access should help inform policy initiatives and drive quality improvement programs in haemodialysis.

FC-12: Title: Ultrafiltration rates in patients on intermittent haemodialysis in a regional dialysis unit: A cross-sectional descriptive study

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Background: The safety and tolerability of the HD procedure is dictated in part by the ultrafiltration rate (UFR), and this in turn is determined by the interdialytic weight gain (IDWG) and length of each session. Furthermore, in haemodialysis patients, higher UFR as well as greater IDWG is associated with higher risk of all-cause and cardiovascular death. Data from observational studies suggests that the risk of all-cause and cardiovascular mortality begins to increase at UFR over 6 ml/h/kg. High UFR is being recognized as an important and modifiable risk factor for mortality in patients receiving maintenance haemodialysis as well as a key performance indicator for facility fluid management practices. We conducted this cross-sectional descriptive study to ascertain UFR in a cohort of haemodialysis patients in a regional dialysis unit.

Methods: Ultrafiltration rates were calculated based on interdialytic weight gain and HD procedure treatment duration, averaged over a three-month period. Clinical data from health information systems in a regional renal-unit was collected, retrospectively, using a standardised instrument. The primary audit was conducted between 1/9/16 and 30/11/16.

Results: A total of 59 patients were included. Males were 59%. Mean age was 66years (SD±15.5). 80% of patients had an ultrafiltration rate of <10ml/h/kg, with an average UFR of 7.9ml/h/kg in the entire dialysis cohort. From observational data, UFR of >13ml/h/kg has a significant correlation with cardiovascular and all cause mortality, and only 3% of our patients crossed this threshold. Mean interdialytic weight gain in the study population was 1.95kg and majority of patients had a relative IDWG of 2 – 4%.

Conclusion: The study shows good fluid management practice in our dialysis cohort compared with international observational data, with 80% adherence to the Renal Association guideline. In patients with higher ultrafiltration rates, individual and treatment specific factors need to be identified and we recommend the following interventions,

- Regular dietetic intervention from a trained renal dietician including formal education sessions that empower patients to implement reduced dietary salt intake and restricted fluid intake.
- Consider additional haemodialysis sessions or longer treatment times for patients with large weight gains.
- In patients with hypervolemia, individualise/reduce dialysate sodium to facilitate sodium removal with haemodialysis.

Moderated Poster Session

PO-01: Title: The Impact of Intensive Dialysis on Sleep Disturbance in End-Stage Renal Disease

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Introduction
Sleep disturbance and fatigue are among the main symptoms that trouble patients with end-stage renal disease (ESRD), but can be overlooked in medical encounters. The impact of changing modality of RRT on sleep-related symptoms is unclear.

Methods: Phase 1: Detailed interviews (using several validated tools), home polysomnography (PSG) and actigraphy were undertaken in an unselected cohort of patients with ESRD to identify the prevalence and impact of sleep disorders/disturbance.
Phase 2: Serial interviews, home PSG studies and actigraphy were performed at one and six months post RRT modality change to identify the impact of modality change.

Results: Phase 1: Twenty-six patients have been recruited to date. The majority reported poor sleep quality, troublesome restless legs syndrome and reduced quality of life (QOL); particularly in the energy/fatigue, general health perception and social functioning domains. Baseline home PSG (n=14 to date) confirmed high rates of sleep fragmentation and disordered sleep architecture; largely due to periodic limb movement (PLM) disorder and sleep apnoea (obstructive and central).
Phase 2: Three patients have had serial assessments following a switch to nocturnal HD or transplant and demonstrated reduced PLM and increased sleep efficiency post-switch.

Conclusions: Baseline home PSG confirmed a high prevalence of disturbed and disordered sleep in patients with ESRD, which correlated with subjective poor sleep quality and reduced QOL. Early data suggests that a switch to more intensive HD or transplant leads to improved PLM and sleep efficiency; we await six-month data to further define this change.

PO-02: Title: The Clinical Manifestations of Autosomal Dominant Polycystic Kidney Disease in an Irish Context.

Authors: Kevin Yachnin[1] (student), Claire Kennedy[2], Dervla Connaughton[2], Paul O'Hara[3], Neil Thompson[4], Sarah Cormican[2], Darren McMahon[5], Orna Waldron[6], Peter Conlon[5], Patrick O'Kelly[2], Liam Casserly[3], Peter Lavin[4], Mark Little[7], Peter J Conlon[2]

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Introduction: Autosomal dominant polycystic kidney disease (ADPKD) is caused by mutations in *PKD-1* or *PKD-2* and shows considerable phenotypic variability. We aim to perform genotype-phenotype analysis in an Irish cohort of patients with ADPKD. Systematic clinical data collection is the first step in this process.

Methods: Clinical data and DNA samples were obtained from consenting patients with ADPKD in conjunction with the Rare Kidney Disease Registry and Biobank. Data collection has been performed in Beaumont Hospital and University Hospital Limerick to date.

Results: Pedigree data were collected from 616 index cases (total 1511 affected individuals and 1289 unaffected family members). Among affected individuals with full data, the median ages at diagnosis and ESRD were 33 years and 50 years respectively. 537 patients (36% of affected patients) were transplanted at a median age of 51 years. 125 patients (8%) died. The most common causes of death were cardiovascular disease, malignancy and sepsis. A range of extra-renal manifestations were reported, with intracranial aneurysm and liver cysts most frequently seen. DNA has been collected on 125 patients to date and genotype analysis is underway utilising a novel Next Generation Sequencing (NGS) platform.

Conclusions: The median age at ESRD in our cohort is lower than that described in the literature. This large and detailed clinical dataset will be the foundation for our genotype-phenotype correlation. This correlation will help to inform patient counselling, prognostication and, potentially, selection for novel disease modifying therapies in future. We look forward to collaboration with more centres around the country.

PO-03: Title: Preemptive Kidney Transplantation in Ireland

Authors: Moloney Brona[1], Kennedy Claire[1], O'Kelly Patrick[1], Wanigsekara Tamara[1], Lambe Grainne[2], Magee Colm[1].

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Introduction: Preemptive kidney transplantation (PKT) avoids vascular access difficulties and metabolic disturbance related to chronic dialysis. However, it leads to earlier exposure to immunosuppression and 'sets the clock' on the transplant. We aimed to review those patients who underwent PKT in Ireland, and compare their outcomes to all other transplants performed during the same time period.

Methods: The National Kidney Transplant System was accessed to identify all adults who underwent PKT in Ireland between 1990 until 2014, and all adults transplanted after exposure to dialysis during the same time period. The analysis was restricted to first transplants. The effect of PKT on allograft and patient outcomes was determined using Kaplan-Meier and Cox regression methods

Results: PKT was undertaken in 138 patients, with 2475 in the comparison group. The PKT recipients were more likely to receive a living donor kidney transplant, and had less delayed graft function (DGF) and a shorter inpatient length of stay ($p<0.001$).
Graft survival at 10 years was superior for PKT recipients with 82.4 % functioning compared to 61.2% for non PKT recipients ($p=0.001$). Adjusting for potential confounding variables using multivariate analysis, PKT became non- significant as a predictor of graft outcome ($p=0.292$). Patient survival was similarly better for PKT recipients with a 10 year survival of 89.6% compared to 76.3% for non PKT recipients ($p=0.038$). Again, adjusting for potential confounders revealed a non-significant benefit for PKT versus non PKT for patient survival ($p=0.901$).

Conclusions: Unadjusted but not adjusted PKT was associated with superior renal allograft and patient survival. These findings suggest that at least some of the major "benefits" of PKT are due to factors other than the timing of the transplant itself. Further study will analyse the eGFR at which patients are being listed for PKT and their eGFR at the time of PKT.

PO-04: Title: REMARK: A Prospective Observational Study of Renin as a Marker of Tissue Perfusion and Prognosis in Critically-Ill Patients

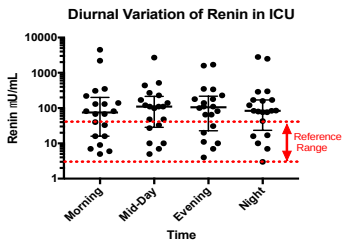
Authors: James Gleeson, Alice Crippa, Wasineenart Mon, Federica Cavicchi, Tess Van Meerhaeghe, Fabio Taccone, Serge Brimioulle, Jean-Louis Vincent, Jacques Creteur. Department of Intensive Care, Hôpital Erasme, Université Libre de Bruxelles, Route de Lennik, Bruxelles, Belgium. **Corresponding Author:** james.gleeson@hotmail.com

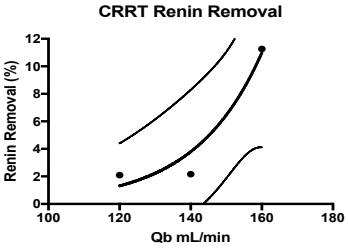
Background: Optimising haemodynamics to improve tissue oxygen-delivery is central to the management of critically-ill patients. Renin is fundamental to circulatory homeostasis and could be a useful marker of tissue-perfusion, particularly renal-perfusion in anuric patients requiring continuous renal replacement therapy (CRRT). Renin exhibits diurnal variation in healthy subjects and is at the size-threshold for removal by CRRT - two factors that could limit its use in clinical practice. We prospectively characterised plasma renin in critically-ill patients and compared its ability to predict ICU-mortality to that of lactate, another marker of tissue perfusion.

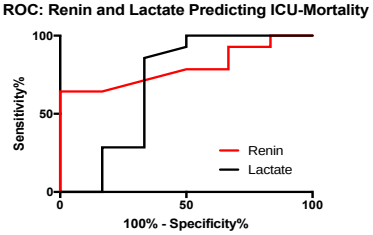
Methods: Ethics-committee approval was granted. Samples were drawn from arterial catheters, patients were consistently recumbent and direct plasma renin was measured. Samples were collected 6-hourly to investigate diurnal variation and were also taken from extra-corporeal circuits to measure clearance by CRRT. Renin was compared with routine lactate measurements. Renal Doppler was performed at time of renin sampling. The use of medicines that interfere with renin was recorded and considered in the analyses.

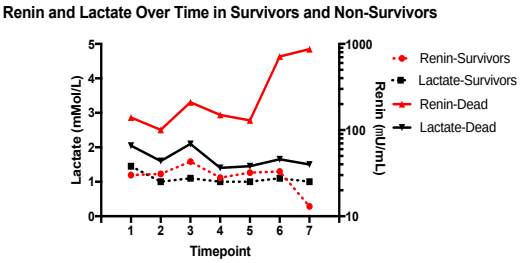
Results: One-hundred and twelve samples (n=112) were taken from 20 patients (65% male, mean 59.8 years old) with heterogeneous diagnoses and 30% ICU-mortality. Renin correlated significantly with urine output after excluding patients that received diuretics (r=-0.5, p=0.04) but did not correlate with mean arterial blood pressure (r=-0.08, p=0.7). There was no diurnal variation of renin in this population (Friedman test p=0.1). CRRT removal of renin was minimal (4±4.3%, mean±SD), and predominantly by membrane adsorption(97.5±5.6%). Renin did not correlate with renal Doppler measurements (r=0.1, p=0.62). There was no difference in renin levels between patients with and without AKI (p=0.48). Patient maximum-renin achieved significant prognostic value for ICU-mortality (ROC AUC 0.80, p=0.04) whereas maximum-lactate did not (ROC AUC 0.70, p=0.17).

Conclusion: In an ICU population, renin measurement is not significantly interfered with by diurnal variation or CRRT removal. Renin correlates significantly with urine output and is a significant predictor of ICU-mortality. Measuring renin as a marker of tissue perfusion could be useful in clinical practice.









PO-05: Title: Survival with ESKD in South West Ireland

Susan Murray, Mark Canney, Joseph Eustace, Liam Plant

Background: In comparison with the United Kingdom, little is known about survival rates amongst incident End Stage Kidney Disease (ESKD) patients in the Republic of Ireland. A study of 197 ESKD patients from South West Ireland in 2005 showed similar survival rates to those reported by the UK Renal Registry. (UKRR). We have now evaluated survival in a larger incident cohort, followed for a longer period of time.

Methods: This was a retrospective cohort study, assessing survival rates for all adult incident ESKD patients commencing renal replacement therapy (RRT) in the south-west region of the Republic of Ireland. (Population 664,034 in 2011). Incident patients were identified over a 14-year period between 01/01/2002 and 31/12/2015. ESKD was considered to be present on the date of initiation of long term renal replacement therapy. Patients adjudged to have acute kidney injury (AKI) were not included. Patients were followed up until 31/12/2016; those transferring out of the region were censored at that time. Unadjusted survival was calculated using Kaplan Meir (K-M) survival curves. Cox's Proportional Hazard modelling was used to explore univariate and multivariate impact of selected independent variables. (age; gender; primary renal diagnosis; presence of diabetes mellitus; initial modality of RRT).

Results: 697 patients entered ESKD in this period. 276 died during the period of observation. 32 of these within the first 90 days. Median survival was 4355 days (12 years). Selected unadjusted K-M survival data (conditional on surviving 90 days) are given in the table and compare one and five-year survival for this cohort, with data reported by the UKRR. Similar comparison between those with/without diabetes mellitus is illustrated.

	SW Ireland (2001-12) % (95%CI)	**UKRR (*2015;**2005)** % (95%CI)
1yr survival	93.2 (91.2 - 95)	*86.6 (85.7,87.4)
5yr survival	68.0 (64.1-73.0)	**49.7 (48.4,51.0)

On univariate analysis, age and underlying diagnoses within the vascular and diabetic nephropathy primary renal diagnosis groups were statistically significantly associated with shorter survival. On multivariate analysis, age and certain primary diagnosis groups remained independent predictors of duration of survival.

Poster Session

PO-06: Title: Evaluation of anti-inflammatory activity of novel Imidazole-Containing Lipoxin A4 Analogues

Eibhlín M. Butler[1],‡ Monica de Gaetano[2],‡ Catherine Maingot[3], Alisha McLoughlin[3], Emily Hams[4] Mariam Marai[2], Padraic Fallon[4], Christine E. Loscher[3], Patrick J. Guiry*[1],ø and Catherine Godson[2],ø

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Background: Lipoxins [LXs] are endogenously generated eicosanoids with potent anti-inflammatory, pro-resolving and fibro-suppressant bioactions. We have previously demonstrated LXs to be efficacious in experimental models of acute renal failure [1], tubulointerstitial fibrosis [2] and glomerulopathy [3]. LXs autacoids are rapidly metabolised and this instability, allied to their difficult/costly synthesis are considered obstacles to their use as pharmaceutical entities. In principle, synthetic LX analogues which mimic the bioactions of endogenous LXs may have therapeutic potential. We have used asymmetric synthesis to generate a series of novel imidazole-containing LX analogues.

Methods: In order to evaluate the biological activity of the newly synthesized imidazole-containing LXA_4 analogues, (1*R*) and (1*S*) epimers, a set of *in vitro* experiments were conducted on a human THP-1 monocyte cell line containing a stably integrated NF-ĸB-inducible Lucia™ reporter plasmid and a murine macrophage cell line J774.1. To further elucidate the effect of the analogues downstream of NF-ĸB activation, LPS-stimulated pro-inflammatory cytokines secretion was analysed by quantification of a panel of pro-inflammatory cytokines in the cultured supernatant of THP-1 Lucia monocytes, using multiplex electrochemiluminescence technology. We then explored the impact of the imidazole analogues in an *in vivo* model of inflammation: zymosan-induced peritonitis.

Results: We report a significant reduction in the release of all the measured pro-inflammatory cytokines by both analogues. In particular, 10 pM of the (1S)-epimer provoked a maximal reduction, compared to LPS, of IL-1b (by 50±7%, $p<0.01$), IL-6 (by 31±10%, $p<0.01$), IL-12p70 (by 35±16%, $p<0.05$), IFN-g (by 31±6%, $p<0.01$) and TNF-a (by 31±9%, $p<0.001$), mimicking responses to LXA_4. No cytotoxicity of the analogues was detected. Using murine zymosan-induced peritonitis as a model of acute inflammation we found that LXA_4 and the imidazole containing LX-analogues significantly attenuated the acute inflammatory response. The imidazole analogue was found to be more efficacious and potent than LXA4 in this in vivo model.

Conclusion: Both benzylic epimers demonstrated significant anti-inflammatory activity attenuating LPS-stimulated NF-ĸB promoter reporter gene activity and cytokine release. These results support the therapeutic potential of these molecules as novel inflammatory regulators.

PO-07: Title: Improved Platelet Interactions following Successful Renal Transplantation

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Background: Uraemic platelet dysfunction contributes to morbidity and mortality in patients with end-stage renal disease (ESRD) and is due to a combination of intrinsic platelet factors, platelet-endothelial interactions and extrinsic factors. The aim of this study was to investigate the impact of renal transplantation on platelet-endothelial interactions in patients with ESRD using a novel peer-reviewed assay of platelet function.

Methods: Nine healthy controls and ten patients scheduled for living donor kidney transplant surgery were recruited. Blood samples and clinical data were collected at baseline and at least four weeks later (ie pre- and post-transplantation for the transplant recipients). Whole blood was perfused over immobilised von Willebrand Factor (VWF) using a custom-designed microfluidic parallel plate flow chamber at arterial shear flow rates. Dynamic platelet-protein interactions were tracked and evaluated by a novel analytical method providing rapid data on nine platelet translocation properties.

Results: In the healthy controls, baseline and follow-up samples showed similar numbers of platelet-endothelial interactions. Patients with ESRD awaiting transplant demonstrated reduced platelet-VWF interactions compared to healthy controls. In the seven transplant recipients with immediate graft function, the number of platelet-endothelial interactions normalized at follow-up. Three patients, all of whom had delayed graft function (DGF), did not demonstrate this normalization of platelet-endothelial interactions.

Conclusions: Platelet-endothelial interactions improved in transplant recipients with immediate graft function but not in those with DGF. This has important clinical consequences, as patients with DGF are more likely to undergo invasive procedures including transplant biopsies and insertion of central venous catheters. Meticulous attention to haemostasis is imperative in this setting.

PO-08: Title: Redox biomarkers in ADPKD and IGAN

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Background: Oxidative stress with redox dysregulation appears to play an integral part in the pathogenesis of chronic kidney diseases. We wanted to study some redox biomarkers in autosomal dominant polycystic kidney disease (ADPKD) and IgA nephropathy (IGAN). ADPKD is a monogenetic disease while genome-wide association studies has revealed a polygenetic basis for IGAN.

Methods: Cross-sectional study: ADPKD diagnosis by Pei criteria, IGAN by biopsy.

	ADPKD, n=54	IGAN, n=58	Controls, n=86	P
Gender, M/F ratio	18/36§	49/9*	47/39	< 0.0001
Age, yrs	49.9 ± 14.9	49.0 ± 11.7	46.1 ± 9.8	0.14
eGFR (ml/min/)	61 ± 29†	69 ± 24†	91 ± 14	< 0.0001

*Patients Vs. controls: † p< 0.0001; * p ≤ 0.001; § p ≤0.014*

DNA was analysed for single nucleotide polymorphisms (SNP) in eight selected redox related enzymes. Oxidized plasma aminothiols were analysed by high performance liquid chromatography (HPLC); homocysteine (Hcy), cysteinylglycine (CG), cysteine (Cys) and glutathione (GSH). Plasma malonedialdehyde (MDA) and advanced oxidation protein products (AOPP) were measured by HPLC connected to a fluorescence detector and a spectrophotometric method, respectively.

Results: The frequency of SNP *rs4880* of mitochondrial superoxide dismutase (SOD2) was significantly elevated in IGAN patients.

	ADPKD, n=54	IGAN, n=58	Controls, n=86	P
Free oxidized Hcy	1.9 ± 1.3†∞	2.2 ± 0.7†a∞	0.9 ± 0.6	< 0.0001
Free oxidized CG	11.2 ± 3.1*∞	10.5 ± 2.7§	9.5 ± 2.1	0.0009
Free oxidized Cys	97.7 ± 26.6†∞	103.7 ± 18.4†∞	78.8 ± 12.2	< 0.0001
Free oxidized GSH	1.5 ± 0.6	1.4 ± 0.4	1.4 ± 0.5	0.30
p-AOPP	1.14 ± 0.36	1.38 ± 0.43*a∞	1.11 ± 0.39	0.0007
p-MDA	0.64 ± 0.18	0.69 ± 0.15§	0.62 ± 0.16	0.021

*Patient group Vs. Controls: † p< 0.0001; * p ≤ 0.001; § p ≤0.017*
IGAN Vs ADPKD: a = 0.003
∞ *remained significant after correcting for age and gender.*

Conclusions: IGAN was associated with higher levels of the oxidation product AOPP and a polymorphism of SOD2 with reduced activity. Both IGAN and ADPKD have elevated levels of oxidised Hcy, CG and Cys, which indicate oxidative stress. GSH, which is considered an important redox buffer, was not increased in the patients.

PO-09: Title: Immunoregulatory functions of innate lymphoid cells (ILCs) and mucosal associated invariant T (MAIT) cells in ANCA vasculitis

Authors: *Barbara Fazekas[a], *Ana Del Carmen Moreno[b], Yvelynne Kelly[a], Paul O'Hara[a], Susan Murray[a], Alan Kennedy[a], Niall Conlon[b], Mark Canney[a], Sarah Moran[a], Derek G. Doherty[b], Mark A. Little[a]
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Background: Innate lymphocyte polulations, such as mucosal associated invariant T (MAIT) cells, invariant natural killer T (iNKT), γδ T cells and innate lymphoid cells (ILCs) are emerging as important effectors of innate immunity and are involved in various inflammatory and autoimmune diseases. The aim of this study was to assess their frequencies in peripheral blood mononuclear cells (PBMC) from ANCA vasculitis (AAV) patients.

Methods: MAIT cells, iNKT cells, the Vδ1, Vδ2, Vδ3 subsets of γδ T cells, ILC1, ILC2 and ILC3 and major lymphocyte and monocyte subsets were analysed by flow cytometry on PBMC from patients with granulomatosis with polyangiitis (GPA), microscopic polyangiitis (MPA) and eosinophilic granulomatosis with polyangiitis (EGPA), both with and without immunosuppressive treatment, in acute phase (AP), remission phase (RP) and compared with healthy (HC) and disease controls (DC) (patients with renal impairment and non-AAV autoimmunity).

Results: The frequencies of MAIT and ILC2 cells were decreased in all diseases compared to HC (Fig1. A-B). These depletions were even more pronounced in patients with AAV and remained decreased during RP (Fig.1 B). We did not observe an increase in ILC2 frequencies in EGPA. We observed an increase in frequencies of ILC2 during GPA RP compared to GPA AP, while a decrease in MPA and EGPA RP compared to AP. B cell frequencies were increased in AP AAV compared to HC, and decreased in RP. The frequencies of iNKT, Vδ1, Vδ2, Vδ3 and ILC3 cells were similar in all groups studied.

Conclusion: We show that AAV is associated with a general decrease of ILC2 and MAIT cells while with an increased frequency of B cells in AP, although similar findings are observed in disease controls, suggesting that this is not necessarily specific to AAV. Despite the strong TH2 preponderance of EGPA, we did not observe an ILC2 expansion.

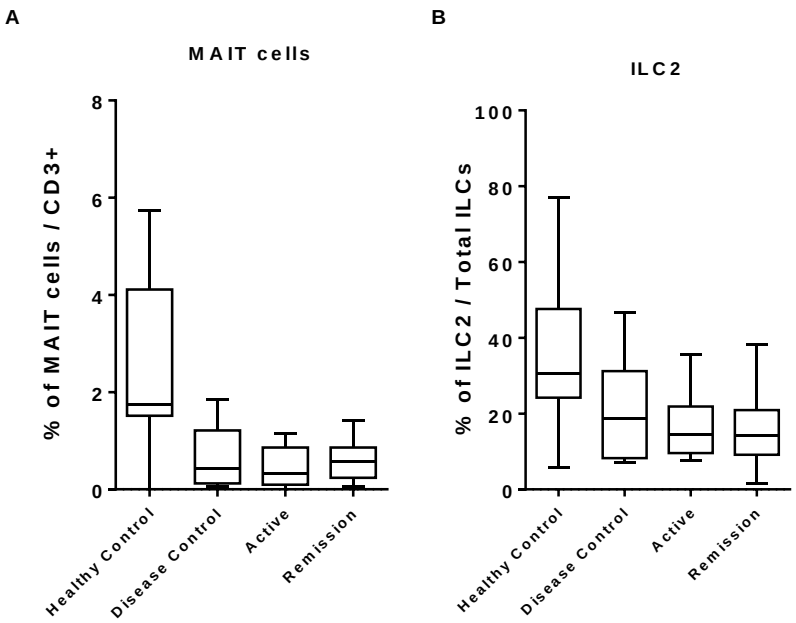

Fig.1. Frequencies of MAIT cells and ILC2 in AAV patients. We assessed by flow cytometry the frequencies of A) MAIT cells in CD3+ T cells and B) ILC2 in Total ILCs in healthy controls disease controls and AAV patients in acute or remission phase (HC n=10, DC n=10, AP n=13, RP n=16).

PO-10: Title: Polygenic risk score as a determinant of risk for post-transplantation non-melanoma skin cancer

Authors: Caragh P. Stapleton[1], Kelly A. Birdwell[2], M. Lee Sanders[3], Paul J. Phelan[4], Peter J. Conlon[5] and Gianpiero L. Cavalleri[1]

Department of MCT, Royal College of Surgeons, Dublin.[1] Department of Medicine, Vanderbilt University Medical Centre.[2] Department of Internal Medicine, University of Iowa Health Care.[3] Nephrology, Royal Infirmary of Edinburgh.[4] Beaumont Hospital Kidney Centre, Dublin.[5] Corresponding author: caraghstapleton@rcsi.ie

Background: Multiple genetic loci have been identified for non-melanoma skin cancer (NMSC) in the general population. Polygenic risk score (PRS) is the sum of all alleles associated with a trait weighted by the effect size of that allele as determined by a previous genome-wide association study (GWAS). We tested whether PRS, calculated using a GWAS of NMSC in a non-transplant population, can be used to determine risk of developing and time to NMSC post-transplant.

Methods: Post-renal transplant NMSC cases (n=150) and controls (n=442) were collected from Vanderbilt University Medical Centre and Beaumont Hospital. Genetic variants that reached pre-defined levels of significance ($1x10^{-4}$, $1x10^{-5}$, $1x10^{-6}$) were chosen from two GWAS papers: squamous cell carcinoma (SCC) in a non-transplant population [1] and basal cell carcinoma (BCC) in a non-transplant population [2]. Using the GWAS results from [1] and [2], BCC and SCC PRSs were calculated at each of the p-value thresholds for each NMSC case and control in the renal transplant cohorts. The PRSs were then normalized so mean = 0 and standard deviation = 1. The PRSs were tested as a predictor of case: control status in a logistic regression model and time to NMSC post-transplant in a survival model. Age of recipient at transplant, azathioprine exposure and the first four principal components were included as covariates in both models.

Results: SCC PRS calculated at p-value threshold of $1x10^{-4}$ was the most significant predictor of case: control status of NMC post-transplant (hazard ratio = 1.8; Bonferroni corrected P = 0.008). When we subdivided NMSC into SCC and BCC, BCC PRS at $1x10^{-5}$ was a significant predictor of time to post-transplant BCC (HR = 1.7, Bonferroni corrected P = 0.018).

Conclusions: Polygenic risk scores of non-transplant NMSC are predictive of case:control status of post-transplant NMSC and time to developing BCC post-transplant. We are currently working to expand this analysis to additional patient cohorts.

References:

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2. Chahal, H.S., et al., *Genome-wide association study identifies 14 novel risk alleles associated with basal cell carcinoma.* Nat Commun, 2016. **7**: p. 12510.

PO-11: Title: Whole exome sequencing to identify causal variants for familial IgA nephropathy

Authors: Caragh P. Stapleton[1], Claire Kennedy[2], Dervla M. Connaughton[2], Gianpiero L. Cavalleri[1]and Peter J. Conlon[2]
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Introduction: IgA nephropathy (IgAN) is the most common form of glomerular nephritis in the world. Differences in incidences between ethnicities and familial inheritance patterns indicate that genetic variants may influence this disease. An IgAN locus on chromosome 6q22-23 was identified via linkage analysis; however the causal gene remains elusive. The advent of next generation sequencing in recent years has led to effective methods of identifying genes underlying familial disorders. These methods were applied in this study.

Methods: Families with a history of IgAN were recruited and DNA was collected through Beaumont hospital. Whole exome sequencing was carried out on 12 affected individuals from 6 different families with IgAN. Mutations that fitted a dominant, recessive or compound heterozygote model of inheritance were screened for. These variants were filtered based on being shared between affected members of the family, frequency in the general population, function and predicted deleterious nature.

Results: In three of the families, we have identified candidate variants. In the first family, we identified a pathogenic variant (according to American College of Medical Genetics (ACMG) standards) in the gene *COL4A5,* a gene known to cause Alport syndrome. The variant was present in 2 of the 3 exome sequenced affected family members. We found that this variant segregated with the disease in the other 5 family members indicating that there may be two similar diseases segregating in the one family. In the second family, we identified a likely pathogenic variant in *COL4A3*. *COL4A3* is also associated with Alport syndrome. This variant segregated with the disease in 2 unaffected and 2 affected family members. In the third family, we identified a variant in the gene *LMX1B*, a gene associated with Nail-patella syndrome. This variant was also found to segregate with the disease; however its significance remains uncertain.

Conclusions: Exome sequencing is a powerful tool for understanding and even diagnosing an individual's disease. Here, we identified a number of pathogenic and likely pathogenic variants using exome sequencing in 6 Irish families who were originally diagnosed with IgAN. Further work is required to assess the extent of segregation and potential pathogenic role of these variants.

PO-12: Title: Interventional Radiology Fluoroscopic Guidance as an alternative to Surgery for Peritoneal Dialysis Catheter Placement

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Background: Peritoneal dialysis (PD) is a mode of Renal Replacement Therapy (RRT) offered by choice to candidates deemed to meet the relevant criteria. Access to perform the dialysis is achieved via a PD catheter that can be placed either surgically or by a variety of percutaneous placement strategies. Recently in our institution placement has been facilitated by fluoroscopic guidance in the interventional radiology (IR) department.

Objectives: The objective of this study was to evaluate the waiting time for PD catheter placement via IR compared to surgical placement in patients waiting for peritoneal dialysis as a modality for RRT in University Hospital Waterford (UHW), and to assess the complications associated with both techniques.

Methods: Patients attending the Low Clearance Clinic in University Hospital Waterford (UWH) referred for PD between November 2014 and February 2017 were identified using the emed and NIMIS databases. The time between referral for PD catheter placement by IR or surgery and actual placement were analysed.

Results: A total of 20 patients underwent PD catheter placement or were referred for it. Of these nine were referred for surgical placement and 11 for fluoroscopic guidance in IR. According to our analysis, six of the nine patients referred for surgical placement had their PD catheter in place by February 2017. Of these four were placed as an emergency procedure and two as routine. Three candidates were still awaiting catheter placement. The average waiting time was 68.66 days (minimum of two days, maximum of 192 days). Similar analysis of the patients referred to IR for PD catheter placement showed that all 11 patients had successfully undergone the procedure. The average waiting time was 23.5 days (minimum of one day, maximum of 64 days).

Conclusions: The waiting time for Peritoneal Dialysis (PD) catheter for candidates who elected for placement under IR as the form of Renal ReplacementTherapy (RRT) was approximately 50% less than for those who underwent surgical placement.

PO-13: Title: A Successful Collaborative Initiative to Increase the Uptake of the Influenza Vaccination among Haemodialysis Patients attending a Satellite Unit

Arwa Shuhaiber, Prof George Mellotte, Prof S Corrigan

Background: End Stage Renal Disease (ESRD) patients on haemodialysis (HD) that receive the influenza vaccination (Flu V) will reduce their risks of developing pneumonia/influenza, other morbidities, ICU stays and hospitalization and death (1).. This is particularly the case for elderly patients. The Health Service Executive (HSE) has recommended that all ESRD patients should receive the Flu V which would be provided free of charge (2). However, research highlights that in spite of the recommendation that the uptake of the Flu V should be obligatory in all HD patients, the uptake is only 67% (3). Therefore the aim of this initiative was to increase the uptake of the Flu V in 2016 among HD patients attending the satellite unit in Tallaght Beacon (TB).

Methodology: In this initiative the HD patients received Flu V and the pneumonia vaccination in the community, as we were not in a position to administer it locally in the satellite unit. The intervention process was led by the Nephrologist Clinical lead and supported by the Staff Physician (SP) and commenced in August 2016. The following month the SP utilised the eMEDRenal tool to generate individualised patient letter addressed to their GP's and pharmacist's, encouraging them to administer the seasonal Flu V and the pneumonia vaccination to their patients as per the HSE guidelines. The letter was adapted from the eMEDRenal template and reviewed by the unit SP and the Clinical Nurse Manager (CNM) and approved by the Clinical Lead. On the ward round the SP told the patients on HD that during the next treatment they will receive a letter regarding their Flu V and pneumonia vaccination and informed that this letter be given to their GP or pharmacist so the vaccine could be administered to them. The letters were signed by the unit SP and distributed to the patient by the nurse or the CNM with additional explanations and encouragement to avail of the vaccines at subsequent visits. Following this and in the subsequent SP visits with patients, they were asked if they had received their Flu V and pneumonia V. If they had received the vaccines answer this was documented on eMEDRenal under infection control section.

Results: In December 2016 an update vaccination status from the eMEDRenal tool highlighted that in total 73 dialysis patients out of a total of 78 (93.5%) had received the vaccinations. This was a marked improvement and a much better uptake that the 67% highlighted from previous research.

Conclusion: This initiative demonstrated that by applying a collaborative leadership approach in planning and implementing a strategy had a positive effect on the uptake of the seasonal Flu V and pneumonia vaccines within a HD population. This collaborative pathway which was people-centred improved communication between healthcare providers across different health care organisations and resulted in improved joint patient care. This initiative also demonstrated two key areas that are critical for co-lead; (i) the right tool; (ii) an understanding of the human factor in the people-centred care. Both these aspects played an important role in improving patient safety where all key stakeholders are actively collaborating (clinical co-lead, leading consultant nephrologist in the parent hospital, nurses, nurse managers in satellite unit, patients, general practitioners, community pharmacist and the staff physician). Everyone was paramount in implementing this process and the goals of increasing the uptake of the Flu V and pneumonia vaccines was achieved

PO-14: Title: Process planning for the supply of medication from Hospital Pharmacy for the Arrest Trolley in the Satellite hemodialysis renal units. Fail to Plan, Plan to Fail.

Authors: Arwa Shuhaiber, Prof Nick McDonald Prof George Mellotte 2017, TCD**.**

The renal services in the Republic of Ireland have evolved over the last decade, from providing hospital centred Haemodialysis to offsite satellite Haemodialysis (SHDU) service provision. We have looked at the arrest trolley (AT) medication management in the offsite dialysis units. The aim is to maximize safety and reduce wastage. We have reviewed the AT medication in SHDU to facilitate the delivery of the advanced cardiac life support (ALCS) requirement on site while waiting for emergency services. We examined the potential role of the hospital pharmacy (HP) in the provision of medication for AT under a Service Level Agreement (SLA).

The goals: 1.The SHDU will have the medication needed for the AT ordered, prepared and sealed by pharmacist in see-through trays in the AT as per the guidelines of the American heart Association (AHA) and the Irish heart Foundation (IHF) 2. The clinical governance of the AT will be under the accredited code blue team of the hospital. 3. The cost of this service provided by the HP for the full AT medication cost, supply, review including the expiry date of each medication. 4. Restock is maintained by pharmacy as per the hospital cardiac/renal ward.

The HP will have the responsibility to carry a routine review of the AT every three months by liaising with the nurse manager of each unit. This inventory is held in a hard copy or electronically by the HP and the AT supplied and sealed by HP and only to be opened in a medical emergency. In the event of an arrest or the use of the AT supply due to a medical emergency the nurse in charge on the day will be in touch with the HP immediately after the event. It will be agreed on the method of communication and the template will be saved on the document management systems of the unit. The HP will prepare the replacement on the AT and ready before the next treatment session in the unit. The HP will look into the cost of providing this service SHDUs. Once the cost is approved, regroup with the Code Blue Team in the hospital and finalise the technical /clinical aspect of the SLA. Accountability and agreement between different groups are transparent. A Standard Operation Procedure (SOP) will be written to address all aspects of this process will be reflected in the SLA with HP and the SHDUs. Any changes of the guidelines regarding the AT, will result in the Code Blue Team to change the medication on the AT and SHDUs will be informed and the PH will update the AT accordingly.

PO-15: TITLE: Comparative Mortality Between Peritoneal Dialysis And In-Center Haemodialysis. A Systematic Review Of Propensity-Score Matched Mortality Studies

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BACKGROUND: Due to lack of randomised controlled trials comparing haemodialysis (HD) and peritoneal dialysis (PD), controversies continue to exist regarding the optimal choice of modality and relative survival benefits. However, well-conducted propensity score matched studies can reduce selection bias and are viewed superior to conventional statistical adjustment methods. We conducted a systematic review and meta-analysis of mortality studies comparing in-centre haemodialysis with peritoneal dialysis that employed propensity-based methods.

METHODS: A sensitive search strategy identified all citations in PubMed, Cochrane and EMBASE databases from inception through Nov 2016. Risk of bias was examined against the Newcastle-Ottawa Scale for observational studies and pre-set criteria on the quality of reporting on propensity score matching methods. A random effect Meta-analysis with a meta-regression allowed calculation of pooled treatment effect estimate and exploration of within studies variations.

RESULTS: From a total of 149 citations, 15 cohort studies were included with a total of 113,578 propensity score-matched incident dialysis patients. Cohort periods spanned from 1999 to 2014. The pooled hazard ratio for PD vs. HD was 1.03 [95% CI 0.96, 1.10]. None of the studies scored poor on the Newcastle-Ottawa Scale. However, the quality of reporting on the propensity score was variable. 13 (87%) studies adequately reported on the variables used to derive scores and 11(73%) explicitly stated the type of matching. On the other hand, 4 (26%) studies used appropriate balancing diagnostics and only 3 (20%) adjusted for within pair correlation post matching. Level of heterogeneity was significant (I2=86%). This was due to differences in cohort period, county of study and type of the study: prospective or retrospective. Together these factors explained a substantial degree of the between-studies variance (R2=76%).

CONCLUSIONS: This meta-analysis suggests that peritoneal dialysis and in-centre haemodialysis carry similar mortality risks. Differences in practice patterns among countries and temporal changes in dialysis care may underpin differences in reported hazard ratios from published studies. Adequacy of reporting and utilizing propensity score methods remains suboptimal.

PO-16: Title: Wider deviation than desired between prescribed & delivered dialysis treatments in an Irish haemodialysis population mandates closer attention to process in quality assurance**.**

Authors: Susan McGrath, William Plant

Background: The eMED Renal system is now deployed in all Irish haemodialysis centres. This contains an integrated Urea Kinetic Modelling (UKM) calculator which facilitates automated generation of delivered dialysis doses. Our unit has set a target that 80% of delivered dialysis doses should not deviate (above/below) by more than 10% from prescribed dialysis doses.

Methods: Patient demographics; prescribed and delivered dialysis (expressed as Kt/Vurea); were audited on three occasions between August and October 2016. Inclusion criteria included all patients receiving centre-based haemodialysis for each of the three months of the audit period. Exclusion criteria included patients who were not on haemodialysis for all three months; patients who were inpatient at the time of their monthly dialysis review and patients with incomplete data sets.

Results: 108/167 patients met inclusion criteria. Only 2% of treatments received exactly the dialysis dose prescribed. In 38% calculated Kt/Vurea was less than that prescribed. In 60% of cases, delivered Kt/Vurea seemed to exceed that which had been prescribed (raising issues of accuracy of methodology). For 49% of 324 treatments, delivered Kt/V was within 10% of dialysis dose whilst 81% were within 20% of the prescribed dose.

Delivered dialysis dose within 10% of prescribed	Criterion	Deviation (95% CI)
51%	Male	0.04 (0.0-0.08)
44%	Female	0.04 (0.02-0.06)
54%	<65years	0.02 (-0.01-0.06)
46%	>=65 years	0.05 (0.03-0.08)
42%	<240min 3/weekly	0.04 (0.01-0.07)
58%	>=240min 3/weekly	0.05 (0.02-0.07)
50%	Prescribed Kt/V <1.2	0.04 (0.02-0.07)
46%	Prescribed Kt/V >=1.2	0.04 (0.0-0.08)
40%	Tunnelled line	0.0 (-0.04-0.03) p<0.05
56%	AV fistula	0.08 (0.06-0.1)) p<0.05
48%	Blood flow <=300ml/min	0.04 (0.02-0.06)
89%	Blood flow >300ml/min	0.02 (-0.03-0.08)
41%	Total Body Water 20-39L	0.06 (0.03-1.0)
52%	Total Body Water 40-59L	0.03 (0.0-0.06)
72%	Total Body Water 60-79L	0.02 (-0.04-0.08)

Conclusion: No more than 49% of treatments achieved the unit target of delivered dialysis being within 10% of prescribed dialysis. A greater proportion were outside the target range in those with less than recommended time on dialysis and those with lower total body water, while the degree of deviation is greater in those who have AV fistulas. The UKM tool may overestimate delivered Kt/V in a large number of cases. The reasons for this variance warrant closer examination to ensure consistency in desired treatment delivery.

PO-17: Title: Dialysis Prescribing Practices in an Irish Haemodialysis Centre

Authors: Susan McGrath, William Plant

Background: The eMED Renal system is now deployed in all Irish hospitals supporting haemodialysis. It allows for the recording of patient demographics, diagnoses, medications and dialysis prescriptions as well as containing an integrated Urea Kinetic modelling (UKM) quality assurance tool. Current Renal Association guidelines recommend dialysis being performed at least four hours per session, three times per week with a targeted Kt/Vurea of 1.2. To retain targeted delivered dialysis dose requires individualised patient prescription. Traditional haemodialysis prescribing practises tend to focus on standardised increments of dialyser performance, blood flow and treatment time. We wish to explore whether this culture of prescription practice resulted in prescriptions targeted to the above standards.

Methods: Patient prescription, the elements of dialysis prescription (dialyser performance, blood flow, treatment time) and the subsequent urea kinetic modelling based prescribed Kt/Vurea were studied in a three month period. Inclusion criteria included all patients receiving centre-based haemodialysis for each of the three months of the audit period. Exclusion criteria included patients who were not on haemodialysis for all three months, patients who were inpatient at the time of their monthly dialysis review and patients with incomplete data sets on eMed.

Results: Of 167 patients on centre-based haemodialysis between August and October, 116 met inclusion criteria for this audit. The average prescribed Kt/Vurea was 1.14 in 348 dialysis sessions reviewed, with 66% of prescriptions below recommended Kt/V guidelines, while 68% of prescriptions did not meet guidelines for 240minutes, three times weekly.

	Mean (95% CI)	Mean(95% CI)	Mean(95% CI)
Gender	Male 1.11 (1.08-1.13)	Female 1.21 (1.17-1.25)	
Years on dialysis	<2years 1.08 (1.04-1.11)	>2years 1.17 (1.14-1.2)	
Total Body Water	20-39L 1.23 (1.21-1.25)	40-59L 1.09 (1.08-1.11)	60-79L 0.97 (0.93-1.01)
Dialyser	Low Flux 1.13 (1.11-1.14)	High Flux 1.18 (1.14-1.21)	
Blood flow	<300ml/min 0.96 (0.86-1.06)	>300ml/min 1.15 (1.13-1.16)	
Clearance	<220ml/min 0.92 (0.78-1.06)	220-300ml/min 1.14 (1.13-1.16)	>300ml/min 1.21 (1.18-1.25)

Conclusions: Current prescribing practices do not result in patients being prescribed dialysis according to current guidelines. No more than 32% of patients are receiving dialysis of recommended duration while 34% receive recommended Kt/Vurea. Further investigation into the factors affecting this is warranted to improve dialysis quality and adequacy.

PO-18: Title: Review of anticoagulation prescribing practices in our haemodialysis population

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BACKGROUND: Oral anticoagulation is the standard of treatment for non-valvular atrial fibrillation (NVAF) in the general population & in those with mild/moderate CKD. Optimal treatment of dialysis patients with NVAF is controversial. KDIGO clinical practice guidelines discourage the use of routine anticoagulation of CKD5D patients with AF for primary prevention of CVA. Risk prediction scores (eg HASBLED) may underestimate the risk of haemorrhage within the dialysis cohort. Additionally, warfarin use may contribute to the increasing incidence of calciphylaxis, which can have devastating consequences.

METHODS: Using our electronic health record database (Emedrenal) we performed a cross sectional analysis of demographic, clinical and laboratory co-variates of our haemodialysis cohort, focusing primarily on warfarin prescribing and its indications.

RESULTS: Of our total 98 chronic haemodialysis patients in our centre, 17 patients were prescribed warfarin. The mean age of patients on warfarin was 67.8 years with an interquartile range of 42 - 84 years. The majority (52%) were male. The average number of blood tests for International Normalised Ratio (INR) was 17.2 over a 3 month period. On further review, we were achieving target INRs, on average, only 46% of the time. No patient suffered from a significant haemorrhage in our cohort.

Indication	N	%
Afib	10	58.8
VTE	4	23.5
Stroke	2	11.7
Post DCCV	1	5.8

CONCLUSION: There were limited rates of bleeding associated with warfarin use within our dialysis cohort despite high rates of inappropriate prescribing for A.fib. In our cohort, we have had a number of cases of calciphylaxis in recent months, both in patients on warfarin ,and those not. Given the fact that current guidelines discourage use of warfarin for primary prevention of CVA in our ESKD patients, and potential life-threatening complications of its use, it is pertinent that we rationalise our prescribing of this agent.

PO-19: Title: Guideline Adherence in Anaemia Management in Haemodialysis: Comparison of University Hospital Limerick with findings from the UK Renal Registry

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Background: Anaemia is a common complication of advanced chronic kidney disease (CKD) and both under-treatment and over-correction are associated with adverse clinical outcomes. The extent to which haemodialysis (HD) units adhere to international guidelines is a quality core indicator. We ascertained the quality of anaemia care at UHL from 2015 to 2016 and benchmarked our results against national standards reported from units in the UK Renal Registry (UKRR).

Methods: We determined the proportion of patients with haemoglobin (Hb) and serum ferritin levels within target range as recommended by the UK Renal Association guidelines (2010) and evaluated the extent of anaemia correction beyond Hb 12 g/dl while on erythropoietin (ESA). Results were compared with national estimates from renal units in the UKRR. Baseline patient characteristics, primary cause of kidney disease, comorbid conditions and measures of anaemia, Hb, serum ferritin and ESA dose were obtained from the Kidney Disease Clinical Patient Management System (KDCPMS). For each patient, mean Hb and serum ferritin was determined in the month of December for each calendar year. Similarly, the ESA dose was recorded from the last prescription for each year. Median values and interquartile range (IQR) for Hb, serum ferritin and ESA dose were computed for December 2015 and 2016 respectively.

Results: One hundred and fifty nine prevalent patients were included (73 in 2015, and 86 in 2016). The median age was 63.5 years (IQR 54.3-72.8), 59% were male. Median Hb was 10.6 (IQR 9.9-11.2) and 10.8 (IQR 10-11.3) g/dl in 2015 and 2016 respectively, and this compared favourably with data from UKRR [median Hb 11.1 (IQR 10.3-12.0) g/dl]. A Hb target of 10-12 g/dl was achieved in 70 % and 64 % of patients in 2015 and 2016 respectively compared with 56% in the UK. Median ferritin levels were 566 (IQR 324-901) and 778 (IQR 559-1209) ng/ml in 2015 and 2016 respectively. The median ESA dose was 9,000 (IQR 4,000-13,500) and 8,000 (IQR 4,000-15,000) IU per week in 2015 and 2016. This compares to 7,333 IU per week in UK. Percentage of patients with Hb > 12 g/dl and treated with ESA was 4 % (n=3) and 8 % (n=7) in 2015 and 2016 respectively, and these standards were numerically superior to those in England (18%), Wales (10%) and Northern Ireland (20%).

Conclusion: Guideline adherence in anaemia management at UHL compares favourably to standards achieved in UK and NI with fewer patients exceeding threshold Hb values > 12 g/dl on ESA treatment. Whether the same holds true for all Irish HD centres needs to be explored.

PO-20: Title: Patterns of Vascular Access Use in the first year of Haemodialysis: Results from the National Vascular Access Project

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Background: Although arteriovenous (AV) fistula or AV grafts confer superior benefits over central venous catheters (CVC) for patients undergoing haemodialysis (HD), utilisation rates are low among incident patients. Little is known about the evolution of AV access use among Irish patients. We explored patterns in vascular access use among new HD patients during the first year of dialysis.

Methods: Data from the National Kidney Disease Clinical Patient Management System (KDCPMS) was used to identify all adult ESKD patients who started HD during 2015. We only included patients who received dialysis in units with full KDCPMS functionality. The cohort was restricted to incident patients who required HD for at least 90 days. Data on demographics, primary cause of end-stage kidney disease, comorbid conditions, Hospital Group affiliation, and principal vascular access were captured. The principal vascular access in use for HD was noted on: day 14, day 90, day 180 and day 360 for each patient. Patients were followed up for up to 360 days from HD initiation, or to the earliest of death, change of modality or withdrawal. Comparisons between groups and over time were conducted using Chi-square, while logistic regression explored associations with AV fistula using adjusted odds ratios (OR) and 95% Confidence intervals (CI).

Results: 340 HD patients began chronic HD therapy in 2015. The median age was 67 (IQR 52-77) years and 63% were men. Prevalence of recorded hypertension, diabetes and atherosclerotic heart disease were 52%, 30% and 17% respectively. Of the original 340 incident patients, 284 (83.5%) and 239 (70.3%) continued to receive haemodialysis at day 180 and day 360 respectively. Vascular access was not recorded in 20%, 6%, 2% and 2% of patients at day 14, 90, 180 and 360 respectively. Of those with non-missing access data, 59/272 (22%) started dialysis with an AV access. The proportion of patients with a functioning AV fistula increased to 25%, 32% and 46% of patients at day 90, 180 and day 360 respectively ($P<0.01$). Rates of conversion from CVC to AV fistula increased significantly over time from 6% at day 90 to 11% at day 180 and 23% by day 360. In multivariable analysis, male gender, OR 0.64 (1.0 – 2.1), affiliation to Hospital Group B, OR 0.20 (0.03 – 0.99) and Hospital Group F, OR 0.28 (0.09 – 0.80) were associated with significantly lower likelihood of AV access.

Conclusions: The majority of Irish patients starting HD begin therapy with a CVC. Although conversion rates to a functioning AVF improve in the first year of dialysis, overall rates are low and less than internationally recommended targets. The availability of national data on vascular access is necessary to inform policy initiatives and drive quality improvement programs in HD.

PO-21: Title: **Access-Related Bloodstream Infection among Haemodialysis Patients at University Hospital Limerick**

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Introduction: Infections are the second leading cause for mortality and hospitalisation in haemodialysis (HD) patients. Central venous catheters (CVC) are associated with high infection rates. We determined incident rates of access-related bloodstream infections (AR-BSI) in chronic HD patients in 2015 and 2016 at University Hospital Limerick (UHL).

Methods: We reviewed all blood cultures sampled from 236 HD patients attending the principal and satellite HD units at UHL during Jan 2015 and Dec 2016. Demographic data, primary cause of ESKD, comorbid conditions and dialysis access type were obtained from the Kidney Disease Clinical Patient Management System (KDCPMS). AR-BSI was defined as growth of a typical organism with either, a documented exit site or tunnel infection, or with no other identified source of infection. Patients with atypical organisms who received antimicrobial treatment for two weeks or more were also considered to have AR-BSI. Medical records were reviewed to identify type of access and capture patient outcomes. Rates of AR-BSI were calculated using criteria defined by the Centres for Disease Control and Prevention (CDC). Rate ratios for each type of access were reported with 95% confidence intervals (CI), and statistical significance was determined.

Results: A total of 236 HD patients were followed for 1,757 and 2,059 patient-months in 2015 and 2016 respectively. Median age was 66 (IQR 56 – 76) years, 29% of the patients were above 75 years of age, and 67% were male. CVC patients experienced 47 AR-BSI episodes, at a rate of 2.31 (95% CI 1.70, 3.07) events per 100 catheter-months, whereas AV fistula patients had 3 episodes, accounting for 0.17 (95% CI 0.03 – 0.49) events per 100 fistula-months. The rate ratio for BSI was 13.68 (95% CI 4.77, 55.52) for CVC compared to AVF ($p < 0.0001$). Coagulase-negative Staphylococci (CONS) and Staphylococcus aureus (SA) accounted for 62% and 22% of events respectively. All clinical events associated with SA bacteraemia resulted in catheter removal, while 43% of the dialysis catheters were removed in events associated with CONS bacteraemia. AR-BSI resulted in hospitalization in 72% of cases, and death in 4% of cases.

Conclusions: HD using a CVC is associated with significantly higher rates of bloodstream infection, hospitalization, access loss and mortality. Continued efforts should be expended to promote AV fistula use for most patients and increase conversion rates from CVC to AV fistula where possible. Adoption of CDC measures to prevent infections including staff training, care bundles and vascular access care audits may improve infection rates and reduce complications.

PO-22: Title: Mineral & Bone Disorders: An Audit of Dietetically Led Management of Renal Home Therapy Patients

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Background: Numbers of renal home therapy (RHT) patients are increasing, while dietetic input has remained static. Cardiovascular disease (CVD) is the leading cause of death in patients at all stages of chronic kidney disease (CKD). Vascular and valvular calcifications are strongly associated with CVD morbidity and mortality. Abnormalities in calcium (Ca2+), phosphorous (P04-), parathyroid hormone (iPTH) and Vitamin D metabolism are common in end stage kidney disease. Therapy is focused on correcting biochemical and hormonal abnormalities to limit their consequences. Our aim is to benchmark our bone health management against best practice guidelines and to highlight areas that require improvement. Of note in 2016 a clinical guideline for Vitamin D Supplementation in Renal Patients was completed by Dietetics to give further clarity on best practice and targets.

Methods: 41 peritoneal dialysis (PD) and 6 home haemodialysis (HHD) patients' blood results were audited. Serum corrected Ca^{2+}, $P0^{4-}$ and iPTH were recorded whenever samples were taken together and an annual average calculated. Medications including phosphate binders, native and active Vitamin D supplementation and Cinacalcet were also monitored and recorded

Results:
Vitamin D Levels: 82% of PD patients had levels checked in 2016. 77% were deficient (of which 23% had levels >30nmol/l). 67 % HHD patients had levels checked, 75% <75nmol/l
iPTH: Numbers achieving target remain static at 56%
Increased number of patients with PTH greater than 500pg/ml - 12 to 22%
Phosphate: Number of patients with phosphate greater than 1.6mmol/l remains unchanged at 22%
Corrected Calcium: 5% drop in levels >2.5mmol/l
Phosphate Binders: Usage patterns remain unchanged

Conclusions: There are multiple actions which can be taken to improve achievement of best practice including -
Increase of dietetic time by 0.1WTE/week by taking from HD service for 2017
Increase telephone review of patients
Checking clinic blood results within one week and take appropriate action
Ensuring all PD patients have baseline Vitamin D levels checked with supplementation as per guideline – annual check only
Actively target cohort with P04- >1.6mmol
Ongoing MDT education to ensure one clear message being given to the patient
Using eMED reporting system once interface with labs online to make audit process more time efficient

PO-23: Title: 'www.irishkidneydiet.ie – the development of a new patient education website for Irish renal patients and their carers'

Authors: Theresa Rennick, Pauline Connolly, Bernice Moore, Jean Savage, Orla Power, Celene Sands, Grainne Corrigan. Institute: Irish Nutrition & Dietetic Institute Renal Interest Group theresa.rennick@hse.ie

Background: The renal diet is an essential part of the management of chronic kidney disease. For patients and their families the diet can, at first, appear to be very restrictive and difficult to implement. Traditionally, dietitians rely on paper based methods of communicating dietary information (diet sheets). However, a growing number of people access the internet on a daily basis for healthcare and other information. With the growth of social media, dietitians needed to develop IT based education tools.In 2013 Shire Plc awarded the Renal Interest Group (RIG) of the Irish Nutrition and Dietetic Institute (INDI) an education grant to create a patient education website regarding the renal diet.

Methods: The project was divided into 2 phases: Phase 1: Compilation of a body of accurate and reliable nutrition data for Irish people and their carers to aid in the development of a patient education website for the Irish population entitled www.irishkidneydiet.ie. Phase 2: Creation of the website with the website design company *Modus* using the data and resources developed.

- A detailed scope document was created and Dietitian 'buddy' groups were employed for the purpose of menu and recipe analysis
- RIG members and people with CKD and their carers were surveyed to prioritise the content of the website
- Permission was sought from recipe authors, relevant food manufacturers and the Irish Kidney Association (IKA) to mention their product/ name on the website
- Three disclaimers were developed and approved by INDI CEO and solicitor
- A system of quality control was developed

Results: A new patient educational website www.irishkidneydiet.ie went live in December 2016 containing:

- Recipes: 41 nutritionally analysed recipes
- Meal plans: 9 fully analysed suggested meal plans and a 'meal plan builder' section
- Information: 11 information topics covering a range of renal nutrition related topics
- FAQ: 24 detailed frequently asked questions
- Quiz: A selection of printable word searches and cross words to test knowledge of the renal diet
- Videos: 5 educational videos reproduced with kind permission from Beaumont Hospital
- Dietitians Blogs: 8 topical and practical dietitians blogs
- Contact us: A standardised 'contact us' form that filters into a monitored email address
- Mailchimp mailing list: Mailchimp account where a mail list is created and those who sign up will receive our newsletters during the year
- Social Media links: Linkage to Facebook and Twitter
- Useful links: links to related/relevant websites

Conclusions: The website gives dietitians a new tool for educating patients and represents a step towards using more IT and social media in our work.The website meets our initial goal of providing an educational resource for Irish kidney patients and their families/carers. This provides practical guidance and support on managing a renal diet. It gives them tools to help empower them in managing their diet.The website is also a valuable resource for other healthcare professionals working with renal patients.

PO-24: Title: Chronic Kidney Disease (CKD) Stages 4 and 5 Bone Health Management Audit 2016

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Background: Secondary hyperthyroidism (SHPT), a contributory cause to cardiovascular disease (CVD), is very common in chronic kidney disease (CKD). SHPT can result in elevated calcium (Ca^{2+}), phosphorous (PO4) and intact parathyroid hormone (iPTH) levels and Vitamin D metabolism abnormalities. These have all been shown as risk factors for mortality and are associated with increased hospital admissions, length of stay and decreased quality of life for patients. Long term cost savings are made by the effective management of CKD Mineral and Bone Disorder (MBD).

Treatment of SHPT in this cohort involves intensive dietary education, monitoring and support alongside tailored drug therapy. CKD-MBD management is a multi-disciplinary approach co-ordinated by the dietitian in Tallaght Hospital.

Our aim is to benchmark our bone health management against The Tallaght Hospital Adult Medicines Guide 2016 biochemical targets and The Tallaght Clinical Guideline for Vitamin D Supplementation in Renal Patients 2016.

Methods:
A total of 190 CKD stage 4 and 5 patients' blood results were evaluated for 2016, which represents approximately 50% of patients seen each year in the renal dietetics OPD. A note of relevant medications were also collected for these patients. Values were compared to the agreed targets and to results from the 2015 audit.

Results:
Corrected Calcium
94% of patients achieved target serum corrected Ca^{2+} levels, reflecting a 4% increase.
Phosphate
91% of patients achieved serum PO4 levels, reflecting a 4% reduction.
iPTH
59% of patients achieved target iPTH levels, reflecting a 6% increase.
Vitamin D
58% of patients had their Vitamin D level checked, of which 77% were deficient.

Conclusions:
1. Actively target those patients with hyperphosphatemia, particularly stage 5 patients, to optimise dietary restrictions, use of phosphate binders and optimise the management of metabolic acidosis.
2. Actively target those patients with an over suppressed iPTH who are on active vitamin D to reduce health risks, cost and patient pill burden. To also ensure these patients are not on calcium based phosphate binders.
3. Ensure all CKD patients have annual Vitamin D levels checked to identify and supplement deficiency which may delay the need for calcium supplementation, active Vitamin D or more expensive high tech medications.

PO-25: Title: Audit of Vitamin D Status, Safety and Efficacy Of Oral Supplementation in a Haemodialysis Population

Authors: Barbara Gillman[1], Kathryn Wrigley[2], Heather Gunning[2], Denise Sadlier[2], Yvonne M O Meara[2]
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Background: There is growing interest in the importance of vitamin D in bone health and in inflammatory non-skeletal disorders such as cancer and cardiovascular disease. The accepted treatment algorithm in chronic kidney disease has focused on use of active vitamin D compounds, however, recent studies demonstrate potential roles for 25(OH)D in a number of tissues independent of renal conversion. There is a lack of adequate prospective trials to guide treatment and or to confirm the safety and efficacy of nutritional vitamin D supplementation especially when combined with active vitamin D compounds. This audit aims to assess the vitamin D status in a haemodialysis population and the safety and efficacy of 3 months oral supplementation.

Methods: Baseline vitamin D, calcium, phosphate and albumin were measured in March 2016 in 59 haemodialysis patients. We devised a protocol for supplementation based on results of a previous audit of response to cholecalciferol supplementation in dialysis patients with deficient levels. Patients with Vitamin D deficiency (<30nmol/L) were commenced on oral cholecalciferol 800 units daily, and Vitamin D insufficiency (30-50nmol/L) were treated with 800 units 3 times weekly. Patients with hypercalcaemia (> 2.6mmol/L) or hyperphosphatemia (> 2.0mmol/L) were excluded. Parathyroid hormone levels and bone profiles were monitored monthly. Vitamin D levels were repeated after 3 months of supplementation.

Results: Twelve patients (20%) were vitamin D deficient and a further fifteen (25%) had insufficient levels. Thirty two were vitamin D sufficient of which nineteen (59%) were on cholecalciferol. Twenty patients (9 with deficiency and 11 with insufficiency) received oral supplementation. The majority of supplemented patients (n=15) were also on active vitamin D. Following 3 months supplementation as per protocol, all patients with deficiency achieved sufficient vitamin D levels (mean= 118nmol/l). In the insufficiency group nine patients (82%) achieved sufficient levels (mean = 97.5nmol/L). Vitamin D was reduced to 800 units three times weekly in all patients after 3 months supplementation. The mean difference in calcium and phosphate in the deficiency treated group was 0.09mmol/L and 0.22mmol/L respectively. In the insufficiency treated group, mean differences in calcium and phosphate were lower. (0.07mmol/l and 0.03mmol/l respectively).

Conclusions: Fifty (85%) patients had sufficient vitamin D levels 3 months post supplementation. The supplementation protocol employed was sufficient to replete 25(OH)D levels and was well tolerated with no adverse effects. There were no significant increases in calcium or phosphate requiring dose adjustments.

PO-26: Title: Oral Behaviours and Barriers to Dental Attendance amongst Irish Renal Haemodialysis and Transplant Patients.

Authors: Daire J. Shanahan[1], Sean Garvey[1], Maura Looney[1], George Mellotte[1], Catherine Wall[1], Peter Lavin[1]
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Background: Oral pathology is more common in patients with Kidney Transplants (KT), or who are currently on Haemodialysis (HD), than in the general population. The aim of this study was to investigate the oral behaviours of these patients, and to ascertain the reasons they were not attending the dentist more regularly.

Methods: Patients with End-Stage Kidney Disease (ESKD) with a functioning Kidney Transplant or receiving Haemodialysis at a single centre were assessed using a standardised questionnaire to determine oral health behavior and barriers to dental attendance.

Results: A total of 369 patients were contacted, with 238 patients taking part in the study (HD: n=83, KT: n=155), giving a response rate of 64% ,with a mean age of 60.5 years for dialysis patients and 56.6 years for renal transplant patients. A third of dialysis patients had not attended a dentist in over 36 months, with those who did not attend regularly citing the following two reasons: 'I have no problem or need for treatment' (52%) and 'I don't think the trouble I have is serious enough' (30%). Dialysis patients displayed poor oral behaviors: they were likely to smoke (HD=22%, KT=10%), brush their teeth less frequently than once a day (HD=45%, KT=25%), did not routinely clean interproximal surfaces of teeth with floss or interdental brushes (HD=12%, KT=25%), or use mouthwash (KT=21%, HD=36%), and were more likely to wear a denture (HD=41%,KT=25%).

Conclusions: The chief recommendations of this paper are to provide targeted education to dialysis patients on the importance of visiting a dentist, and to improve access to dental services for this cohort. Such measures will lead to earlier prevention, and intervention, in patients on HD and following KT.

PO-27: Title: Alopecia responding to Mycophenolate Mofetil-Azathioprine switch in Female Transplant Recipients on Tacrolimus-based immunosuppression regimen

Authors: Sandys V[1],Hudson A,[1] Abernethy E, Leavey S. Department of Nephrology, University Hospital Waterford

Background Alopecia is a well described complication of immunosuppression. The prevalence of hair loss in renal transplant recipients may be higher than generally appreciated. Self-reported symptom distress affected 69% of patients in one report. Classically, this has been identified as a Tacrolimus-related adverse effect, with resolution of symptoms occurring on switching to a cyclosporine based regime. The role of anti-metabolites has received little attention in the transplant literature. In fact, mycophenolate mofetil (MMF) has been trialled as a therapy in autoimmune alopecia.

Methods A database of all active prescriptions was extracted from the electronic health record (EMedrenal) for all patients attending transplant clinic at UHW on Jan 15th 2017. Patients on Azathioprine (Aza), who were originally on MMF post-transplant, were identified and characterized. A retrospective analysis of clinical records was then undertaken to determine the reason for switching.

Results 19.6% of 168 patients (33pts) were on Aza. Aza use was significantly more common in women (chi-square, p=0.002): who made up 57.6% (19 pts) of Aza-treated cases, despite accounting for only 34.5% of transplant recipients. Thirteen of these women (68%) had switched from MMF to Aza. Alopecia was the commonest indication for switching in women, accounting for 54% of switches. It was the sole indication for switching in 6, and an additional indication in 1 of these cases.

Patient Characteristics of Alopecia Patients Pre-Post MMF to Aza Switch

Age	**Time post transplant**	**Time to resolution**	***Tac pre**	**Dose change**	**Tac post**	**Underlying Renal Dx**	**Confounding factors**
28	6 years	3 months	8.7	No	4.6	Reflux nephropathy	Anaemia: Hb 8.9
43	5 months	1 month	9.7	Yes	8.6	Tubulo-interstitial nephritis	
45	3 months	2months	4.7	No	6.1	FSGS	
72	4 months	2 months	7.9	No	13.5	TMA	
62	15 months	2 months	9.8	Yes	8.8	Post infectious GN	
30	8 months	U/K	6.9	No	4.3	Reflux nephropathy	
38	5 months	4-6 months	8.0	No	7.9	Diabetic nephropathy	Glossitis Pregnancy

*First recorded level pre and post MMF-AZA switch

No patient had underlying autoimmune disease to explain alopecia. The median time to occurrence post-transplant was 5 months (interquartile range 4-15 months) and recovery was seen on average 2.5 months after switching the antimetabolite.

Conclusion There is limited published data on the contribution of MMF to the development of alopecia in transplant recipients. Our observations suggest that when alopecia is troublesome a switch in antimetabolite may provide a satisfactory resolution. Perhaps the variable rates of bioavailability of MMF, effects on nitric oxide depletion, and/or other drug-specific properties, including overall higher levels of immunosuppression might explain this finding.

PO-28: Title: Characterization of H2-Blocker and Proton Pump Inhibitor Prescribing Practices in Maintenance Care of Kidney Transplant Recipients

Authors: Sandys V.[1], Hudson A.[1], Brown, C, Leavey, S. Department of Nephrology, University Hospital Waterford.

BACKGROUND: Antacids, either histamine type 2 receptor-blockers (H2Bs) or proton pump inhibitors (PPIs) are routinely prescribed post-transplant and often continued long-term. Interactions with immunosuppressants occur in the case of PPIs, through the inhibition of cytochrome P-450 enzymes and alteration of the gastric milieu. Worryingly, evidence linking PPIs to acute interstitial nephritis, has been extended to now show association with indolent progressive chronic kidney disease.

METHODS: All active prescriptions for patients attending transplant clinic at UHW on Jan 15th 2017, were extracted from the electronic health record (EMedrenal), together with demographic, clinical and laboratory covariates. A variable describing the sum of all non-immunosuppressive medications per patient (excluding antacids) was created as an indicator for polypharmacy. Descriptive and both univariate and multivariate inferential analysis was undertaken using SPSS (version 23).

RESULTS: 1540 prescriptions were identified in 168 patients. 75% of patients were on antacid (41.7% (70) on H2B; 33.3% (56) on PPI). Significant positive associations with any antacid use ($p<0.05$) were found in univariate analysis for older age, male gender, immunosuppressant type, anticoagulant, statin and polypharmacy. Only lower eGFR indicated preference for PPI over H2B ($p<0.05$). In multivariate modelling, the prescription of prednisone, MMF and each additional non-immunosuppressant independently increased the Odds of antacid prescribing by 4.7, 3.8 and 1.4 fold respectively.

Multivariate Logistic Regression: Predictors of Antacid Prescribing

	B	S.E.	p-value	Adj. Odds Ratio (95%CI)
Age	.018	.016	.287	1.0 (0.99-1.05)
TxVintage	.022	.036	.537	1.0 (0.95-1.10)
eGFR	-.004	.012	.766	1.0 (0.97-1.02)
Polypharmacy*	.301	.115	.009	1.4 (1.08-1.69)
MMF	1.344	.475	.005	3.8 (1.51-9.73)
Prednisone	1.557	.530	.003	4.7 (1.68-13.4)
Tacrolimus	1.387	.761	.068	4.0 (0.90-17.8)
Constant	-4.444	1.616	.006	0.0

***Sum of all non-immunosuppressive drugs (excl antacids)

CONCLUSION: There is a high prevalence of H2B and PPI prescribing. Polypharmacy and immunosuppressant combinations independently influence prescribing. The use of PPIs long-term, post-transplant may have clinical implications for graft survival. The factors influencing the overall indication for and choice of antacid in the maintenance post-transplant period merits further study.

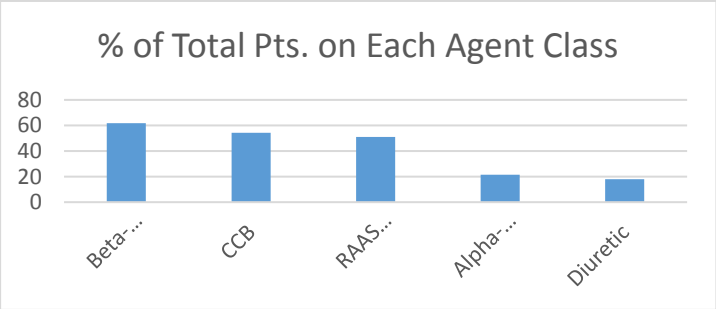
PO-29: Title: Antihypertensive Prescribing in Kidney Transplant Recipients – An Analysis of Practice Patterns

Authors: Hudson A[1], Sandys V[1], Brown C, Leavey S, University Hospital Waterford

BACKGROUND: Kidney transplant recipients present with complex comorbidities during follow-up. Cardiovascular morbidity and mortality, specifically hypertension is very prevalent. Blood pressure control, not only may prolong graft survival, but also protects against the accelerated atherosclerosis.

METHODS: All active prescriptions for patients attending transplant clinic at UHW on Jan 15th 2017, were extracted from the electronic health record (EMedrenal), together with demographic, clinical and laboratory covariates. Descriptive and both univariate and multivariate inferential analysis was undertaken using SPSS focussing on antihypertensive (anti-HTN) prescribing practices (version 23).

RESULTS: There were 1540 active prescriptions in 168 pts. 36 separate anti-HTN agents were prescribed, from 5 major classes. 36.9% of pts were on 3 or more agents (as shown). There were only 14 prescriptions for combination tablets (9 for combined alpha-beta blockade, and 4 for ARB-Diuretic/CCB combinations)



No. of BP Meds/ Pat	% total Pts
0	7.1
1	24.4%
2	31.5%
3	23.8%
4	8.9%
5	4.2%

Multivariate Logistic Regression: Predictors of ≥ 3-Drug Anti-HTN Regimen

	Adj Odds Ratio (95% CI)	p-Value
Age per 10 yrs	1.28 (1.00-1.66)	0.06
TxVintage per yr	0.99 (0.93-1.05)	0.64
eGFR per 10ml /mi	0.73 (0.59-0.91)	0.00
Male Gender	3.11 (1.35-7.20)	0.01
Tacrolimus	0.24 (0.06-1.02)	0.05
Antidepressant Rx	0.20 (0.04-0.93)	0.04

Significant univariate associations with of ≥ 3-drug anti-HTN were noted with increasing age, transplant vintage, male gender, eGFR, Tacrolimus and antidepressant use ($p<0.05$). In multivariate modelling each 10 ml/min increase in eGFR, male gender, and use of Tacrolimus or antidepressants independently influenced the likelihood of ≥ 3-drug anti-HTN (respective OR's of 0.73, 3.11, 0.24, 0.20).

CONCLUSION: There is a high prevalence of Anti-HTN multi-drug use in kidney transplant recipients with poor penetration of combination pill prescribing**.** KDIGO recommends maintaining BP <130/80mmHg, but states that *any* agent can be used to control blood pressure. Thus consensus as to optimal BP management in this cohort remains unclear.

PO-30: Title: Determinants of change in estimated GFR at specified time intervals over follow up in renal transplant recipients in Ireland, 1990-2011.

Authors: Sexton DJ, O'Kelly P, Magee CM, Denton M, de Freitas D, O'Seaghdha CM, Conlon PJ. **Institution:** *1. Beaumont Hospital, Dublin, Ireland.*

Introduction: Determinants of eGFR post renal transplant have not been extensively characterised. This study forms the basis of a larger multicenter study evaluating both genetic and clinical predictors of eGFR and graft outcomes.

Methods: The National Kidney Transplant Service (NKTS) database was accessed for the years 1990-2011 and all recipients aged ≥ 18 years with available data were included in the analysis. We evaluated the dataset for variables associated with change in eGFR over follow up which was defined as both i) with a 33% decline in the reciprocal of creatinine (a surrogate for eGFR) and ii) delta eGFR from baseline at 1-3months to 1,3and 5 years post transplant. *Clinical parameters of interest in this study included:* Recipient age and sex, Donor age and sex, delayed graft function, duration of dialysis post transplant, number of prior transplants, biopsy proven rejection within the first year post transplant, cold ischemia time, panel reactive antibody (PRA) group, HLA mismatch, diabetes mellitus, Tacrolimus compared to ciclosporin use, CMV and rhesus status.

Results: 1,635 deceased and living donor adult kidney transplants were assessed comprising 1,042 (63.7%) male and 593 (36.3%) female recipients. Mean age at transplant was 44.7 years (SD 14.3 years). Median delta eGFR -0.9 (-8.03, +5.84) ml/min/1.73m^2 at 1 year, -0.26 (-10.3, 9.13) ml/min/1.73m^2 at year 3, and -.083 (-11.1, 9.99) ml/min/1.73m^2 at year 5.
Of these candidate variables the following were significantly associated with a **33% decline in the reciprocal of creatinine** (a surrogate for eGFR):

At 1 year (fully adjusted models): recipient age OR .97 P=0.004, recipient sex OR 0.48 P=0.002, donor age OR 1.04 P<0.001 and donor sex OR 1.78 P=0.023, biopsy rejection OR 3.68 P<0.001.
At 3 years (fully adjusted models): recipient age OR 0.97 P<0.001, recipient sex OR 0.50 P<0.001, donor age OR 1.03 P<0.001 but not donor sex OR 1.26 P=0.16, biopsy rejection at 1 year OR 2.22 P<0.001, Tacrolimus vs ciclosporin OR 0.63 P=0.008.
At 5 years (fully adjusted models)**:** recipient age OR 0.97 P<0.001, recipient sex OR 0.54 P<0.001, donor age OR 1.02 P<0.001 but not donor sex OR 1.05 P=0.71, biopsy rejection at 1 year OR 2.12 P<0.001.
Delta eGFR
The following candidate variables were associated with delta eGFR from baseline at 1-3months to β coefficient (P value): **1-year post transplant**
Recipient age .086 (P=0.002), recipient sex 1.915 (P=0.008), donor age -.113 (P<0.001), delayed graft function 2.30 (P=0.049), diabetes mellitus -4.21 (P=0.008), Tacrolimus use vs Ciclosporin 2.34 (P=0.003). **3 years post transplant**:
Recipient age .2036455 (P<0.001), recipient sex 3.764105 (P<0.001), donor age -.2185201 (P<0.001), number of prior transplants -2.203092 (P=0.03), and Tacrolimus use vs Ciclosporin 4.052084 (P<0.001). **5 years post transplant**:
Recipient age 0.26 (P<0.001), recipient sex 4.26 (P<0.001), donor age -0.27 (P<0.001), number of prior transplants -2.55 (P=0.048), and Tacrolimus use vs Ciclosporin 6.69 (P<0.001).

Conclusions
Consistent associations with change in eGFR over long term follow in renal transplants in Ireland were recipient age, recipient sex, donor age and sex, and biopsy proved rejection within the first year. This study will form part of a larger study to phenotype graft eGFR and graft loss using a combination of clinical and genetic factors.

PO-31: Title: Determinants of eGFR at specified time intervals over follow up in renal transplant recipients in Ireland, 1990-2011.

Authors: Sexton DJ, O'Kelly P, Magee CM, Denton M, de Freitas D, O'Seaghdha CM, Conlon PJ.

1. Beaumont Hospital, Dublin, Ireland.

Introduction: Determinants of eGFR post renal transplant have not been extensively characterised. This study forms the basis of a larger multicenter study evaluating both genetic and clinical predictors of eGFR and graft outcomes.

Methods: The National Kidney Transplant Service (NKTS) database was accessed for the years 1990-2011 and all recipients aged ≥ 18 years with available data were included in the analysis. Clinical parameters of interest in this study which were investigated for an association with eGFR included: Recipient age and sex, Donor age and sex, delayed graft function, duration of dialysis post transplant, number of prior transplants, biopsy proven rejection within the first year post transplant, cold ischemia time, panel reactive antibody (PRA) group, HLA mismatch, diabetes mellitus, Tacrolimus compared to ciclosporin use, CMV and rhesus status.

Results: 1,635 deceased and living donor adult kidney transplants were assessed comprising 1,042 (63.7%) male and 593 (36.3%) female recipients. Mean age at transplant was 44.7 years (SD 14.3 years). Mean (SD) eGFR at year 1 post transplant was 52(16) ml/min/1.73m^2, 52.9(19) ml/min/1.73m^2 at 3 years, and 53.1(21) ml/min/1.73m^2 at 5 years post transplant. eGFR was transformed by natural log for analysis.

Of the candidate variables the following were associated with eGFR at 1 year post transplant (fully adjusted models): β coefficient (P value): Recipient age -.003 (P<0.001) and recipient sex 0.129 (P<0.001), donor age -.007 (P<0.001) and donor sex 039 (P=0.01), delayed graft function -.111 (P<0.001), number of prior transplants -.047 (P=0.009), biopsy proven rejection within the first year -.217 (P<0.001), cold ischemic time -.005 (P<0.001), Time on dialysis post transplant .001 (P=0.02), Tacrolimus use vs Ciclosporin use 0.162 (P<0.001).

At year 3 post transplant (fully adjusted models): significant associations included β coefficient (P value): Recipient sex .146 (P<0.001), donor age -.008 (P<0.001) and donor sex 0.041 (P=0.04), delayed graft function -.108 (P<0.001), number of prior transplants -.0597 (P<0.001), biopsy proven rejection within the first year post transplant -.164 (P<0.001), Cold ischemia time -.005 (0.009) and Tacrolimus use vs ciclosporin 0.189, (P<0.001).

At 5 years post transplant (fully adjusted models): recipient sex .155 (P<0.001), donor age -.009 (P<0.001), delayed graft function -.078 (P=0.03), number of prior transplants -.052 (P=0.04) and biopsy proven rejection within the first year post transplant -.20 (P<0.001), Tacrolimus use vs ciclosporin 0.223 (P<0.001).

Conclusions: Baseline parameters at the time of renal transplant are associated with long-term graft function in Ireland as assessed by eGFR at various time points over follow up. These features represent a combination of parameters that may be considered fixed, such as donor age and sex, cold ischemic time and also features which may be considered time-varying such as the occurrence of rejection and maintenance immunosuppression regime.

PO-32: Title: The Kidney Donor Profile Index (KDPI) and deceased donor renal allograft outcomes in Ireland.

Authors: Sexton DJ, O'Kelly P, Magee CM, Denton M, de Freitas D, O'Seaghdha CM, Conlon PJ.

1. Beaumont Hospital, Dublin, Ireland.

Introduction: The Kidney Donor Profile Index (KDPI) and Kidney Donor risk Index (KDRI) have gained popularity for the prediction of deceased donor renal allograft outcomes and even organ allocation. The KDRI expresses the relative risk of kidney graft failure for a given donor compared to the median kidney donor from the previous year. The KDPI is then an extrapolation of the KDRI to a cumulative percentage. The ability of these measures to predict allograft outcomes in the cohort of renal transplants in Ireland has not been examined to date.

Methods: The National Kidney Transplant Service (NKTS) database was accessed for the years 2006 – 2013 and all recipients with available data were included in the analysis (N=877). We explored the ability of the Kidney Donor Profile Index (KDPI) to predict graft outcomes in this cohort of renal transplants in Ireland. Constituent components of the score include donor factors: Age, Height, Weight, Ethnicity/race, history of hypertension, history of diabetes, cause of death, serum creatinine, hepatitis C status, and whether the donor meets DCD criteria.

Results: See table 1 for renal transplant survival probability stratified by decile of KDPI and KDRI. Median (25-75th centile) eGFR at 5 years post transplant per quartile of KDRI were as follows: 74.5(60.5, 88.2) ml/min/1.73m^2 in quartile 1, 65.56(51.7, 83.2 ml/min/1.73m^2) in quartile 2, 48.8(34.4,61.1) ml/min/1.73m^2 in quartile 3 and 43.6 (37.5, 58) ml/min/1.73m^2 in quartile 4, P<0.001.

Conclusions: The KDPI and KDRI scores appear to perform well in terms of renal allograft outcome prediction in our Irish cohort. Renal allograft survival probability in Ireland and KDPI are inversely related.

Table 1. Graft survival by decile KDPI and KDRI (scaled to the median).

KDPI	KDRI	Kidney graft survival			
		1 year (%)	2 year (%)	3 year (%)	5 year (%)
1-10 %	.6037985 - .7269802	98.68	98.68	98.68	98.68
11-20 %	.7280123 - .7891976	98.7	97.37	97.37	89.9
21-30 %	.7898948 - .8546023	97.7	96.51	95.13	88.38
31-40 %	.8546106 - .9394881	100	98.73	95.87	92.32
41-50 %	.9395639 - .9997305	98.91	97.76	97.76	95.95
51-60 %	1.000269 - 1.078522	95.56	94.38	87.79	85.6
61-70 %	1.07891 - 1.162403	97.85	94.44	94.44	87.85
71-80 %	1.162729 - 1.251644	95.65	93.4	92.03	81.82
81-90 %	1.251911 - 1.365957	92.31	89.99	89.99	83.6
91-100 %	1.369848 - 2.004591	90.22	85.49	84.04	78.14

KDPI; Kidney Donor Profile Index. KDRI; Kidney Donor Risk Index.

PO-33: Title: Transplant Outcomes in Patients with Autosomal Dominant Tubulointerstitial Kidney Disease (AD-TKD)

Authors: S. Cormican[1], C. Kennedy[1,2], D. Connaughton[1], P. O'Kelly[1], B. Doyle[3], A. Dorman[3], MA. Little[4], P. Lavin[4]P.J. Conlon[1,2]

1. Nephrology Dept., Beaumont Hospital
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3. Pathology Dept., Beaumont Hospital
4. Trinity Health Kidney Centre, Tallaght Hospital

Introduction: AD-TKD is a rare genetic cause of Chronic Kidney Disease in which progressive tubular atrophy and interstitial fibrosis cause loss of renal function. Patients with AD-TKD frequently progress to End Stage Renal Disease (ESRD). Little is known about transplant outcomes in this group.

Methods: Patients with clinical characteristics consistent with AD-TKD by the criteria outlined in the 2015 KDIGO consensus report were identified through the Irish Kidney Gene Project. Clinical and histology records were reviewed for patients who received a renal transplant during follow-up.

Results: Twenty-two patients were eligible for inclusion. Fourteen (66%) had an identified mutation in MUC-1 (n=9) or UMOD (n=5) genes. Three patients received two transplants during follow-up, providing 25 grafts (20 deceased-donor, 5 living-related-donor) for analysis.

Graft loss occurred in 8/25 cases during follow-up due to patient death (n=3), chronic allograft nephropathy (n=4) and polyoma-virus nephropathy combined with acute rejection (n=1). Median time to graft loss was 8 years. A log-rank test for equality of survivor functions showed no significant difference in graft survival times compared with other transplant recipients.

Fifteen transplant biopsies were performed during follow-up. These demonstrated chronic allograft nephropathy (n=5), acute rejection (n=4), polyoma-virus nephropathy (n=2), chronic rejection (n=1), Acute Tubular Necrosis (n=1), calcineurin inhibitor toxicity (n=1) and donor-related fibrosis (n=1). Recurrent disease was not seen.

Conclusion: We demonstrate non-recurrence of AD-TKD post-transplant and good graft survival time in this group. In patients with AD-TKD developing ESRD transplantation should be the preferred option for renal replacement therapy.

PO-34: Title: Proton pump inhibitors “use or misuse” in transplant patients.

Authors: Julio Chevarria, Hannah O’Keeffe, Ecaterina Berzan, Neil Thompson, Megan Gilcrest, Maura Looney, Catherine Wall, George Mellotte, Peter Lavin.
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Background: Proton pump inhibitors (PPIs) are among the most common classes of medications prescribed, it has been estimated that up to two-thirds of all people on PPIs do not have a verified indication for the drug. Their overutilization and inappropriate use is exposing patients to a range of potential risks. Recent literature has shown that these risks may include acute and chronic renal impairment. Due to these risks, it is important to determine if PPIs are being used appropriately. The purpose of this work was to evaluate the appropriateness of PPI use in prevalent kidney transplant patients.

Methods: We performed a cross-sectional study in prevalent transplant patients from January to December 2016 that attended our outpatients. The study was performed by reviewing the patient’s records during that timeframe. We recorded their demographic characteristics, principal comorbidities, treatment with anticoagulation, antiplatelets, PPIs or H2RAs, indication, time of use, steroid dose. For the statistical analysis we used SPSS19, for the descriptive analysis we used mean, frequencies and ranges, for the inferential chi square and T test, we accepted a $p<0.05$ as significant.

Results: 282 patients were included. The mean steroid dose was 3.9mg (SD 2.1), from these 57 (20%) patients were on steroid free regimens and 210 (69.7%) were on no more than 5 mg/day. A total of 120 (42.6%) of the patients were on PPIs, 87 (30.9%) on Ranitidine and 75 (26.6%) on neither. The most used was Omeprazole (43.3%) followed by Lansoprazole (25.8%), and 99.03% for more than 90 days. Only 14 patients (6.7%) had a clearly documented indication for their use.
The use of PPIs is greater in hypertensive patients (p:0.02, OR 2.05, CI 95% 1.11-3.77) and older patients (56.3 vs 51.8 years, p:0.023). The use of PPIs compared to ranitidine was greater in patients with diabetes (p:0,03, OR 2.30, CI95% 1.08-4.90), and older patients (56.3 vs 52.3 years, p:0.04). The use of Ranitidine over PPIs was more frequent in heavier patients (79.0 vs 73.1 Kg, p:0.04).

Conclusions: A large number of patients are being treated with PPIs or Ranitidine, without a documented indication. These findings highlight the importance of evaluating appropriate therapy and recommending discontinuation if a clear indication does not exist. Reducing inappropriate prescribing of PPIs in kidney transplant patients can minimize potential for adverse events, and foster controllable cost expenditure.

PO-35: Title: An Assessment of AVS, 11C Metomidate PET/CT and CT Abdomen in the Lateralisation of Aldosterone Producing Adenomas in Primary Aldosteronism

Authors: O'Donoghue, D[1,2], Joyce, M[3], O'Sullivan, G[4], O'Shea, PM[5] Quill, D[6], Lappin, D[1], Dennedy, MC[2,7]
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Background: Primary aldosteronism (PA) is the commonest secondary cause of systemic hypertension and is amenable to specific pharmacological management or definitive surgical correction. The diagnostic algorithm for PA is challenging and requires screening with the aldosterone renin ratio (ARR), confirmation with the saline infusion test (SIT) and lateralisation using abdominal CT and adrenal venous sampling (AVS) or ^{11}C Metomidate PET/CT.
Adrenal venous sampling is the necessary gold-standard test to distinguish between unilateral PA, amenable to surgical correction versus bilateral disease, requiring pharmacological management. AVS requires measurement of cortisol and aldosterone between the adrenal veins, the inferior vena cava and the peripheral blood stream (cubital fossa), following which a series of ratios, specifically the selectivity and lateralisation indices are calculated. While some consensus exists relating to diagnostic cut-offs for lateralisation of PA using AVS, procedural niceties are based upon localised protocols.
Objective: To evaluate diagnostic accuracy, cost-effectiveness and procedural simplification for adrenal venous sampling as a lateralisation modality for PA, compared with non-contrast abdominal CT and ^{11}C Metomidate PET/CT.

Methodology: Sequential, unstimulated AVS was performed on 17 patients between 2015 and 2016 according to institutional protocol, drawing blood from the following locations: Right Adrenal Vein (RAV) (x2); Left Adrenal Vein (LAV) (x2); high and low IVC. Each adrenal vein blood sample was matched with an antecubital fossa peripheral blood sample. Each patient had CT abdomen performed for structural evaluation of the adrenal glands. 11C Metomidate PET CT was carried out on selected patients where AVS results did not lateralise or where results were close to diagnostic thresholds.

Results: 15 of the 17 (88%) AVS performed successfully cannulated both the right and left adrenal veins. 10 of the 15 AVS lateralised and 5 demonstrated bilateral disease. ^{11}C Metomidate PET/CT confirmed unilateral disease in three individuals, lateralised an APA in 2 and demonstrated bilateral disease in 1 with unsuccessful AVS. CT abdomen identified 3/17 (18%) adenomas correctly based on radiology report.
Matched comparisons of peripheral and IVC sampling to determine lateralisation index demonstrated mean cortisol 467 nmol/L (412, 523). No significant difference in cortisol was demonstrated between peripheral or IVC samples. Moreover, there was no significant difference in selectivity index for RAV or LAV when calculated using matched peripheral samples versus a single random peripheral or IVC sample.

Conclusions: Choice of lateralisation procedure for primary aldosteronism is of significant importance. We demonstrate that CT abdomen is a poor predictor of lateralisation and represents a structural only scan of limited efficacy. We demonstrate high procedural success with adrenal venous sampling, the gold standard and show agreement between AVS and 11C Metomidate PET/CT where both were performed. We demonstrate that 11C Metomidate PET/CT is a practical alternative in individuals for whom AVS is not successful. Finally, we propose that simplification of AVS, using a single IVC or peripheral sample for calculation of the selectivity index is warranted. This would contribute to reduced procedural time and healthcare costs.

PO-36: Title: Did Non-Standard Withdrawal of Antihypertensive Agents Exaggerate Treatment Effect in SPRINT?

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Background: The control group in the SPRINT trial targeted a blood pressure range of 130-140mmHg, which required down-titration of antihypertensive therapy when blood pressure was below 130mmHg on a single visit, or below 135mmHg on two consecutive visits.[1] While such an approach had the advantage of ensuring a large blood pressure difference between intensive and control groups, it would not be considered routine clinical care. We hypothesised that non-standard reductions or discontinuations of antihypertensive therapy in the control group, may have inflated the events rates (compared to true usual care) and exaggerated the reported treatment effect of intensive blood pressure lowering.

Methods: Withdrawal of antihypertensive agents were identified from number of medications reported at each clinic visit. Standard withdrawal of antihypertensive agents was defined as a withdrawal for systolic blood pressure less than 100mmHg at the current visit, or a reported, related adverse event occurring between the previous and current visit. We evaluated the association of antihypertensive withdrawal (or reduction) with CV events on follow-up using the Cox proportional-hazards regression. We repeated the primary analysis comparing the time to first occurrence of a primary outcome between treatment groups, adjusting for non-standard withdrawal or reduction in blood pressure medication, treated as time dependant covariates, to estimate the effect of intensive blood pressure lowering compared to standard (usual) blood pressure control.

Results: Non-standard withdrawal of antihypertensive agents occurred in 9.3% of patient visits in the control group, compared with 5.1% in the treatment group ($p < 0.001$) (Figure), and was associated with an increased risk of the composite outcome measure, which was significant for 2 follow-up periods (HR 1.65; 95% CI, 1.26-2.16 for initial 3 months, HR 1.47; 95% CI, 1.12-1.95 for 3 to 6-month period after withdrawal), which was independent of blood pressure effect. After adjusting for non-standard withdrawal/reduction of antihypertensive agents, the intensive-treatment group was associated with a lower risk of the composite outcome measure, compared to standard care (HR 0.81; 95% CI, 0.67 to 0.97).

Conclusions: Targeting a systolic BP range (130-140mmHg) in the control group of SPRINT, rather than a conventional blood pressure threshold (<140mmHg), resulted in withdrawals of antihypertensive medications that would not be considered routine standard-of-care. An analysis that adjusted for non-standard withdrawal of blood pressure medications during the trial (i.e. estimated treatment effect compared to routine clinical care) resulted in a significant, but diminished, treatment effect of intensive blood pressure control (HR 0.81 versus 0.75), and the effect on heart failure became non-significant

PO-37: Title: Chronic kidney disease referral appropriateness: a clinical audit

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Introduction: Chronic kidney disease (CKD) is increasing in prevalence[1] and awareness of CKD as a morbidity is growing. Nephrology services are struggling from a capacity perspective. Refinement of how patients are prioritised is therefore required.

Aim: Quantify the appropriateness of patient referrals for CKD in the Galway-Mayo SAOLTA region.

Materials and Methods: All adult referrals from primary care for CKD to nephrology from February to June 2016 were categorised as appropriate, inappropriate or inadequate using the Renal Association criteria[2](9 specific criteria). Serum creatinine and estimated glomerular filtration rate (eGFR) immediately preceding the referral date, were recorded. Missing laboratory data was obtained from the hospital laboratory system. Descriptive statistics were performed using SPSS v23.

Results: Baseline characteristics: mean age 64 years, 52% female, and mean eGFR 51(ml/min/1.73m^2). Of 119 received referral letters, 24% were deemed inappropriate and 22% inadequate. Of appropriate referrals, 4% were inappropriate on review of additional lab values. All inadequate referrals were later deemed appropriate after review of additional lab values. Inappropriate referrals were more frequent in patients aged <65.

Discussion: Almost half of referrals for CKD from primary care were either: inappropriate, congesting the referral system; or inadequate, impacting classification of referrals as urgent vs. routine and waiting times. Efforts are needed to highlight this issue and the importance of guidelines for referral, to primary care. There is a need to establish a standardised and accountable referral system in Ireland.

References:

1. Glassock RJ. Referrals for Chronic Kidney Disease: Real Problem or Nuisance? JAMA. 2010;303(12):1201-1203.
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PO-38: Title: Association of Gout with Risk of Advanced Chronic Kidney Disease in the UK Health System

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Background: It is speculated that gout is a risk factor for kidney disease progression. The aim of this study was to evaluate the association of gout with progression to advanced chronic kidney disease (CKD) in a national study.

Methods: Data from all primary care practices in the UK, via the UK Clinical Practice Research Datalink, were linked to national data on hospitalisation and mortality. From 1/01/2000 to 31/03/2013, adult patients with gout (age ≥18 years), based on clinical diagnosis or treatment with a urate lowering agent, were matched with up to 10 controls without gout on age, sex, and registered clinical practice. The incidence of advanced CKD (a composite outcome defined as progression to dialysis, kidney transplant, diagnosis of CKD stage 5 or eGFR < 10ml/min, death with CKD, or doubling of the serum creatinine) was estimated and relative risk of advanced CKD was compared in 68,897 gout cases and 554,964 matched controls. Multivariable Cox regression using marginal structural models and propensity-matching methods estimated hazard ratios (HRs) and 95% confidence intervals (CI) for the rate of advanced CKD. Analyses were adjusted for demographic characteristics, 12 medical conditions including mild-moderate kidney disease, Charlston comorbidity index, lifestyle factors, socioeconomic status (Townsend score) and medication use (NSAIDs, ARB and ACE inhibitors, thiazide and other diuretics, statin and aspirin).

Results: The median follow-up was 3.68 years (interquartile range 1.65-7.04 years). Patients with gout experienced significantly higher incidence rates of advanced CKD (8.54 vs 4.08 per 1000 person years) with incidence rate ratio of 2.10. In multivariable Cox models, the adjusted hazard ratio (HR) of advanced CKD was 1.29 (1.23-1.35). For components of the primary outcome, the HR were as follows: ESKD 2.13 (1.73-2.61); eGFR <10 ml/min 1.45 (1.30-1.61), doubling of serum creatinine HR 1.13, (1.08-1.19), and death associated with CKD 1.14 (0.99-1.31). The findings were similar in the propensity-matched analysis with HR 1.23, 95% CI 1.17-1.29) for risk of advanced CKD.

Conclusion: Gout is associated with elevated risk of progression to advanced CKD. Future studies should investigate whether control of gout is protective and reduces future CKD risk.

PO-39: Title: Prevalence of Hyperuricaemia within the Irish Health System and relationships with Chronic Kidney Disease.

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Background: Hyperuricaemia is an emerging risk factor for metabolic disorders and major cardiovascular events. A better understanding of the burden and variation of hyperuricaemia within the health system may identify high-risk groups. The aim of this study was to describe the prevalence of hyperuricaemia, and period trends within the Irish Health System

Methods: We identified 136,325 adult patients, age 18 and over, with valid measurements of serum uric acid and creatinine from laboratory systems within the Irish health system. Hyperuricaemia was defined as serum uric acid in excess of 420umol/L in men and 360 umol/L in women. Glomerular filtration rates (eGFR) in ml/min per 1.73m²were determined using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation from standardized creatinine measurements and patients were classified by CKD stage. Age- and sex-specific prevalence estimates with 95% confidence intervals (95% CI) were determined for each group and across calendar years. Comparisons among groups and across years were conducted using chi-square and multivariate Logistic regression was used to explore associations using adjusted odds ratios (AOR) and 95% Confidence Intervals (CI).

Results: From 2006 to 2014, the prevalence of hyperuricaemia increased from 20.3 % (19.5, 21.0) to 26.5% (25.8, 27.2%) in men and from 17.9% (17.2, 18.6) to 20.4% (19.8, 21.0) in women, p<0.001. Age-specific prevalence increased significantly over time for all age groups (18-39, 40-59, 60-79, and >=80 years) for men and women, P<0.001 for each. Prevalence increased significantly with advancing stage of CKD from 15.1% (14.5, 15.6) in Stage 1 CKD to 43.0% (34.8, 51.1) in Stage 5 CKD, p<0.001. However, while prevalence rates increased over time for patients with Stages 1-3 CKD; rates fell significantly for those with Stage 4 and 5 CKD respectively, P<0.001. In multivariable models, the adjusted likelihood of hyperuricaemia in the health system increased with each successive calendar year from OR 1.07 (1.01-1.14)* in 2008, to OR 1.24 (1.17-1.32) in 2014, p<0.01 (vs referent 2006, OR=1.00).

Conclusions: The prevalence of hyperuricaemia is substantial in the Irish health system and has increased in frequency over the past decade. Although, the burden was highest among patients with advanced CKD, an encouraging decline in prevalence was evident in recent years, which may reflect increasing utilisation of urate lowering therapies.

PO-40: Title: Life-course Socioeconomic Position and Later Life Kidney Health

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Background: It is recognised that socioeconomic disparities exist in chronic kidney disease (CKD), however these data are based on adulthood socioeconomic position (SEP) rather than SEP across the life course. We sought to examine the relationship between life-course SEP and later life CKD. We specifically test the critical period hypothesis, which proposes that exposure to lower SEP early in life directly influences future health.

Methods: Cross-sectional analysis of 4996 participants from The Irish Longitudinal Study on Ageing, a randomised cluster sample of Irish residents aged ≥50 years. We defined CKD as an estimated glomerular filtration rate (eGFR) <60mL/min/1.73m^2 using the combined creatinine and cystatin C CKD-EPI equation. We defined "origin SEP" as father's occupation when the participant was growing up, until the age of 14. We defined "destination SEP" as the respondent's primary occupation in adulthood. SEP was categorised as (1) High (professional/managerial) (2) Intermediate (non-manual) (3) Low (semi-skilled/unskilled) (4) Other (never worked). We used logistic regression to model the age-adjusted relationship between origin SEP and CKD in men and women separately. We also examined potential mediators of this relationship: height, waist circumference, smoking, diabetes, hypertension and destination SEP.

Results: Mean age of the sample was 62.9 years and 53.7% were female. A total of 623 participants (12.5%) had CKD, 365 (13.6%) women and 258 (11.2%) men. Origin SEP was strongly associated with CKD in women (OR 2.09 [95% CI 1.38, 3.18] for low versus high SEP), even after adjusting for destination SEP (OR 1.90 [95% CI 1.24, 2.92]). After adjusting for potential mediators, women exposed to disadvantaged SEP in childhood had an 82% increased likelihood of CKD in later life (OR 1.82 [95% CI 1.15, 2.90] for low versus high SEP). Only waist circumference attenuated the association between origin SEP and CKD in women. The association between origin SEP and CKD in men was in the same direction as that for women, but did not reach statistical significance.

Conclusion: We observed a strong relationship between childhood SEP and later life CKD in women, supporting the critical period hypothesis. Some of this association may be mediated via central obesity, consistent with the mediating effect of early-life weight gain in the relationship between low birth weight and the risk of cardiovascular disease in adulthood.

PO-41: Title: Clinical heterogeneity in familial IgA Nephropathy

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Background.: IgA nephropathy is the most common type of primary glomerulonephritis worldwide and a significant cause of end-stage renal disease (ESRD). While most cases of IgA are considered sporadic, there are a small number of reports of familial cases of IgA nephropathy.

Methods: We embarked on a national audit of patients attending renal clinics and dialysis units to identify the presence of a family history amongst patients with kidney disease. We applied this survey to approximately 1500 subjects. We have identified 14 families involving 42 affected individuals with biopsy-proven IgA nephropathy and one other first or second degree relative with either biopsy-proven IgA nephropathy or ESRD. A detailed family history was obtained from all participating families. Medical records and pathological reports were reviewed where available. All family history and clinical data were recorded and family pedigrees constructed.

Results: Of the 14 families, 10 families had more than one member with biopsy proven IgA nephritis. Both autosomal dominant and autosomal recessive modes of inheritance were observed. Of the 42 patients, 30 (71%) were male and 12 (29%) were female. The mean age at diagnosis was 34 years (17 – 60 years). The mean creatinine at presentation was 178.4 umol/L (SD 84.04 umol/L; range 67 – 405 umol/L). 14 (33%) patients had haematuria at presentation, while 16 (38%) had proteinuria. 22 (53%) patients had progressed to ESRD, with a mean time to progression of 5.13 yrs (SD 1.8 yrs; range 2 -8 yrs). Of these 42 patients, 7 (17%) were currently on dialysis, 9 (21%) had been transplanted, 8(19%) were deceased and 18 (43%) had chronic kidney disease. In those transplanted, recurrence of disease was reported in 6 cases.

Conclusion: These data suggest familial aggregation of IgA nephropathy, with both autosomal Dominant and autosomal recessive modes of inheritance.

PO-42: Title: The Burden of Autosomal Dominant Tubulo-Interstitial Kidney Disease (ADTKD) in Ireland

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Background: In ADTKD hereditary mutations in the MUC-1, UMOD, HNF and REN-1 genes cause renal tubular atrophy, interstitial inflammation and fibrosis with progressive renal impairment including End-Stage-Renal-Disease (ESRD). A recent KDIGO consensus report advocated the unified term ADTKD (with sub-classification by genetic mutation) for several previously identified genetic syndromes e.g. Medullary Cystic Kidney Disease and Familial Juvenile Hyperuricemic Nephropathy.

Methods: Individuals with a family history of kidney disease identified by the Irish Kidney Gene Project were invited to attend for DNA collection with the Rare Kidney Disease Registry and Biobank. Clinical data were collected using existing clinical records.

Results: We enrolled 61 individuals from 27 families with renal biopsy findings and/or family history consistent with KDIGO recommendations for suspected/confirmed diagnosis of ADTKD. Native kidney biopsy results were available for 32 patients.

To date, a mutation has been identified in 15/31 patients (48%) who have had DNA-testing. Based on analysis of the proband or affected relative we categorised patients as ADTKD-MUC1 (n=19), ADTKD-UMOD (n=12) or ADTKD-NOS (n=30).

For ADTKD-MUC-1/UMOD/NOS individuals: mean age at presentation was 36/42/40 years; mean creatinine at presentation was 135/143/184mmol/L (excluding 6 patients who presented with ESRD (2 ADTKD-UMOD, 4 ADTKD-NOS)); mean age at ESRD was 44/53/44years. 40% of patients were hypertensive at presentation. Significant proteinuria occurred in 3/30 individuals with available data. Gout/elevated uric-acid occurred in 86% of patients with UMOD-mutations and 31% with ADTKD-NOS.

Discussion: ADTKD is prevalent in Ireland. Significant progress has been made in identifying causative mutations. Clinical awareness of ADTKD enables screening of relatives and early diagnosis.

PO-43: Title: Review of Potential Nephrotoxic Medications on Admission to an Acute Medical Service: A Clinical Audit

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Background: Acute Kidney Injury (AKI) complicates up to 20% of acute hospital admissions and is associated worse outcome. Medications prescribed pre-admission, including ACE-inhibitors (ACEIs), Angiotensin-Receptor-Blockers (ARBs), Non-Steroidal-Anti-Inflammatories (NSAIDs) and diuretics may contribute to AKI during intercurrent sepsis or dehydration. Temporary discontinuation ("Sick-Day Rules) is generally appropriate in these circumstances. Other medications including metformin should be discontinued due to the risk of drug accumulation and toxicity.

Methods: All patients admitted to general medical wards were included in this audit. Review of medical notes, medication charts and laboratory results was performed to collect information regarding demographics, clinical status, admission medications, changes to medications during admission and laboratory results.

Findings: Sixty in-patients were included. The frequency of medication prescription and discontinuation is shown in Table 1. In total thirteen patients were identified who would have benefitted from temporary discontinuation of nephrotoxins on admission, seven were on more than one agent. Prompt discontinuation of these drugs occurred in only two cases (15%).

Discussion: We demonstrate that potential nephrotoxins are often not held in patients admitted with AKI, sepsis or dehydration leading to increased morbidity from AKI.

Table 1: Frequency of Nephrotoxic Medication Prescription and Review

Medication	Taking Pre-Admission (n)	Sick-Day Rules Appropriate (n)	Held On Admission (n)	Held Later (n)	Not Held (n)
ACEi/ARB	15	6	1	2	3*
Diuretic	22	9	2	3*	4
NSAID	2	2	1	1	0
Metformin	6	4	0	0	4

*1 in each group developed hospital acquired AKI

PO-44: Title: “Cockcroft & Gault - adding weight to the subject; an organisational change”

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Background: Recent publications, as well as an increasingly obese population, have brought the issue of calculating renal function in obese patients to the fore. In our institution we use the Cockcroft and Gault (C&G) equation to calculate creatinine clearance (CrCl) for the purposes of drug dosing. Historically, we used ideal body weight (IBW) in the C&G equation for obese patients (defined as patients weighting greater than 120% of their Ideal Body Weight (IBW). We wanted to determine if this remained the most appropriate parameter for the basis of drug dosing or if our practice needed to be reviewed.

Aims: The aims were to review the evidence base for calculating renal function in obese patients for drug dosing and to gain collaborative input from involved stakeholders to ensure a comprehensive review process, enabling change at an organisational level and ensuring best practice, patient focused care

Methods: A comprehensive literature review was carried out. The evidence base was presented to three consultant nephrologists by members of the pharmacy team. The resultant change in practice was submitted to our Drugs & Therapeutics Committee before implementation and dissemination. Nurse Practice Development were involved regarding practical aspects of ensuring routine weight and height measurement and documentation at ward level. Other stakeholders were consulted to ensure all patient groups were considered.

Results: A collaborative decision was made regarding the most appropriate weight to use in the C&G equation based on patients’ BMI bands. A validated electronic medical calculator (MDCalc®) was selected as part of this practice change. After consultation with the authors, weight selected for use in the C&G equation was aligned with the evidence based BMI bands. It was validated and available as an open website and free ios app. We also carried out an internal validation before recommending its use.

Conclusion:A collaborative decision was made to adjust our guidelines (see table below). The amended guidance has been updated on our electronic formulary app. The information has been widely disseminated internally and presented externally also. We plan to publish our change in practice to demonstrate how evidence and collaboration can combine to contribute to positive patient outcomes.

Pt’s weight status	**Weight to use in C&G equation (kg)**	**How to obtain**
Underweight: BMI <18.5	Actual body weight	Use actual body weight
Normal weight: BMI 18.5-24.9	Ideal body weight (IBW)	See IBW Chart or =50kg + 2.3kg per inch over 5 feet (males) = 45.5kg + 2.3kg per inch over 5 feet (females)
Overweight: BMI ≥ 25	Adjusted body weight	= IBW + 0.4(Actual body weight-IBW)

PO-45: Title: An Audit of Fluid Prescription Amongst Interns at Tallaght Hospital

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Background: Fluid prescription has been reported as the most common medical intervention in acute hospitals, surpassing even oxygen prescription[1]. We know that fluid prescribing is not 'benign' and inappropriate or incorrect fluids have many associated complications[2]. Despite this fluid prescription is often practiced in a haphazard fashion, usually by junior team members[3]. This is often further compounded by the fact that fluids are often prescribed by on call Doctors with little knowledge of the patient and their requirements.

Methods: We carried out an audit of the current interns in Tallaght Hospital. This was carried out via a questionnaire, assessing the interns knowledge of fluid prescribing in comparison to the 2013 NICE guidelines for fluid prescribing (C3174).

Results: 33 of 37 interns completed the survey. Only 1 intern was aware of the existence of the NICE guidelines for fluid prescribing. 20 of these interns reported prescribing fluids at lease daily. One third of interns reported receiving no senior help when prescribing fluids. Only 3 of the the 33 interns knew the sodium content of commonly prescribed fluids. None of the interns surveyed could accurately give the daily requirements of sodium, potassium and water. Feedback from the interns reflected poor confidence in fluid prescribing as well as dissatisfaction with undergraduate and intern teaching on the subject.

Conculsions: This highlights current poor practices with respect to fluid prescription. It is important that senior team members are aware of the current lack of knowledge amongst interns on this subject and support them in this regard. We are presenting our results at the quality improvement symposium in Tallaght hospital. We will be carrying out intern education on the subject of fluid prescribing. We are liasing with our pharmacists with respect to preparing hospital guidelines for inclusion in the Tallaght Medicines Guide and the app associated with this. We plan to re-audit knowledge of the interns following these measures.

PO-46: Title: An Audit of Pilot Hyperkalaemia Protocol in Galway University Hospital(GUH)

Authors: Louise Ryan, Pat O'Brien, Louise Giblin, Galway University Hospital.

Background: Hyperkalaemia is a common life threatening emergency. Prompt treatment with subsequent appropriate monitoring is paramount to successful outcomes. Following an audit of the management of hyperkalaemia in GUH in which pharmacological treatment regimens and monitoring varied considerably amongst patients, a standardised treatment protocol was introduced. The protocol emphasised the need for close monitoring with continuous cardiac monitoring, potassium rechecks at both 30mins and 4 hours along with capillary glucose checks at 30mins and hourly for 6 hours. The standardised treatment for life threatening hyperkalaemia included 2.2mmol calcium gluconate and 8units novorapid in 100ml of 20% glucose intravenously.

Methods: The standardised treatment protocol was devised by a collaboration of the departments of Medicine Safety, Nephrology, Endocrinology and Cardiology. The protocol was piloted in 4 clinical areas including the emergency department following education briefings of both medical and nursing staff. The pilot lasted from 21/11/16 to 31/1/17. All adult cases of hyperkalaemia were identified during this time period in conjunction with the biochemistry department. Patients on chronic dialysis were excluded. Detailed chart reviews were subsequently carried out and the results analysed with Microsoft Excel.

Results: 32 non-dialysis patients were identified as having hyperkalaemia during the re-audit period. 9 of these were deemed to have pseudohyperkalaemia and were subsequently excluded from further analysis. Medical records were available on 13 of the remaining patients. The mean potassium level was 6.5mmol/L (6.1-8.4mmol/L). 85% received 2.2mmol calcium gluconate. 62% received 8units novorapid in 100ml of 20% glucose while the remaining 38% received 10units actrapid in 50ml of 50 dextrose. 38% received salbutamol nebulisers. 2 patients (15%) required acute haemodialysis. 54% were documented as having continuous cardiac monitoring. The mean time to recheck potassium and capillary blood glucose post treatment were 162 minutes and 133 minutes respectively. 2 patients had hypoglycaemia post treatment. Both of these received the protocol treatment of 8units novorapid in 100ml of 20% glucose. There were no other significant adverse treatment events.

Conclusions:

1. Education regarding the new protocol needs to be increased
2. Closer monitoring for hypoglycaemia and persistent hyperkalaemia in treated patients is needed.
3. Frequency of hypoglycaemic episodes post treatment was significant.
   Availability of continuous cardiac monitoring for patients with hyperkalaemia needs to be increased.

PO-47: Title: B7-1 and Synaptopodin Immunohistochemistry in Septic Acute Kidney Injury

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Background: Septic acute kidney injury (SAKI) is a common cause of acute renal failure however, its pathophysiology remains unknown. Podocytes are capable of antigen-presentation, which requires podocyte expression of the co-stimulatory molecule B7-1. Lipopolysaccharide has been reported to induce podocyte B7-1 expression. Synaptopodin is a marker of mature podocytes and is involved in the podocyte cytoskeleton's contractile apparatus. Podocyte expression of these molecules in SAKI is of interest, as they could be involved in immune- or vascular-mediated mechanisms of renal dysfunction, respectively.

Methods: We identified patients who died with KDIGO stage 3 AKI attributed to SAKI and underwent post-mortem examination (n=6). As a control group, we identified post-mortem renal tissue from patients who died with an infection, but without AKI (n=4). Immunohistochemistry staining of post-mortem tissue from both left and right kidneys from each patient was performed using anti-B7-1 and anti-synaptopodin primary antibodies. Control samples stained with the secondary antibody alone were negative.

Results: While staining for B7-1 was positive on resident interstitial immune cells (serving as an internal positive control), glomerular staining for B7-1 was completely negative in both SAKI and control tissue.
There was no significant difference in the proportion of glomeruli positive for synaptopodin (median, IQR) in the SAKI group (42%, 9-75) compared to controls (95%, 23-100) (p=0.6). Nor was there a significant difference in the global intensity of synaptopodin expression (visually rated from 0-3; median, IQR) in the SAKI group (1.5, 0.9-2.3) compared to controls (3, 0.8-3) (p=0.4). Renal tissue from SAKI patients showed a clear pattern of abnormal synaptopodin expression, with strong staining in outer cortical glomeruli progressing to absent expression in juxta-medullary glomeruli, particularly in glomeruli adjacent to damaged tubules.

Conclusion: B7-1 is not expressed in glomeruli during septic-AKI. The abnormal pattern of synaptopodin expression in septic-AKI probably represents post-mortem artefact and requires further investigation.

PO-48: Title: usCD163 Utility in the Prospective Detection of Renal Vasculitis Flare

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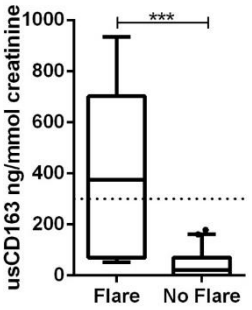
Background: Prior work has shown that usCD163 displays excellent biomarker characteristics for detection of active renal vasculitis with highly active renal disease at diagnosis. This prospective study focuses on the prospective use of usCD163 to aid in the detection renal vasculitis flare in patients in whom there is a clinical suspicion.

Methods: Patients with a known history of ANCA associated vasculitis in whom active renal vasculitis was clinically suspected were prospectively recruited. Clinical phenotyping, urinalysis, CRP, ANCA and serum creatinine were measured locally. Urine samples were processed locally using RKD protocol or centrally in St James's Hospital. Creatinine normalised usCD163 was measured by ELISA (Duoset, R&D systems) and values normalised to urine creatinine.

Results: 30 patients have completed clinical follow up to date. 40% (12) had renal flare confirmed at adjudication, 33.3% of these (4) were renal biopsy proven.
usCD163 levels are elevated in renal vasculitis flare with median levels of 374.7ng/mmol (IQR 69.6-702ng/mmol) compared to 69.6ng/mmol (IQR 21-178.8ng/mmol) in confirmed remission vasculitis, p=0.002. See figure 1.
Percentage increase in creatinine from baseline was increased in renal flare (56.4% (SD 50.5%) v 4.2% (SD 11.9%), p=0.0005). However other traditional biomarkers of renal flare did not differ between flare and remission groups including serum creatinine (143umol/L (IQR 103.5-172) v 187umol/L (IQR 109-282), ns), dipstick proteinuria (1.6 (SD 1.2) v 2.2 (SD1.5), ns), dipstick haematuria (2.4 (SD 1.2) v 2.6 (SD 1.1), ns), c-reactive protein (4mg/dL (IQR 2-11) v 13.5mg/dL (IQR 4-55), ns), ANCA titre (13U (IQR 2.2-67U) v 123U (IQR 13-168), ns) or new haematuria (33.35 v 33.3%, ns).



Conclusions: usCD163 levels are elevated in confirmed renal vasculitis flare compared to remission renal vasculitis in patients prospectively recruited in whom there is a clinical suspicion of renal flare. Further recruitment and study of associations of usCD163 with traditional biomarkers and other novel proteins is needed.

Table 1: usCD163 levels in confirmed renal vasculitis flare compared to confirmed remission.

PO-49: Title: Epidemiology of Acute Kidney Injury in a Tertiary Referral Hospital.

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Background: Acute Kidney Injury (AKI) is a common complication of hospital admissions that has considerable impact on patient morbidity and mortality. This retrospective study reviewed the presentation, management and outcomes of all patients who presented with severe (Stage 3) AKI over a 7-month period.

Methods: All patients admitted to a tertiary referral hospital with Serum Creatinine ≥ 354umol/L were identified through the biochemistry laboratory database from July 2016 – January 2017 inclusive. Patient data was extracted from hospital records and included age, gender, presenting complaint, co-morbidities, medications, clinical exam findings, treatment received, laboratory results, length of stay, nephrology consult and in-hospital mortality.

Results: A total of 345 patients met the inclusion criteria of an admission Serum Creatinine ≥354 umol/l, of these 14 patients had inadequate information, 148 were known dialysis patients, and 70 were patients with stable chronic kidney disease; thus all of these were excluded from further analysis. The remaining 113 patients met the criteria of Acute Kidney Injury or Acute on Chronic Kidney Disease (AoCKD) and were included for further analysis.
73 patients had AoCKD: median age 73years (range: 27years - 92years), 66% (n = 48) were male, 3% (n = 2) were renal transplant recipients. The majority of patients, 85% (n = 62) had a diagnosis of pre-renal AoCKD, the remaining cases were obstructive uropathy (n = 4) and intra renal pathology (n = 8) of which 3 required a biopsy to confirm the diagnosis. 33% (n = 24) of patients required dialysis: of these 50% (n = 12) received continuous dialysis initially and the remaining 50% started intermittent haemodialysis; 38% (n = 9) remain dialysis dependent. The overall mortality was 37% (n = 27), of the survivors (n = 46), at the time of discharge the majority had return to their baseline renal function.
40 patients had Stage 3 AKIN: median age 62.5 years (range 23years – 90years), 63% (n = 25) were male. The majority of patients, 85% (n = 34) had a diagnosis of pre-renal AoCKD, the remaining cases were obstructive uropathy (n = 6) and intra renal pathology (n = 11), no biopsies were undertaken. 45% (n = 18) of patients required dialysis: of these 61 % (n = 11) received continuous dialysis initially and the remaining started intermittent haemodialysis; 11% (n = 2) remain dialysis dependent. The overall mortality was 20% (n = 8), of the survivors (n = 32) at the time of discharge the majority had return to their baseline renal function.

Conclusions: Acute Kidney Injury is a common and significant clinical challenge, in this study those with underlying renal disease were older and at higher risk of non- recovery of renal function and death.

PO-50: Title: A case of IVIG-associated Aseptic Meningitis in a renal transplant patient.

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Background: We report a case of intravenous immunoglobulin (IVIG) associated aseptic meningitis in a renal transplant recipient treated for antibody mediated rejection (ABMR).

Methods: A retrospective review of medical notes and laboratory information.

Results: A 31-year-old male with End Stage Kidney Disease secondary to IgA Nephropathy received a deceased donor kidney transplant four years prior to presentation. Antibody mediated rejection (ABMR) was diagnosed on allograft biopsy performed for rising creatinine levels. He received methylprednisolone and his maintenance immunosuppression was increased. He then underwent 5 sessions of plasma exchange followed by IVIG (1g/kg). Less than 24 hours after receiving IVIG he presented to emergency services with a severe headache, photophobia, and nuchal rigidity without focal neurological findings. He was commenced on empirical antimicrobial treatment at presentation. Lumbar punctures on day 1 and 2 of admission yielded clear CSF with a polymorphic leukocytosis and low glucose. CSF samples were negative for typical and atypical microbial organisms including the following: bacterial culture, viral, meningococcal, cryptococcal, listerial, CMV, enteroviral, HSV and VZV PCR as well as acid fast bacilli. This patient improved with supportive care and was well at follow up 4 weeks post initial presentation without residual symptoms.

Conclusions: In a heavily immunosuppressed patient presenting with meningitis, all typical and atypical organisms should be considered and investigated. Aseptic meningitis secondary to IVIG use is rare and should be a diagnosis of exclusion. Its pathological mechanisms are incompletely understood. As IVIG associated aseptic meningitis causes significant morbidity and mimics infectious meningitis, it is important to be cognizant of its features and clinical presentation.

PO-51: Title: A Case Report: An unusual presentation of membranous nephropathy as a first presentation of secondary syphilis.

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Background: Membranous nephropathy is the most common cause of nephrotic syndrome in Caucasian patients under 60. Around 75% of cases are primary; however secondary causes of membranous nephropathy such as syphilis should be considered. Syphilis is known to have renal involvement, and cases of nephrotic syndrome have been reported in the literature. In 2014, 24,541 syphilis cases were reported in European Centre for Disease prevention and Control epidemiological data. This underscores the sharp increase in the number of presentations of syphilis. In Ireland, between 2010 and 2014 there has been a greater than 50% rise in reported cases. The largest increase in patients is seen in those aged over 45 and 63% of cases are in men who have sex with men, and there is frequent co-infection with HIV.

Case: A case report of a 59 year old HIV positive patient presenting with weight loss, joint pains, malaise and a non-pruritic papulosquamous rash. The rash appeared after frequent NSAID consumption for arthalgias. He was on long-term treatment with Atripla (efavirenz/emcritrabine/tenofovir). On initial presentation an AKI with nephrotic range proteinuria were present. Laboratory data included: urea 16.6, creatinine 264, albumin was 22g/L. 24 hour protein collection revealed 7.694g in 24 hours. CD4 268cells/µL. A biopsy performed showed features of allergic type acute tubulointerstitial nephritis and membranous nephropathy. He was treated with glucocorticoid therapy for presumed NSAID induced acute interstitial nephritis and discharged with improving renal function. Three weeks later he was re-admitted with acute visual deterioration and diagnosed with left panuveitis and right chorioretinitis. On opportunistic infection work-up, Treponema Pallidum Rapid particle agglutinin test (1:20480), Rapid Plasma Reagin (1:128) and Spyhilis IgM were all positive indicative of recent/active syphilis infection. Quantiferon was negative. Oral steroids were withdrawn and a 2 week course of IV ceftriaxone treatment for syphilis was completed with subsequent complete resolution of visual disturbance and a return of renal function to pre-morbid baseline and complete and sustained resolution of nephrotic syndrome.

Conclusions: In our patient an acute kidney injury was attributed to NSAID use and he was treated with steroids with good clinical response. He was also found to have membranous nephropathy, and proteinuria resolved after 2 weeks of antimicrobial treatment. Syphilis is a rare cause of nephrotic syndrome however, it is important to consider such secondary causes of membranous nephropathy in the appropriate clinical setting, as it is a completely reversible phenomenon with appropriate antibiotic therapy.

PO-52: Title: Iatrogenic Life-threatening Metabolic Alkalosis

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Introduction

We present an unusual case of extreme life-threatening metabolic alkalosis

Case report

An 89year old female presented with a 2week history of increasing somnolence and reduced oral intake. Fludrocortisone was commenced 9months previously for orthostatic hypotension and 2weeks prior to admission bendroflumethiazide was added for hypertension and codeine for headache. On examination GCS was 13 and the patient was volume deplete. Bloods showed pH 7.57, bicarbonate 62.9mmol/L, chloride 77mmol/L, potassium 2.4mmol/L, sodium 148mmol/L, creatinine 384umol/L (80umol/L 1 month previously), urea 21mmol/L, creatinine kinase 13,649U/L, and spot urinary chloride 61mmol/L. Volume resuscitation using normal saline with potassium was unsuccessful in correcting the acid-base abnormalities and the patient continued to deteriorate with worsening renal indices and gas exchange. Continuous venovenous haemodiafiltration (CVVHDF) was commenced to allow controlled correction of the metabolic abnormalities. The patient made a complete recovery and was discharged home independent of dialysis.

Discussion

The metabolic alkalosis here was multifactorial. Fludrocortisone and bendroflumethiazide increased hydrogen ion secretion. Increasing somnolence, due to acid-base disturbances and codeine in an elderly patient with deranged renal function, resulted in reduced oral intake. AKI was due to volume depletion and rhabdomyolysis, the latter evidenced by markedly elevated creatinine kinase and likely due to prolonged immobility. Both AKI and volume depletion compound metabolic alkalosis. Hypokalaemia, due to fludrocortisone and bendroflumethiazide, reduced bicarbonate and increased hydrogen ion secretion. Bendroflumethiazide caused chloride depletion, reducing the ability to excrete bicarbonate.

A high urinary chloride predicted ‘chloride-resistant alkalosis’ and failure of normal saline to correct the acid-base abnormalities. Progressive acute kidney injury further complicated management and prompted the use of CVVHDF.

In this case the combination of 3 commonly used medications resulted in a cascade of events precipitating a life-threatening metabolic state. This illustrates the importance of awareness of medication interactions and vigilance when prescribing, especially in the frail, elderly population.

PO-53: Title: Crystal Storing Histiocytosis in Multiple Myeloma

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Background: Renal involvement in multiple myeloma is commonly due to cast nephropathy, amyloidosis or monoclonal Ig deposition disease. We describe a rare form of paraprotein-related kidney injury.

Case Description: A 78-year-old woman was referred to nephrology clinic with total urine protein of 1.3g/24-hours. Serum protein electropheresis demonstrated a 6.2g monoclonal IgA band; the serum kappa:lambda free light-chain ratio was 154 and the bone marrow trephine biopsy yielded >30% abnormal plasma cells, diagnostic for multiple myeloma. She was treated with lenalidomide, dexamethasone and pembrolizumab (a monoclonal antibody targeting the Programmed-Cell-Death-1 Receptor) in a Phase-3 Clinical Trial.

Two months into treatment the patient developed acute kidney injury (AKIN 1) after diarrheal illness, with creatinine of 142µmol/L (baseline 94 µmol/L0. She was hypokalaemic (K+ 2.9mmol/l) and increasingly proteinuric (3.3g/24hr). Renal function initially improved with rehydration. However, one week later creatinine was 262µmol/l and so a renal biopsy was performed. Histology demonstrated round eosinophilic bodies extensively deposited within tubular cytoplasm with an associated tubulitis and diffuse oedema of the interstitium, characteristic of crystal-storing histiocytosis. Electron microscopy revealed rhomboid and diamond shaped crystals.

The patient was withdrawn from the clinical trial and treatment was intensified to bortezomib, cyclophosphamide and dexamethasone. Peak creatinine was 270µmol/L and continues to improve as an outpatient (most recently 137µmol/L).

Discussion: Crystal-storing histiocytosis is an uncommon form of renal involvement in multiple myeloma of κ-light-chain type. High concentrations of abnormal light chains form intra-cytoplasmic crystals in the tubular cells. Patients commonly present with proximal tubular dysfunction (e.g. hypokalaemia) and renal impairment.

PO- 54: Title: Mind the Gap

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Case:A 52 year old lady was brought into a peripheral hospital following a collapse episode. Her background was significant for depressive illness with previous multidrug overdose and ethylene glycol poisoning. On presentation she was confused (GCS 14/15) with slurred speech and a superficial laceration to her forehead. Examination including neurological exam was unremarkable.

Her VBG showed pH 7.192, pO_2 13.5kPa, pCO_2 2.77kPa, HCO_3 8.0mmol/L, Na 146mmol/L, K 4.3 mmol/L, Cl 113 mmol/L, lactate was above the upper detectable limit on the gas analyser. Renal function was normal with urea 5.3 mmol/L and creatinine 75umol/L. Her alcohol level was <10 and urinary toxicology was negative. CT Brain was normal. Her calculated anion gap was 29.

Her son searched her home and found two 1L bottles of antifreeze empty in a drawer in her bedroom. She was commenced on Fomepizole and transferred to our ITU for dialysis. She was hypocalcaemic (Ca 2.09 mmol/L) on arrival and her creatinine had risen to 148umol/L. She was commenced of CVVHDF. Urine was sent for microscopy and ethylene glycol levels were sent. Her measured osmolality was 327, versus a calculated osmolality of 298, giving a gap of 29.

The ethylene glycol level was 829mg/ml. It was re-checked after two days on CVVHDf and came below the detectable limit. CCVHDF was discontinued. Creatinine was 190umol/L on discharge (trending downwards) and psychiatry input was ongoing. Urine revealed the classic needle shaped monohydrate oxalate crystals and envelope shaed dehydrate crystals.

This case illustrates a case of ethylene glycol poisoning with a high anion gap metabolic acidosis and an osmolar gap effectively managed with Fomepizole and CVVHDF.

PO-55: Title: Etanercept associated retroperitoneal fibrosis: 2 cases presenting to a regional Nephrology Service

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Background: Retroperitoneal fibrosis (RPF) is a rare condition characterized by the presence of inflammation and fibrosis in the retroperitoneal space where it frequently causes ureteral obstruction and renal failure. It may occur as an idiopathic (66%) or secondary form (33%). Idiopathic RPF is immune-mediated, and can be either isolated, associated with other autoimmune diseases, or arise in the context of immunoglobulin G4-related disease (IgG4-RD). Treatment of idiopathic RPF includes corticosteroids and immunosuppressants. Biological agents (including TNF-α antagonists) have been successfully used in RPF therapy.[1] Secondary RPF (33% of cases) can occur due to a number of factors including drugs, surgery, radiotherapy and in the setting of malignancy. Ergot derivatives, dopamine agonists, β-blockers, analgesics and non-steroidal anti-inflammatory drugs are well known causes of drug induced RPF. Etanercept (a soluble receptor directed against tumour necrosis factor (TNFα)) as a cause of RPF has only been reported in 2 previous cases in the literature.[2]

Methods: Two incident cases of RPF presented to our service with acute kidney Injury and were discovered to have RPF causing obstructive nephropathy. Both patients were on long term treatment etanerecept treatment for rheumatological conditions; ankylosing spondylitis and rheumatoid arthritis.

Results: Imaging confirmed obstructive nephropathy secondary to RPF and both patients required urgent urological management with bilateral JJ stenting.

Conclusions: In both cases, secondary RPF appeared despite several years of successful etanercept treatment for rheumatological conditions. This highlights the need for ongoing vigilance for new onset renal dysfunction in patients on this drug. Although immunosuppressants including anti-TNFα drugs have been used as a successful treatment for idiopathic RPF, Etanercept can paradoxically cause secondary RPF as in our cases.[3] More research is required to understand the complex relationship between TNF α and RPF.

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