



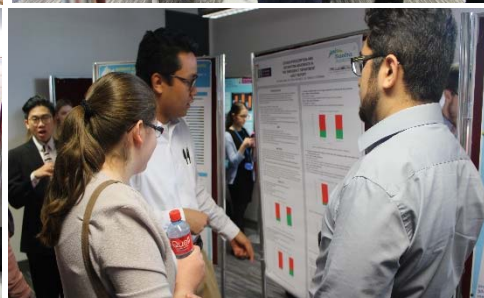
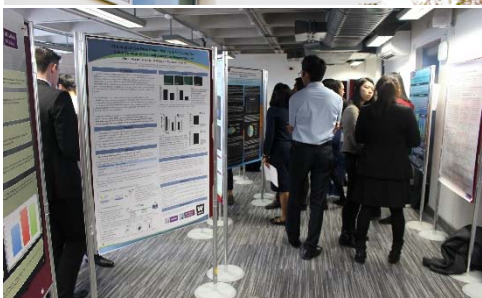
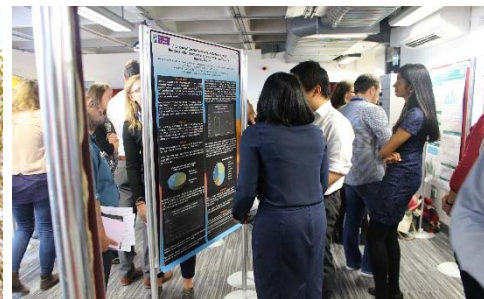
OÉ Gaillimh  
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GRADUATE  
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SCOIL LEIGHIS IONTRÁLA  
IARCHEIME OLLSCOIL LUIMNIGH



University College Cork  
School of Medicine



# Atlantic Corridor Medical Student Research Conference 2016 Programme

Thursday, 3<sup>rd</sup> November 2016

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<b>09:30 – 10:00</b>	<b>Registration &amp; Refreshments</b>	CSI Foyer
<b>10:00 – 10:15</b>	<b>Opening Address</b> by <b>Dr Carmel Malone</b> Head of School of Medicine, NUI Galway	CSI-1030

<b>Oral Presentation Session 1</b>	<b>Chair: Dr Róisín Dwyer</b>	<b>CSI-1030</b>
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|---------------|----------------------------------|
| 10:15 – 10:30 | 1. <b>Evelyn Fennelly</b> (NUIG) |
| 10:30 – 10:45 | 2. <b>Ivana Capin</b> (UL GEMS)  |
| 10:45 – 11:00 | 3. <b>Amy Kelliher</b> (UCC)     |
| 11:00 – 11:15 | 4. <b>Mohamed Elhadi</b> (NUIG)  |

<b>11:15 – 11:30</b>	<b>Coffee Break</b>	CSI Foyer
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<b>Oral Presentation Session 2</b>	<b>Chair: Dr Aideen Ryan</b>	<b>CSI-1030</b>
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| 11:30 – 11:45 | 5. <b>Sinead Finnegan &amp; Jeff Henderson</b> (UL GEMS) |
| 11:45 – 12:00 | 6. <b>Kenneth Thornton</b> (UCC)                         |
| 12:00- 12:15  | 7. <b>Miray Unal</b> (NUIG)                              |
| 12:15 – 12:30 | 8. <b>Sean Whelan</b> (UCC)                              |

12:30 – 14:00	<b>Poster Viewing &amp; Lunch</b>	<b>CSI-2010</b>
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<b>Oral Presentation Session 3</b>	<b>Chair: Dr Conall Denny</b>	<b>CSI-1030</b>
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| 14:00 - 14:45        | <b>Plenary Address</b> , Professor Michael O' Dwyer, Consultant Hematologist and Director SFI/ICS Blood Cancer Network Ireland. School of Medicine, NUI Galway. |
| 14:45 – 15:00        | 9. <b>Niall Dalton</b> (UL GEMS)  |
| 15:00 – 15:15        | 10. <b>Emma Flaherty</b> (NUIG)   |
| 15:15 - 15:30        | 11. <b>Eimear O'Leary</b> (UL GEMS)   |
|                      | 12. <b>Zara Fullerton &amp; Susan O' Sullivan</b> (UCC)   |
| <b>15:45 – 16:00</b> | <b>Award Committee Convenes</b>   |
| 16:00 – 16:15        | Prize-giving and Closing Address by Professor Michael Kerin<br>Vice-Dean of College of Medicine, Nursing and Health Sciences,<br>NUI Galway                     |

# **Oral Presentation Abstracts**

**Title:** Vascular Access for Coronary Rotational Atherectomy: Radial versus Femoral

**Authors:** Fennelly, E.1, Lee, M.2, Crowley, J.2, Smyth, Y.2, Sharif, F.2, Da Costa, M.3, Veerasingham, D.3, George, A.4, Walsh, S.4, Cockburn, J.5, Neylon, A.6, Garot, P.6, Wolfrum, M.7, Banning, A.7, Mylotte, D.2

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6. Institut Cardiovasculaire Paris Sud, Massy, France
7. Oxford Heart Centre, Oxford University Hospital, Oxford, England

**Introduction:**

Rotational atherectomy (RA) is an adjunct to percutaneous coronary intervention (PCI) that modifies calcified coronary artery plaques. We sought to evaluate outcomes of patients undergoing RA via transradial (TR) and transfemoral (TF) routes.

**Methods:**

The rotational atherectomy international (RAI) registry is a multinational collaboration of high-volume PCI centres. Data from 1569 patients were retrospectively collected. Each centre submitted patient baseline characteristics, angiographic data, procedural information, and scheduled clinical follow-up. All patients gave written informed consent. Continuous variables are presented as mean  $\pm$  standard deviation. Categorical variables are presented as frequencies and percentages and were compared using the Chi-square or Fisher exact test. A P-value  $\leq 0.05$  was considered statistically significant. Statistical analysis as performed using SPSS v22.0 (SPSS Inc., Chicago, IL, USA).

**Results:**

Of the 1569 patients in the RAI registry, most were male (N=1148;73.2%). Women were more likely to undergo TR approach than TF approach (56.5% vs 43.5%) though this did not reach statistical significance (P=0.054).

The left anterior descending was the most frequently treated artery (N=687;44.0%). Coronary stenting was performed in 1450 (92.7%) cases.

Some periprocedural complications were less likely with a TR approach: minor bleeding (0.1% vs 1.1%;P=0.017), occlusive dissection (0.9% vs 2.8%; P=0.007), and myocardial infarction (MI) (0.3% vs 1.5%; P=0.012).

30-day mortality was 2.2% with no statistical difference between the groups.

**Conclusions:**

TR access is a safe and effective method to perform RA. This approach is associated with excellent procedural success and fewer occlusive dissections, MIs and minor bleeding complications compared with TF access.

**Title:** Prognostic Factors for Pediatric and Adolescent Ewing's Sarcoma Patients: A Retrospective study from 2001 to 2013

**Authors:** I. Capin, C. Owens University of Limerick Graduate Entry Medical School

## **Introduction**

Ewing Sarcoma is a malignant primary bone cancer that is a part of a group of cancers called the Ewing Sarcoma family of tumors. It affects children and young adults between the ages of 10 and 20. On average, the five-year survival is between 70-80%. Certain prognostic factors are able to better postulate an individual's chance of survival. This paper examines the demographic, clinicopathological and histopathological factors that affect five-year Ewing Specific Survival (ESS).

## **Materials & Methods**

Thirty medical charts for patients being treated at OLCH Crumlin from 2001-2013 were retrospectively evaluated. The patients were treated according to the Euro-EWING99 protocol. SPSS and Microsoft excel were used to evaluate ESS using the Kaplan Meier method. Univariate analysis was employed to see the effects age, metastasis, tumor site, tumor size, site of metastasis and histopathological response had on the survival.

## **Results**

Metastasis on presentation was the most significant prognostic factor  $p=0.014$ , followed by age  $p=0.087$  and histopathological response  $p=0.023$ . Eleven out of thirty cases had a primary tumor in the pelvis, pelvic tumors were often greater than 8 cm  $p=0.01$ . Seven of the eleven pelvic tumors had metastasized on presentation, although this did not have a significant effect on survival, a relationship was still noted.

## **Conclusion**

Population size limited this study, a greater population would have allowed for more reliable findings. Outlining the negative prognostic factors specifically; metastasis on presentation, histopathological response and age may aid physicians in identifying individuals with poor prognoses. This may lead to a more aggressive multidisciplinary approach.

**Title:** Evaluating lymph node ratio (LNR) as a prognostic indicator in node-positive breast cancer.

**Authors:** Kelliher A, Boyce M, O Connor D, Donnellan E, Murphy CG, Bird B.

**Affiliations:** University College Cork, Bon Secours Hospital

## **Introduction**

Recently, the idea of a Lymph Node Ratio (LNR), i.e. the number of positive nodes over the total number of nodes, has been put forward as a possible alternative to the current TNM staging system in node-positive breast cancer. The aim of this study was to determine whether LNR can provide additional prognostic information to pN staging in these patients.

## **Materials and Methods**

A retrospective review of pathology records was undertaken in 307 patients diagnosed with node-positive breast cancer between January 2000 and 2015. Overall survival (OS) and invasive Disease Free Survival (iDFS) were calculated using the Kaplan Meier Method. Univariate and multivariate analysis were performed using Cox proportional hazards models.

## **Results**

The 5-year OS and iDFS for node-positive patients were 80% and 78%, respectively. The OS for LNR groupings decreased from 87% in the high group to 75% in the intermediate risk group to 57% in the low risk group ( $p \leq 0.005$ ). Similarly, iDFS decreased between LNR groupings. On univariate analysis, LNR, Positive Nodes, Age, Stage, ER (Oestrogen Receptor) and PR (Progesterone Receptor) status were all shown to be significantly associated with OS. ER, PR, LNR and Stage were also significantly associated with iDFS. When these variables were entered into a multivariate model only LNR, Age, Stage and ER status held their significance for OS while only LNR and ER status were associated with iDFS.

## **Conclusion**

In this study LNR has been proven a reliable and strong indicator of prognosis in node-positive breast cancer patients and would be a valuable tool in deciding the clinical course of treatment for any given patient.

**Title:** Serum Exosome-Encapsulated microRNAs as circulating biomarkers for Breast Cancer.

**Authors:** Elhadi M, Moloney BM, Gilligan KE, Joyce DP, Kerin MJ, Dwyer RM

**Author affiliation:** Discipline of Surgery, School of Medicine, Lambe Institute for Translational Research, National University of Ireland Galway.

## **Introduction**

Exosomes are small membrane-derived vesicles secreted by most cell types that hold great promise as novel biomarkers for clinical diagnosis. Exosome-encapsulated microRNAs (miRNAs) secreted into circulation may represent a signature of the secreting tumour cell(1). Recent studies by this group have highlighted the presence of miR-451a in exosomes secreted by breast cancer cells in vitro.

## **Aims**

To investigate the presence and clinical relevance of exosome-encapsulated miRNA-451a in the sera of breast cancer patients compared to healthy controls.

## **Methods**

Following ethical approval and informed patient consent, sera of 40 breast cancer patients and 12 healthy controls was collected. Serum exosomes were isolated by differential centrifugation, microfiltration and ultracentrifugation. Exosome concentration was determined by protein assays and nanoparticle tracking analysis, which also measured size. RNA was then extracted from exosomes and RQ-PCR targeting miR-451a performed.

## **Results**

Exosomes were successfully isolated from all serum samples analysed (n=52) and confirmed to be of the expected 30-120nm size. There was no significant difference between the overall exosome yield of serum from patients compared to healthy controls, with a broad range of concentrations detected from the same volume of serum. miR-451a was detected in 48/52 samples analysed, with higher levels of expression detected in circulating exosomes from breast cancer patients compared to healthy controls.

## **Conclusion**

The preliminary data presented highlights miR-451a as a potential circulating biomarker of disease. Exosome-encapsulated miRNAs may offer valuable tumour-related profiles to facilitate the early detection of breast cancer. Further analysis and investigation of any association with patient clinicopathological characteristics is warranted.

## **References**

1. Joyce DP, Kerin M, Dwyer RM. 2016. Exosome-encapsulated microRNAs as circulating biomarkers for breast cancer. *International Journal of Cancer*, 139(7), p.1443-1448.

**Title:** Acute Appendicitis: An audit of diagnostic approach

**Authors;** S. Finnegan & J. Henderson, UL, GEMS C. Cronin & F. Pretorius, St Luke's, Kilkenny.

## **Introduction**

Acute appendicitis is a common surgical emergency. Currently there is no diagnostic imaging protocol; it remains a clinical diagnosis. This uncertainty can lead to histo-pathologically normal appendices being removed, termed the negative appendectomy rate (NAR).

## **Aims**

- Calculate the negative appendectomy rate of the given time period in order to compare this to national and international standards
- Examine the use of inflammatory markers in appendicitis
- Assess the accuracy of imaging to diagnose acute appendicitis

## **Materials & Methods**

Data on all patients who underwent appendectomies in St Luke's General hospital between January and December 2015 was collected. Retrospective analysis was carried out on C-reactive protein levels, white cell count, imaging findings and histopathology reports for each patient. Data was analysed using Graphpad Prism.

## **Results**

210 appendectomies were carried out in the timeframe; 102 female. 161 had positive histology for appendicular pathologies and 49 had negative histopathology reports, producing a NAR of 23.3%. Average WBC and CRP for the negative histology group were 9.02 and 15.82 respectively with the positive histology having significantly higher results 13.36 ( $P < 0.0001$ ) and 50.03 ( $P < 0.01$ ). CT had a superior sensitivity (82.4%) to ultrasound (12.8%) though ultrasound showed a higher specificity (100%) to CT (50%).

## **Conclusion**

The negative appendectomy rate is higher than current international standards. Raised inflammatory markers are more common in appendicular pathologies. Regarding imaging, ultrasound has a sensitivity far lower than international standard. CT remains a sensitive diagnostic tool consistent with the literature. Consistency of reporting could help reduce patient risk and health care cost.



**Title:** Medical outcomes post transition of clinical care from a paediatric cystic fibrosis care model to an adult cystic fibrosis care model – an Irish perspective

**Author:** Thornton KP<sup>1</sup>, Ronan NJ<sup>2,3</sup>, Shortt C<sup>2</sup>, McCarthy M<sup>2</sup>, Fleming C<sup>2</sup>, Daly M<sup>2</sup>, Hickey C<sup>2</sup>, Howlett C<sup>2</sup>, Flanagan ET<sup>2,3</sup>, Eustace JA<sup>3</sup>, Murphy DM<sup>1,2</sup>, Plant BJ<sup>1,2</sup>

<sup>1</sup>Medical School, University College Cork, Cork

<sup>2</sup>Cork Adult CF Centre, Cystic Fibrosis Centre, Respiratory Department, Cork University Hospital, University College Cork, Cork.

<sup>3</sup>HRB Clinical Research Facility, University College Cork, Cork.

As life-expectancy increases in CF it is paralleled by an increasing number of patients transitioning from a paediatric care-model to an adult care-model. In chronic illnesses' including CF the transition process is often complicated by concerns about the potential implications. Traditionally studies have evaluated subjective aspects of transition including patient satisfaction. There are limited objective studies in this area. Our study investigated the change in clinical status in the year pre & post transition.

Data was collected retrospectively for the year pre-transition and the first year post-transition for the last 28 patients who transitioned from our paediatric to adult program. FEV<sub>1</sub>, FVC, BMI, number of pulmonary exacerbations were recorded.

There was no significant difference in the mean decline in FEV<sub>1</sub> ( $p=0.66$ ) or FVC ( $p = 0.248$ ) in the year pre-transition compared to the year post. There was a significant decrease in the total number of exacerbations (PO & IV antibiotics) in the year post- transition ( $p = 0.015$ ). There was no significant change in the number of exacerbations requiring IV antibiotics ( $p = 0.568$ ). A significant increase in use of home IV antibiotics was noted after transition ( $p = 0.006$ ) with a parallel non-significant reduction in number of inpatient days (mean -2.35 days,  $p = 0.211$ ). There was no significant change in BMI after transition.

Transition is not associated with a clinical decline; however, it is associated with a change in antibiotic practice - with a reduction in oral antibiotic usage and a change in location of IV antibiotic delivery.

**Title:** Attention Deficit Hyperactivity Disorder (ADHD) in Adults: Use of Eye-Tracker Device to Detect Attention Deficits

**Authors:** Unal, M.1, O'Mahony, E.2, Adamis, D.2

**Author affiliations:**

1. School of Medicine, National University of Ireland, Galway
2. Department of Psychiatry, Sligo Mental Health Services, Sligo

Supported by Wellcome Trust.

**Introduction**

Adult patients with ADHD may go unrecognised due to various factors. This study aims to investigate the use of objective testing, with an eye-tracker device in the diagnosis of adult patients with ADHD.

**Methods**

An ethically approved cross-sectional study was conducted between ADHD patients and normal controls. Out-patients diagnosed with Conners' Adult ADHD scale (Group A, n=15) were matched for gender and age against controls (Group B, n=33). Participants completed four computer-based tasks while their eye movements were recorded. The tests included (i) Stroop Effect test1, (ii) Stroop Effect test with visual aid, (iii) Perceptual Selectivity test2 and (iv) Saccadic Interference. Data was collected with respect to accuracy (%) and response time(msec) for tests i-iii. For test iv, saccade count, average saccade amplitude and average fixation duration was collected. Normally distributed data were analysed using parametric tests or otherwise non-parametric tests.

**Results**

Stroop test accuracy showed a statistically significant difference between group A and group B (Mann-Whitney U=153.000, p=0.004). Stroop response time also showed a statistically significant difference between the two groups (t=3.581,df:46, p=0.001). For test (ii), there was a significant difference for response time (t=2.326, df:46, p=0.024) but not for accuracy. For test (iii), the results were statistically significant for accuracy; (t=2.682, df:46, p=0.010) and for response time (t=3.531, df:46, p=0.001). There were no significant differences in the saccadic interference test.

**Conclusions**

Adults with ADHD have longer response times and perform less accurately than controls. Thus, these data demonstrate that there is a use for objective tests (tests i-iii) in the diagnosis of adult ADHD.

1. Stroop, J. R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology*, 18(6), 643-662. doi:10.1037/h0054651
2. Theeuwes, J. (1992). Perceptual selectivity for color and form. *Perception & Psychophysics*, 51(6), 599-606. doi:10.3758/bf03211656

**Title:** Microbiome & morphology: adult germ-free mice exhibit distinct hippocampal dendritic morphological changes

**Authors:** Seán O. Whelan<sup>1, 2</sup>, Pauline Luczynski<sup>3</sup>, Colette O'Sullivan<sup>1</sup>, Gerard Clarke<sup>3, 4</sup>, Fergus Shanahan<sup>3</sup>, Timothy G. Dinan<sup>3,4</sup> and John F. Cryan<sup>1, 3</sup>

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4. Department of Psychiatry and Neurobehavioural Science, University College Cork, Cork, Ireland.

## **Introduction**

Germ-free (GF) mice, born and reared in an aseptic isolator, are an important model used to elucidate the influence of the microbiota-gut-brain axis in health and disease. These mice have been wide-ranging alterations in their physiological and behavioural profiles, including impairments in neurogenesis, cognition and anxiety-like behaviours. It is possible that changes in hippocampal structure could underlie the altered behavioural and physiological features of GF mice.

## **Materials and Methods**

Using design-based stereology we compared the volumes of the total, dorsal and ventral hippocampus, and that of the granular layer of the dentate gyrus (DG), between GF mice and conventionally-colonised controls (CC). We also compared the dendritic arborisation (using Sholl analysis) and dendritic spine densities of dorsal hippocampal DG granule cells between these groups.

## **Results**

A reduction in dendritic branching was observed in the GF mice compared to the CC. This finding was localised to the infralimbic blade of the DG and accompanied by a reduction in dendritic complexity on Sholl analysis but not by a reduction in dendritic length. No significant differences were seen in hippocampal volumes between GF mice and controls, nor in the volume of the granular layer of the DG. Spine densities did not vary between groups.

## **Conclusion**

These results are the first to investigate the association between microbiome and hippocampal morphology, and suggest that the microbiota is a key mediator of the structural integrity of the dorsal hippocampus. This has implications for dorsal hippocampus-dependent behaviours, such as spatial memory and pattern separation, in GF mice.

**Title:** Platelet Von Willebrand Factor Levels Provide Novel Insights into the Biology Underlying Quantitative Von Willebrand Disease.

**Authors:** N. Dalton<sup>1,2,9</sup>, S Aguila<sup>2</sup>, S Schneppenheim<sup>3</sup>, JM O'Sullivan<sup>2</sup>, NM O'Connell<sup>1</sup>, K Ryan<sup>1</sup>, M Byrne<sup>1</sup>, MNolan<sup>1</sup>, RJS Preston<sup>4,5</sup>, Peter O' Loughman<sup>9</sup>, U Budde<sup>3</sup>, P James<sup>6</sup>, J Di Paola<sup>7</sup> JS. O'Donnell, <sup>1, 2, 8</sup> and M Lavin<sup>1, 2, 8</sup>

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6. Medicine, Queen's University, Kingston, ON, Canada.
7. University of Colorado, Anschutz Medical Campus, Aurora, CO; US
8. Irish Centre for Vascular Biology, Royal College of Surgeons in Ireland, Dublin.
9. University of Limerick, Graduate Entry Medical School.

## Introduction

Von Willebrand Factor (VWF) has a central role in haemostasis and is synthesized exclusively in endothelial cells (plasma VWF) and platelets (plt-VWF). High levels of plt-VWF are stored within platelet  $\alpha$ -granules and previous in-vivo studies suggest that plt-VWF also contributes to normal haemostasis. As patients with Low VWF (plasma VWF levels 30-50 IU/dL) exhibit a significant bleeding phenotype, we hypothesized that a common synthetic defect may reduce plt-VWF levels in this cohort. Consequently, we conducted the largest study of plt-VWF and bleeding phenotype to date. Plt-VWF antigen (plt-VWF:Ag) and collagen binding (Plt-VWF:CB) levels were systematically examined in patients with Low VWF levels and compared to healthy controls to determine the impact of Plt-VWF.

## Materials & Methods

Using standard ELISA techniques, plt-VWF:Ag and plt-VWF:CB levels were determined for patients with Low VWF (n=54) and compared to controls (n=22). Bleeding phenotypes were evaluated using the International Society of Thrombosis and Haemostasis Bleeding Assessment Tool (ISTH BAT).

## Results

In addition to low plasma VWF levels, we observed significantly reduced plt-VWF:Ag and plt-VWF:CB levels in patients with Low VWF. This suggests that a synthetic defect common to both VWF synthetic compartments may contribute to Low VWF levels. However, reduced plt-VWF levels did not significantly impact on bleeding phenotype in patients with Low VWF.

## Conclusion

Our findings demonstrate that, in patients with reduced plasma VWF levels, plt-VWF levels are also significantly reduced, suggesting defective VWF synthesis may contribute to the pathophysiology of Low VWF. Thus, plt-VWF assessment may help elucidate the pathophysiology of Low VWF but did not alter the bleeding phenotype.

**Title:** Investigating the Link Between Adrenal Cushing's and ER-Positive Breast Cancer

**Authors:** Flaherty, E1, McCarthy A1, O'Shea PM2, Lowery A3, Gurnell, M4, Dennedy, MC5,6.

**Author Affiliations:** 1School of Medicine, NUI Galway, Galway, 2Department of Clinical Biochemistry, University Hospital Galway, 3Department of Surgery, NUI Galway, Galway, 4Institute of Metabolic Science, University of Cambridge, Cambridge, UK, 5Discipline of Clinical Pharmacology & Therapeutics, NUI Galway, Galway, 6Department of Endocrinology, Galway University Hospital, Galway.

## Introduction

Subclinical hypercortisolism (SH) is associated with increased risk of malignancy.(1) We aimed to investigate the prevalence of aberrant glucocorticoid metabolism in women in remission from breast cancer.

## Methods

Post-menopausal women in remission from ER(+) breast cancer were recruited under informed consent (n=97) and compared with age-matched women with adrenal incidentalomas (n=69). Each patient (i) underwent overnight dexamethasone suppression test (ONDST), and (ii) blood sampling for DHEAS. Patients receiving systemic non-hormonal chemotherapy and those taking high dose glucocorticoids were excluded. Statistical analysis used Chi Squared test for proportions and t-tests for hypothesis testing.

## Results

A higher number of postmenopausal women with a history of breast cancer [16/98 (16%)] failed the ONDST (Cortisol >50nmol/L) (1) when compared to a control cohort of postmenopausal women [6/90 7%]. This was lower than women with adrenal nodules [33/69 (48%)] ( $\chi^2=41.76$ ;  $p<0.0001$ ). Low DHEAS ratio supported a diagnosis of SH in the breast cancer group failing the ONDST versus those passing [0.52+/- 0.14 versus 1.05 +/- 0.19 ( $p=0.01$ )] (2). There was no association between failed ONDST and current hormonal therapy. Failed ONDST in this group was associated with larger adrenal glands [7.31 +/- 1.8 versus 3.74+/-0.47 ( $p=0.051$ )].

## Conclusions

A higher proportion of women with a history of breast cancer demonstrated evidence of subclinical hypercortisolism independent of hormonal chemotherapy which suggests an association between abnormal glucocorticoid metabolism and breast cancer. Further mechanistic studies are necessary to determine the mechanism of this association.

## References

1. Debono M, Newell Price J. Subclinical hypercortisolism in adrenal incidentaloma. *Curr Opin Endocrinol Diabetes Obes.* 2015 Jun;22(3):185-92.
2. M Conall Dennedy, Anand K Annamalai, Olivia Prankerd Smith, Natalie Freeman, Kuhan Vengopal, Johann Graggaber, Olympia Koulouri, Andrew S Powlson, Ashley Shaw, David J Halsall, Mark Gurnell. Low DHEAS: A sensitive and specific test for the detection of subclinical hypercortisolism in adrenal incidentalomas. *JCEM* Sept 2016: In Press.

**Title:** Investigating a Role for Circulating Fibrocytes in Colorectal Cancer

**Authors:** E O'Leary<sup>1</sup>, MG Kiernan<sup>1</sup>, P Tibbitts<sup>1</sup>, F Owowlabi<sup>1</sup>, DP O'Leary<sup>2</sup>, JC Coffey<sup>1,2</sup>

1. University of Limerick, Graduate Entry Medical School
2. University Hospital Limerick

## **Introduction**

Circulating fibrocytes (cFC) are a sub-population of leukocytes initially discovered for their role in wound healing (Bucala et al., 1994). These cells are influential intracellular signallers and have been shown to be involved in disorders such as asthma, pulmonary fibrosis and Crohn's disease (Wang et al., 2008, Moeller et al., 2009, Sahebally et al., 2013). Recently they have been implicated in cancer, for roles in tumour proliferation in gastric cancer and tumour metastasis in lung cancer (Terai et al., 2015, Mukaida and Sasaki, 2016). Furthermore, cFC in inflamed tissues have been shown to differentiate into fibroblasts and myofibroblasts (Hong et al., 2007). Fibroblasts and cancer-associated fibroblasts (CAF) have been shown to be involved in tumour initiation and progression in colon cancer (Tommelein et al., 2015)

## **Aims**

To ascertain whether the level of cFC in colorectal cancer patients alter peri-operatively and when compared to healthy volunteers.

## **Materials & Methods**

To determine cFC levels, flow cytometry was conducted on blood collected from 45 colorectal cancer patients pre-op and, where possible, post-op at 24hours, 48hour and 72hours. Blood samples were also collected from 15 healthy volunteers.

## **Results**

The levels of cFC varied significantly peri-operatively. We found that the levels increased 24hours post-op from their pre-operative levels. Following this, at 48 post-op, we still saw an increased trend in the level of cFC compared to pre-op levels. At 72hours the cFC levels had dropped below pre-op levels. The percentage of cFC was higher in pre-op colorectal cancer patients when compared to the healthy controls.

## **Conclusion**

Overall this data suggests that there may be a role for cFC in colorectal cancer. While, we believe the significant increase in cFC levels following surgery was primarily due to the wound healing properties of cFC, the levels decreased 72hours following surgery and it was also raised in the pre-op patients when compared to the healthy controls.

**Title:** Made to Move: An examination of the impact of physical activity and nutritional behaviours on the health and wellbeing of Irish adolescents

**Authors:** Zara Fullerton and Susan O'Sullivan (Final Year Medicine, UCC)

**Affiliations:** Prof Mary Horgan (School of Medicine, UCC), Dr Fiona Chambers (School of Sports Studies and Physical Education, UCC)

## **Introduction**

Obesity is a major contributor to the global burden of disease, affecting 30% of the world's population. This is reflected in Irish adolescents with 1 in 4 classified as overweight or obese. Understanding the determinants of physical activity and healthy nutritional choices in secondary school pupils is fundamental in forming interventional policies to tackle this obesity epidemic.

## **Materials and Methods**

This cross sectional study focused on the nutritional and physical activity behaviours of adolescents in Cork city. Anthropometric data, self-reported physical activity and nutrition questionnaires were collected from students in two co-education secondary schools and BMI Z-scores (relative weight adjusted for child age and sex) calculated. Parental demographics, BMI, attitudes towards physical activity and nutritional knowledge were garnered from a sub-population. Statistical analysis was completed using R and SPSS.

## **Results**

92 participants were involved in this study (67 students, 19 parents). Mean adolescent BMI Z-score was 0.44 with 29.7% of students overweight or obese (n=19). Mean parental BMI was 26.18, with 56.3% of parents overweight or obese. 63% of pupils with a BMI Z-Score>1 engaged in physical activity for less than an hour a day, compared to 33% of those with a BMI- Z-score<1 (p=0.002) 47% of pupils with a BMI Z-score>1 watched over 2 hours of videos per day compared to 13% of those with a BMI Z-Score < 1 (p=0.003) Breakfast was consumed more frequently among males than females (p=0.005). 79.1% of males and 50% of females eat breakfast every day. Parental overweight and obesity status was associated with a higher level of nutritional knowledge (p=0.048).

## **Conclusion**

From the potential study population females were less likely to participate. This should be factored into the design of future interventions with larger sample sizes needed to explore additional significance.

# **Poster Presentation**

## **Abstracts**



Poster No.	Author	Affiliation	Co-Authors	Presentation Title
1.	Ali Malik	UCC	Professor Colin Bradley	Demographics of the population attending Adult Day Care Centres (DCC) in Cork & Kerry.
2.	Genevieve Leon	NUIG	Rajan. A, Sinead. D, Fitzgerald. C, Tierney. M, Vellinga. A.	GPs Attitudes towards Diagnosis & Treatment of Male UTIs.
3.	Daniel Nevin	UL GEMS	Damien Ryan	Appropriate Referral of Minor Injuries to the Emergency Department in UL Hospitals.
4.	Muhammad Abu Bakar	UCC	Alan Hoban, Gerard Clarke.	Anatomical Changes in Brain Volume in Adult Microbiota Deficient Mice
5.	Aisling McNamara	NUIG	Fapohunda, O., Keogh, IJ.	Human Papilloma Virus-Associated Head and Neck Cancer; A 21 <sup>st</sup> Century Pandemic; Assessing Student Awareness and Knowledge.
6.	Barry Noonan	UL GEMS	C. Thompson, I. Okafor, N. Kandamany, R. Drew, R. McNamara.	An Audit of the Clinical Outcomes and Complications of Children with Primary Varicella Zoster Virus (Vzv) Infection in the ED.
7.	Clare Jimenez Keaveney	UCC	Brian O'Donnell, Curtis McMillan.	Peripheral Nerve Blocks and Perioperative Analgesic Outcomes.
8.	Danial Adbul Sukor	NUIG	Ahern M, O' Malley G, Rigalou A, Ryan AE.	The role of low dose chemotherapy in sensitising the colon tumour microenvironment to immunotherapy.
9.	Anne Grogan	UL GEMS	L. Griffin, M. Lynch, B. Ramsay.	Paediatric Psoriasis – an Examination of a Regional Centres Data.
10.	Bryan Pdraig Finn	UCC	Derek Whelan, Prof. Noel Caplice.	Moving Towards an In Vitro Model of Angiogenesis.
11.	Zi Yi Christoper Thong	NUIG	Johnny Wong, Maria Victoria Jane Parot, Han Tun Oo, Al Ping Chua.	Clinical Characteristics of Patients Referred to the Local Sleep Clinics for Evaluation of Obstructive Sleep Apnoea.
12.	Thomas O' Halloran	UL GEMS	Denis O' Keeffe, Jane Conway, Oliver Power, Carolyn Holt, Michael Watts.	Audit of Time in the Therapeutic Range, a measure of anticoagulation control for the Warfarin Clinic and UHL.

Poster No.	Author	Affiliation	Co-Authors	Presentation Title
13.	Danielle Clifford	UCC	Sarah Meaney, Dr. Adianna Olaru, Dr. Keelin O' Donoghue.	Perinatal Outcomes in Twin Pregnancy – A Single Unit Cohort Study.
14.	Roy Quek	NUIG	A. Douglas, J. Shearer, K.M. Doyle.	Investigation for Biomarkers of Haemorrhagic Transformation.
15.	Samuel Yellin	UL GEMS	S Ó' Riain	Audit of unscheduled admissions in paediatric day-case surgery at University Hospital Limerick, Ireland.
16.	Jill Mitchell	UCC	S. Cremin	The Epidemiological Features of Herpes Simplex Virus Cases in a Cork STI Clinic.
17.	Lorcan O' Maoileannaigh	NUIG	Dr. Brian McNicholl, Dr David Evans, Dr. Diarmuid O'Donovan.	The Prevalence of Alcohol Related Admissions to ED in UCHG on Sunday Mornings between 0.00am and 6.00am between July 2015 and June 2016.
18.	Bridget Melley	UL GEMS	Kerry Alcorn, Terri Muldoon.	LLETZ (Large Loop Excision of the Transformation Zone) Fragmentation: Impact on Margin Assessment and Cervical Biopsy – LLETZ Correlation.
19.	Donnacha Hogan	UCC	Shane O'Driscoll, Mr Paul Cullen, Prof Kishore Doddakula.	Does Age Influence the Duration of Mechanical Ventilation Post Coronary Artery Bypass Graft Surgery?
20.	Derick O' Flynn	NUIG	V.Keatings, P.McLaughlin.	Investigation of long-term oxygen therapy prescription and determination of cost of provision among chronic obstructive disease patients in Co. Donegal.
21.	Sheera Fingold	UL GEMS	Barry Linnane, Donna Daly.	Cystic Fibrosis – Associated Liver Disease and Vitamin A: Investigating the Relationship and Presence of Liver Disease Over Time.
22.	Philip Macilwraith	UCC	Dr Deirdre Bennett	Burnout, Physical Activity and Extracurricular Activity in Medical Students.

Poster No.	Author	Affiliation	Co-Authors	Presentation Title
23.	Rawan Elhelali	NUIG	Glynn, S., Callagy, G, Shallaby, A, Webber, M, O'Loughlin, Mark, Jentsch, L.K., de Jong.	Assessment of the association of FOXP3 positive tumour infiltrating lymphocytes with therapeutic response in triple negative breast cancer.
24.	Rafael Solimano	UL GEMS	Erik Skarsgard, Kourosh Afshar & Julie Bedford.	Implementation of 2% Chlorhexidine Gluconate Washcloth Pre-operatively to Reduce Surgical Site Infections Following Paediatric Surgical Procedures.
25.	Ruth Nagle	UCC	Dr Mairead O' Riordan	An Evaluation of Healthcare Worker Familiarity with Female Genital Mutilation (FGM) in Three Irish Hospitals.
26.	Patrick Higgins	NUIG	O'Sullivan Lisa, Davis Cian, Corbett Mel, Tiarnan Morris, Mgego Isaac, Arnold Philis, Sepoko Hussein, O'Donovan Diarmuid.	Penye nia ipo njia: a pilot audit of surgical services in a rural hospital in Tanzania.
27.	Niall Byrne	UL GEMS	Sally Anne Lynch, Jillian Casey.	Genetic Disorders Among Irish Travellers.
28.	Darragh Browne	NUIG	Smyth, A., Reddan, D.	Chronic Kidney Disease Referral Appropriateness: A Clinical Audit.
29.	Erica Walsh	UL GEMS	Dr. Andrew Wragg	Non- Invasive Cardiac Imaging for Coronary Artery Disease in Renal transplant Candidates.
30.	Andrew O' Donoghue	UCC	Dr. S. Mannion	A Perioperative Checklist: Compliance of Anaesthesiologists.

**Title:** Demographics of the population attending Adult Day Care Centers (DCC) in Cork and Kerry

**Authors:** Ali Malik, Professor Colin Bradley

**Affiliations:** Department of General Practice, University College Cork

There is currently very literature available on the population characteristics of Adult Day Care Center (DCC) attendees in Ireland. Adult DCC's provide a range of services, which include meals, social activities, physiotherapy and occupational therapy to seniors residing in the community. DCC's have shown to be effective in reducing and preventing admission to nursing homes or hospitals in the senior population and cost less to the public healthcare system than institutionalization for the senior population. An important first step to improving the quality and effectiveness of services provided is to know exactly who attends day care centers so services can be tailored appropriately to the population needs.

The aim of this study is to examine the population characteristics of older adults attending the 40 Adult DCC's in Cork and Kerry.

This study will analyze secondary data available from HSE South and include variables such as age, gender and the level of dependency. The data will be stratified based on urban/rural, whether DCC caters specifically to dementia patients or general older persons or a mix of both, and whether HSE or a voluntary group operates the DCC. Attendances and demographic information for the DCC population will be reported via questionnaire by DCC coordinators for ALL attendees in ONE randomly selected week.

The results of this study will be important in helping the public healthcare system deliver appropriate services according to the needs of attendees and help seniors live independently in the community as well as avoid admission to nursing homes or hospitalization.

**Title:** GPs Attitudes towards Diagnosis and Treatment of Male UTIs

**Authors:** Leon. G, Rajan. A, Sinead. D, Fitzgerald. C, Tierney. M, Vellinga. A.

**Affiliations:** Discipline of General Practice, School of Medicine, National University of Ireland, Galway.

## **Introduction**

In general practice, males represent around 20% of the total number of UTI consultations as opposed to females. The majority of UTI research focuses on women. Less guidance and research may contribute to the (mis)conception of many GPs that male UTIs are complicated and should be treated accordingly.

## **Objectives**

This research is done to better understand GPs attitudes towards the diagnosis and treatment of male UTIs.

## **Methods**

A qualitative interview study was carried out with GPs across Ireland. A topic guide was created to ensure consistency in interviews after receiving approval from the Irish College of General Practitioners (ICGP) Research Ethics Committee. Interviews were audio recorded and transcribed verbatim. The transcripts were analyzed using thematic analysis.

**Results:** 15 interviews with GPs were set up. Preliminary analysis indicated that all GPs interviewed had prior knowledge of guidelines and used them when deciding a treatment plan. The infrequency of male UTIs as opposed to a STI remained a prominent theme, as some GPs reported never or seldom having treated a male UTI. Most interviewed GPs viewed male UTI as complicated and therefore took a more comprehensive approach in their investigations and treatment.

## **Conclusion**

Male UTIs are perceived by GPs to be complicated, resulting in a different attitude toward its treatment as opposed to a female UTI. Further research is needed to determine if they are actually complicated diseases, or if GPs could benefit from a more standardized approach towards treatment of these patients.

**Title:** Appropriate Referral of Minor Injuries to the Emergency Department in UL Hospitals

**Authors:** Daniel Nevin<sup>1</sup>, Damien Ryan<sup>1, 2</sup>

**1 University of Limerick, Graduate Entry Medical School**

**2 Centre of Prehospital Research, University of Limerick, Graduate Entry Medical School**

## **Introduction**

Patients utilising the Emergency Medical Services (EMS) in Limerick are currently brought to University hospital Limerick (UHL) for diagnosis and management of their condition. Whilst many patients require services that can only be offered at a tertiary hospital, some could be managed at a Local Injuries Unit (LIU). To determine appropriateness of patient EMS referral with minor injury to UHL, we examined the number of patients admitted to UHL ED via EMS over a one-month period to quantify if they fulfil the criteria for LIU attendance.

## **Materials & Methods**

In this retrospective, single-centre study, a list of all patients presenting to UHL ED over the course of 1 month as obtained from UHL's IT department. Patient data was examined, and relevant details including patient demographics, presenting complaint and diagnosis were analysed to determine if patients fulfilled HSE LIU attendance criteria.

## **Results**

Analysis of all attendances to ED UHL revealed that 16.03% (n=795) of all referrals during March 2015 were through EMS. Following HSE LIU attendance guidelines, it was determined from patient medical records that 3.1% (n=25) fulfilled these stipulations but were nonetheless admitted to UHL ED. Distribution analysis of these cases revealed that Limb Problems accounted for the majority (36%), whilst Falls (24%), Head Injuries (24%) and Wounds (16%) accounted for the remainder. Importantly, the vast majority of EMS referrals would not have been suited for admission to LIU's based on current HSE criteria (96.9%, n=770)

## **Conclusions**

Although some quarters have expressed opinions that EMS transport to LIU's would represent best health care practice, this study highlights that the vast majority of EMS referrals would not have been suited for attendance at LIUs. It is believed that these findings support the view that current practices regarding LIU attendance streams are fit for purpose, challenging the view for policy change.

## Anatomical Changes in Brain Volume in Adult Microbiota Deficient Mice

**Authors:** Muhammed Abu Bakar, Alan Hoban, Gerard Clarke.

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Department of Psychiatry and Neurobehavioural Science, University College Cork, Ireland.

**Introduction:**

The microbiota is essential for functional gut motility, immune-system maturation, absorption of essential nutrients and is increasingly acknowledged as a key node in the brain-gut axis with implications for brain and behaviour. Previously, volumetric expansion has been observed in the amygdala and hippocampus of GF mice, two brain regions critical for emotional response and cognition (REF).

**Aim:** To further explore volumetric changes in key brain structure due to the absence of microbial exposure throughout life.

**Methods:** This was a randomized and double blinded study. 2224 brain slides from total of 28 Swiss Webster mice were prepared and processed for immunostaining. The coronal sections that contain the cerebellar and subcortical striatum regions were measured. Damaged samples were excluded. We used an optimized stereology protocol for quantification of regional brain volume by unbiased selection of brain slides at an interval of 5 images. The total volume of cerebellum and striatum of both sides of the brain were measured using Image J software and regional tissue volume was later determined based on the Cavalieri principle. Data was then tabulated and analyzed using IBM SPSS Statistics Version 22.0.

**Results:** The final analytical sample consisted of 1919 brain slides of 23 mice (n=12 for control, n=11 for GF). The total hemisphere volume of the cerebellum in germ-free mice shows no significant difference compared to the conventionally colonized control group (Mann Whitney U Test,  $U=10$ ,  $p=1.000$ ). Likewise, the total hemisphere volume of the striatum in germ-free mice shows no significant difference compared to control group ( $U=22$ ,  $p=0.852$ ).

**Conclusion:** Absence of the gut microbiota had no impact on the size of the striatum and cerebellum in adult GF mice. Therefore, the absence of a gut microbiota throughout life results brain-region specific morphological alterations confined to more emotionally relevant brain regions like the amygdala and hippocampus (REF).

**Title:** Human Papilloma Virus-Associated Head & Neck Cancer; A 21<sup>st</sup> Century Pandemic; Assessing Student Awareness and Knowledge.

**Authors:** McNamara, A., Fapohunda, O., Keogh, IJ.

**Author Affiliations:** Department of Otorhinolaryngology, UCHG, Galway. National University of Ireland, Galway.

## **Introduction**

Recent studies suggest up to 70% of oropharyngeal cancers are caused by Human Papilloma Virus (HPV)(1), yet public awareness of HPV and its association with Head and Neck Cancer (HNC) is lacking. Our aim is to investigate the extent of knowledge within a high risk, and relevant cohort of Irish students in order to determine if there is more that can be done to raise awareness of the risk factors of HNC to curb the increasing incidence of HPV-related HNC, which is expected to surpass the incidence of cervical cancer by the year 2020(2).

## **Methods**

A self-designed, anonymous questionnaire was distributed to all registered students of NUIG (17,000 approx. sample size) via email, using a survey provider platform, allowing for a qualitative analysis of responses. Ethical approval was granted by GUH's Clinical Research Ethics Committee.

## **Results**

The questionnaire has been distributed among students of NUIG and response collection is ongoing. We hope to be able to expand on our results in the near future on presentation of our work.

## **Conclusions**

HPV is a relatively unknown STI, and is often only associated with cervical cancer, however it's significant role in HNC has been overlooked, as has its means of transmission, with particular regard to oral sex. More education is needed within schools, and university campaigns are necessary in order to better inform those potentially at risk. The introduction of HPV vaccines for boys must also be pushed to the forefront of future health policy.

1. O'Sullivan B, Huang SH, Su J, Garden AS, Sturgis EM, Dahlstrom K, et al. Development and validation of a staging system for HPV-related oropharyngeal cancer by the International Collaboration on Oropharyngeal cancer Network for Staging (ICON-S): a multicentre cohort study. *Lancet Oncol* [Internet]. 2016 Apr [cited 2016 Aug 20];17(4):440–51. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26936027> Human Papillomavirus Associated Head and Neck Cancer [online] (2016) [accessed 1 Feb 2016].

2. Chaturvedi AK, Engels EA, Pfeiffer RM, Hernandez BY, Xiao W, Kim E, et al. Human papillomavirus and rising oropharyngeal cancer incidence in the United States. *J Clin Oncol* [Internet]. American Society of Clinical Oncology; 2011 Nov 10 [cited 2016 Aug 19];29(32):4294–301. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21969503>



**Title:** An Audit of The Clinical Outcomes and Complications of Children with Primary Varicella Zoster Virus (Vzv) Infection in the ED

**Authors:** B. Noonan<sup>1</sup>, C. Thompson<sup>2</sup>, I. Okafor<sup>2</sup>, N. Kandamany<sup>2</sup>, R. Drew<sup>2, 3</sup> and R. McNamara<sup>2</sup>.

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<sup>2</sup> Temple Street Children's University Hospital (TSCUH), Dublin

<sup>3</sup> The Rotunda Hospital, Dublin

## **Introduction**

Varicella zoster virus (VZV) infection is a common condition worldwide. Significant complications can occur in 1% of cases. There is a lack of published studies on the burden of VZV on the Irish healthcare system.

## **Aims**

- Describe the most common presenting features of chickenpox in the ED.
- Calculate the most frequent complications.
- Estimate the average duration of admission.

## **Materials & Methods**

A retrospective chart-based audit was conducted on ED attendance cards over a two year period. Records were searched for final diagnosis of "chickenpox" or "pox" and eligible patients were identified. Demographic, clinical and treatment information was extracted.

## **Results**

599 presentations with chickenpox were identified from June 2014 to June 2016. The first 100 presentations were analysed which corresponded to January to June 2016. Of this sample, 73 (73%) patients were discharged from the ED, 16 (16%) were referred to other hospital departments and 11 (11%) patients were admitted. The most common complication was bacterial superinfection ranging from cellulitis to osteomyelitis. Of the 11 admitted patients, the average duration of admission was 5.6 days with a standard deviation of 2.9 days. 17 (17%) patients were discharged with treatment from the ED department including oral antibiotics and oral aciclovir. 8 of these patients (47%) were treated with topical aciclovir for eye lesions.

## **Conclusion**

This study adds a detailed description of the burden of VZV infection on an Irish paediatric population and opens further avenues of research into the national burden of VZV in Ireland.

Key words: varicella zoster, chickenpox, emergency department, complications.

**Title:** Peripheral Nerve Blocks and Perioperative Analgesic Outcomes

**Authors:** Clare Keaveney Jimenez<sup>1</sup>, Brian O'Donnell<sup>1,2,3</sup>, Curtis McMillan<sup>2</sup>

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2. Department of Anaesthesia and ITU, Cork University Hospital, Cork, Ireland
3. ASSERT for Health Centre, University College Cork, Cork, Ireland

**Introduction**

Peripheral nerve blocks (PNBs) are increasingly used for both surgical anaesthesia and post-operative analgesia. Although PNBs are widely used at Cork University Hospital (CUH), information on block success and perioperative analgesic efficacy is lacking. These audits aim to characterise the success of commonly performed PNBs, and offer objective insight to inform clinical practice change.

**Method**

Starting in June 2015, we conducted a prospective audit of PNBs performed in the perioperative setting at CUH over six weeks. PNBs were assessed for loss of motor and sensory function. Pain in the post-anaesthesia care unit (PACU) was measured using numerical rating from 0 to 10. In January 2016, the findings were discussed at a meeting of consultant anaesthetists. Recommendations for alterations to practice were derived from the audit data. In June 2016, having made the clinical practice changes, we conducted an analogous prospective audit.

**Results**

In the 2015 audit, a total of 104 PNBs were assessed. Data relating to success rates and postoperative analgesia is presented in Table 1. Of note, 47% of patients undergoing ankle surgery, did not receive combined popliteal and ACB blocks. Analgesia was unsatisfactory in this group, with a reported median pain score of 3.5 [0-6]. In the 2016 audit, all patients received combined blocks for ankle surgery. Patients with both a successful popliteal block and successful ACB, reported pain scores of 0.

**Conclusion**

We conclude that administration of the ACB in addition to the popliteal block to patients undergoing ankle surgery provides satisfactory postoperative analgesia for this group. Block success rates in CUH have improved 2015-2016.

**Table 1.**

Region	Block Type	2015 Audit Data		2016 Re-audit Data	
		Block Success Rate	Median Pain Score in PACU [range]	Block Success Rate	Median Pain Score in PACU [range]
Upper Limb	Axillary	86.60%	0 [0-4]	83.30%	0 [0]
	Infraclavicular	40%	0 [0]	50%	0 [0]
	Interscalene	25%	0 [0-8]	50%	3.5 [0-7]
	Supraclavicular	71.40%	0 [0-8]	75%	0 [0]
	Radial	100%	0 [0]	NA	NA
	Ulnar	0%	0 [0]	100%	0 [0]
	Median	66.60%	0 [0]	NA	NA
Lower Limb	Femoral	58.30%	0 [0-8]	86.70%	0 [0-6]
	Popliteal	71.40%	0 [0-6]	70%	0 [0-7]
	ACB	100%	0 [0]	80%	0 [0-7]

**Title:** The role of low dose chemotherapy in sensitising the colon tumour microenvironment to immunotherapy.

**Authors:** Abdul Sukor DR1, Ahern M1, O'Malley G1,2, Rigalou A1,2, Ryan AE1,2

**Author affiliations:**

- (1) Regenerative Medicine Institute (REMEDI), College of Medicine, Nursing and Health Sciences (CMNHS), National University of Ireland Galway (NUIG), Ireland.
- (2) Discipline of Pharmacology and Therapeutics, CMNHS, NUIG, Ireland.

**Introduction**

Metastatic colorectal cancer is a frequently lethal disease. Immunotherapies, alone or in combination with chemotherapy and radiotherapy have potential for treatment of metastatic disease as they act through unrelated mechanisms.

**Aim**

We investigated if treatment of CT26 cells treated with low-dose chemotherapies in presence of anti-PDL1 antibody will enhance antibody-dependent cellular phagocytosis (ADCP) or cytotoxicity (ADCC)- mediated tumour cell clearance by macrophages in-vitro.

**Methods**

Conditioned media (CM) was collected from CT26 cells, mouse colon adenocarcinoma cells following treatment with a range of low-doses of fluorouracil (5FU) and cyclophosphamide (Cy). Cell death was assessed by cell SYTOX positivity as determined by flow cytometry. RAW 264.7 macrophages were incubated in the CM for 48 hours before being placed in co-culture with fluorescently-labelled CT26 cells in the presence or absence of anti-PD-L1 antibody. Tumour cell clearance by ADCP/ADCC was determined by analysis of the number of live fluorescently-labelled tumour cells in the cultures after 18 hours. Statistical analysis was performed by T-test analysis.

**Results**

Cy and 5FU induced significant levels cell death of CT26 cells at concentrations above 10uM and 125ng/ml respectively. For subsequent co-cultures, CM from CT26 treated with 5, 10, 20uM Cy and 125, 250,500ng/ml 5FU were assessed. The % live CT26 cells in low-dose (5-20uM) Cy and 5FU (<250ng/ml)-conditioned macrophage co-cultures was reduced compared to untreated controls. This effect was enhanced in the presence of PD-L1 antibody.

**Conclusion**

Combination of low-dose chemotherapy and immunotherapeutic treatment promoted ADCC/ADCPmediated tumour cell clearance by macrophages, suggesting potential therapy for metastatic colorectal cancer.

**Title:** Paediatric Psoriasis- an examination of a regional centres data

**Authors:** A Grogan<sup>1</sup>, L Griffin<sup>2</sup>, M Lynch<sup>2</sup> and B Ramsay<sup>2</sup>

1. University of Limerick, Graduate Entry Medical School
2. Department of Dermatology, University Hospital Limerick.

### **Introduction**

Considerable advances have occurred over the last 2 decades in adult Psoriasis yet a paucity of studies exists for paediatric disease. A literature review we performed suggests that onset of Psoriasis in childhood causes increased psychiatric disorders and poorer quality of life. Published studies highlight a higher prevalence of co-morbidities, such as hyperlipidaemia, hypertension and obesity.

### **Aims**

To determine numbers of children attending our service with psoriasis, examine the role of family history, establish the prevalence of co morbidities and effects on quality of life.

### **Materials & Methods**

A search for patients under 16 with psoriasis, was conducted of the letters database in UHL Dermatology department. Only confirmed cases were included. Data was collected on the demographics, morphology, severity, family history, co-morbidities and any psychological impact.

### **Results**

69 confirmed cases were found from a database which spanned 6 years. We found 37% had moderate-severe disease with four patients (7.2%) requiring systemic treatment, 22 patients (32%) referred for Phototherapy. A positive family history was recorded in 38% of patients. Co-morbidities were detailed for 14% of the patients. Only 11% made reference to quality of life.

### **Conclusion**

Our experience demonstrates a significant impact in children when affected with psoriasis. Family history was common but unfortunately not completed by physician in many cases. Documentation of co morbidities was poor with little reference to obesity. Social impact was also poorly recorded with few letters recording an accurate CDLQI. This study has prompted us to create a childhood proforma to accurately capture relevant information for future use.

**Title:** Moving towards an in vitro model of angiogenesis

**Authors:** Bryan Padraig Finn (Final year medical student UCC, Centre for Research in Vascular Biology), Derek Whelan (PhD student Centre for research in vascular biology, UCC) and Prof.Noel Caplice (Head of department-Centre for research in vascular biology, UCC).

## **Introduction**

A new generation of cardiovascular stent technology which can stimulate angiogenesis around coronary artery disease blockages has been successfully tested in animal models. However, this stent technology cannot be tested in patients without optimising its safety and efficacy in preclinical trials using an in vitro model of angiogenesis. A number of models have been attempted previously including here in UCC with O'Brien et al, 20151.

Our aims is to develop an in vitro model of angiogenesis by creating a two layer blood vessel within a perfusable model that can withstand the shear stresses associated with arterial flow and remain contamination free.

## **Materials and Methods**

Optimisation of the hydrogel tunnel was carried out using a pluronics F-127 coating. Seeding of these tunnels with SMCs and HUVECs was carried out with the further development of an optimised seeding protocol, a contamination free perfusable model through which dynamic culture can be facilitated by using a rotational perfusion bioreactor. Imaging was carried out using confocal microscopy.

## **Results**

A perfectly smooth hydrogel tunnel was manufactured. SMC and HUVEC seeding was successfully performed with improved coverage and attachment to the walls of the tunnels which resisted gravity.

## **Conclusion**

An optimised seeding protocol has now been established as has a perfusable hydrogel mould through which flow can be generated for a short time. Although an invitro model of angiogenesis was not completed, future studies need to perfect the bioreactor set up so sustained flow can be maintained for longer than was performed here.

**References:** 1.O'Brien T, Martin K, Pillai G, Whelan D, Cai L, Caplice NM. Towards a perfusable in vitro model of human vasculature that facilitates angiogenesis. UCC project report submission MX5090 module. 2015.

**Title:** Clinical Characteristics of Patients Referred to the Local Sleep Clinics for Evaluation of Obstructive Sleep Apnoea.

**Authors;** ZI YI CHRISTOPHER THONG<sup>1</sup>, JOHNNY WONG<sup>2</sup>, MARIA VICTORIA JANE PAROT<sup>2</sup>, HAN TUN OO<sup>2</sup>, AI PING CHUA<sup>2</sup>

- (1) National University of Ireland, Galway
- (2) Ng Teng Fong General Hospital, Singapore

## **Objective**

Obstructive sleep apnoea (OSA) is a highly prevalent chronic disease of public health significance. We studied the demographic and clinical characteristics of patients presenting with suspected OSA.

## **Methods**

This is a descriptive retrospective study of 668 patients who presented to the specialist sleep clinics in two public hospitals in Singapore from May 2012 to August 2015 for suspected sleep apnoea. Patients' clinical records and polysomnography results were reviewed.

## **Results**

OSA was confirmed in 96.3% polysomnographically with 89.2% having at least moderate to severe OSA. Mean age was 47 (SD = 15) year old. There was male preponderance (3:1) with 68.8% Chinese, 16.6% Malay and 9.7% Indian. 59.9% had one or more cardiovascular comorbid risks/diseases (hypertension, diabetes, hyperlipidemia, ischemic heart disease and stroke). Major reported symptoms were snoring (89.7%), unrefreshed sleep (74.8%), dry mouth (57.4%), frequent awakening (57.0%), choking /gasp during sleep (40.9%) and witnessed apnoea (33.2%). 93.8% had one or more of the following signs (Friedman III /IV tongue position, low lying palate, tonsillar hypertrophy, elongated uvula, tongue scalloping, retrognathia, turbinate hypertrophy and deviated nasal septum). 66.0% were obese and/or had increased neck girth and/or unhealthy waist-hip ratio. 51.8% of them had normal Epworth sleepiness scale (ESS) less than 10.

## **Conclusion**

Moderate to severe OSA was prevalent among patients with suspected OSA referred to the sleep specialists. Snoring and unrefreshed sleep were still the commonest presenting symptoms. Majority had one or more anatomical and/or anthropometric risk factors. Significant proportion were not sleepy and had at least one or more cardiovascular comorbid conditions.

**Title:** Audit of Time in the Therapeutic Range, a measure of anticoagulation control, for the Warfarin clinic at UHL

**Authors:** Thomas O' Halloran<sup>1</sup>, Denis O Keeffe<sup>2</sup>, Jane Conway<sup>2</sup>, Oliver Power<sup>2</sup>, Carolyn Holt<sup>2</sup>, Michael Watts<sup>1, 2</sup>

(1) Graduate Entry Medical School, University of Limerick

(2) University Hospital Limerick

## **Introduction**

The introduction of novel oral anticoagulants, NOACs, has revolutionised the field of anticoagulation therapy. While warfarin remains the anticoagulation agent of choice in many countries, patients who are not achieving good INR (International normalised ratio) control on warfarin therapy have the option of transferring to a NOAC. Time in the therapeutic range (TTR) is used by pharmaceutical trials and guidelines as a measure of INR control over time.

## **Aims**

The warfarin clinic at University Hospital Limerick, UHL measures the INR and advises on warfarin dose for over 1000 patients. The mean TTR of patients at the warfarin clinic at UHL was calculated to assess how INR control at this clinic compares to other clinics. The number of patients with TTRs outside of the target defined by NICE, 2014, was enumerated.

## **Materials & Methods**

A retrospective audit of all INR tests performed by the clinic from June 2015 to July 2016 was conducted. 14,425 tests from 872 patients were processed offline using a bespoke computer program. TTRs were calculated for all patients using the Rosendaal method.

## **Results**

The mean TTR of patients attending the clinic is 75% which is 10-20% higher than that reported in the major pharmaceutical trials. 233 patients, 27% of total should have their anticoagulation strategy reviewed according to NICE, 2014.

## **Conclusion**

Despite the excellent mean TTR of the clinic, a substantial number of patients have poor INR control as defined by MMP and NICE guidelines. Review of those patients with an option to transfer to a NOAC would further improve the INR control at the clinic.

**Title:** Perinatal Outcomes in Twin Pregnancy – A Single Unit Cohort Study

**Authors:** Danielle Clifford: Medical School, University College Cork, Ms Sarah Meaney: National Perinatal Epidemiology Centre, University College Cork, Cork.

Dr Adrianna Olaru: Cork University Maternity Hospital, Cork.

Dr Keelin O'Donoghue: 1) Cork University Maternity Hospital, Cork 2) Dept. of Obstetrics and Gynaecology, University College Cork, Cork 3) INFANT Centre, University College Cork, Cork.

## **Introduction**

It is accepted that there is an increased incidence of adverse perinatal outcomes associated with multiple pregnancy. The number of twin pregnancies is increasing worldwide, a trend which is reflected in Ireland. This study aimed to investigate perinatal outcomes in twin pregnancies.

## **Methods**

A retrospective cohort study of all twin pregnancies delivered from 2009 to 2015 in a large, tertiary-referral centre (~8,000 deliveries per year) was conducted. Birth registers, clinic and neonatal unit records were reviewed to analyse perinatal outcomes.

## **Results**

Of the 1242 twin pregnancies in the study, mean gestational age at delivery was 35.2±2.5 weeks (range 19+0-39+5). Overall, 57.1% (n=710) delivered preterm (<37 weeks), of which 69.3% (n=492) were classified as late preterm, delivering between 34-37 weeks, and 5.4% (n=38) were delivered <28 weeks. Nulliparity was significantly associated with preterm delivery (p=0.024) and with lower birthweight (mean 2343.8g) compared to multiparity (mean 2771.5g, SD:556.5). Among the 1242 twins 18.2% (n=445) were monochorionic. Monochorionicity was associated with lower birthweight (mean 2145.8g) compared to dichorionicity (mean 2466.9g, SD:544.3), and 10.4% of monochorionic twins developed twin-to-twin transfusion syndrome (TTTS). Monochorionicity was associated with a higher rate of growth restriction (13% vs. 7.8%; p<0.001), fetal anomaly (7.6% vs. 4.3%; p=0.005), stillbirth (0.9% vs. 0.2%; p=0.037), neonatal death (2.4% vs. 0.6%; p=0.001) and admission to the Neonatal unit (53.7% vs. 41.1%; p<0.000).

## **Conclusion**

Monochorionicity was associated with poorer perinatal outcomes including low birthweight, growth restriction, TTTS, fetal anomaly and perinatal death. This study also shows that nulliparity is associated with preterm delivery and lower birthweight compared to multiparity. This confirms the need for close surveillance of twin pregnancies, in particular those who are nulliparous or monochorionic.



**Title:** Investigations for biomarkers of Haemorrhagic Transformation

**Authors:** R. Quek, A. Douglas, J. Shearer, K.M. Doyle

**Author Affiliations:** Department of Physiology, School of Medicine, NUI Galway.

Work by this author was partially supported by The Physiological Society.

## **Introduction**

Ischemic stroke and its complications are leading causes of disability and mortality [1]. Timely reperfusion of the occluded cerebral vasculature can minimize brain damage and optimize patient outcome. A major complication of reperfusion treatment is haemorrhagic transformation (HT) [2]. The causative factors responsible for development of ischemia into HT are poorly understood. We aimed to study the expression of biomarkers of HT in brain tissue following temporary middle cerebral artery occlusion and subsequent reperfusion in a rat model of acute stroke.

## **Methods**

TTC staining was utilized to identify extent of infarct and oedema in non-perfusion fixed tissue (n=4) in male Sprague Dawley rats with temporary focal ischemia for 2h, followed by reperfusion of 2h. MMP-9 and BDNF levels were assessed using ELISA to illustrate changes in expression levels in brain regions. Separately, rats were injected with horseradish peroxidase (HRP) 10 minutes prior to perfusion fixation, and immunohistochemistry and immunofluorescence were utilized to characterize changes in MMP-9 expression, HRP infiltration and extent of ischemic infarct in brain tissue (n=1).

## **Results**

ELISA and immunofluorescence showed that MMP-9 expression was significantly elevated ( $P < 0.05$ ) in anterior temporal cortex, striatum and posterior temporal cortex within the ischemic hemisphere versus the contralateral hemisphere. Increased HRP infiltration was observed in the ischemic hemisphere, reflecting blood brain barrier (BBB) breakdown.

## **Conclusion**

Biomarkers for HT, disruption of the BBB and vasogenic oedema can be observed following transient focal ischaemia. These results demonstrate that MMP-9 elevation in brain tissue is a significant response to cerebral focal ischemia and reperfusion.

1. Strokecenter.org. (n.d.). Stroke Statistics | Internet Stroke Center. [online] Available at: <http://www.strokecenter.org/patients/about-stroke/stroke-statistics/> [Accessed 21 Jul. 2016].

2. Jickling, G., Liu, D., Stamova, B., Ander, B., Zhan, X., Lu, A. and Sharp, F. (2013). Hemorrhagic transformation after ischemic stroke in animals and humans. *Journal of Cerebral Blood Flow & Metabolism*, 34(2), pp.185-199.

**Title:** Audit of unscheduled admissions in paediatric day-case surgery at University Hospital Limerick, Ireland

**Authors:** SA Yellin<sup>1</sup>, S ÓRiain<sup>2</sup>. 1 Graduate Entry Medical School, University of Limerick 2 Department of Anaesthesia, University Hospital Limerick.

## Introduction

Many paediatric surgical cases are performed as day procedures, which affords the patients an at-home recovery, decreases susceptibility to nosocomial infections, and eases the requirement for inpatient beds. Performing day surgery requires the ability to cope with unscheduled admissions. Previous audits have reported rates of 1.8% and 2.2% among the paediatric population. The aim of this audit is to evaluate the rate and reasons behind unscheduled admissions at University Hospital Limerick (UHL) following paediatric day-case surgery.

## Materials & Methods

Patients  $\leq 18$  years undergoing day surgery from February 1, 2015 to January 31, 2016 at UHL were retrospectively identified from the Surgical Day Ward (SDW) log book.

## Results

A total of 1,260 procedures were performed, yielding 59 admissions. 31 cases were excluded because they did not meet UHL day surgery criteria, leaving 28 unscheduled admissions in our study cohort. This corresponds to a 2.2% unscheduled admission rate. Urology had the highest admission rate, with circumcisions accounting for the most unscheduled admissions. The most common reason for admission was post-operative nausea & vomiting.

## Conclusion

The rate of unscheduled admission following day-case surgery reflects the precision of patient selection, taking into account medical, procedural and social factors. This is increasingly important as the Health Service Executive announce plans to increase day surgery rates. The unscheduled admission rate of 2.2% from the SDW at UHL compares favourably with previous audits in similar populations. Awareness of procedures and groups at higher risk for admission can increase preparatory measures and decrease admission rate.

## Tables:

**Table 1.** Case-load, number of unscheduled admissions and unscheduled admission rate for each speciality and overall from February 1, 2015 to January 31, 2016.

Speciality	Number of Procedures	Unscheduled Admissions	Unscheduled Admission Rate
ENT	555	6	1.1%
Dental	413	2	0.5%
Urology	209	17	8.1%
General	44	3	6.8%
Other	20	0	0.0%
Orthopaedics	19	0	0.0%
All specialities	1260	28	2.2%

**Title:** The Epidemiological Features of Herpes Simplex Virus Cases in a Cork STI Clinic

Authors: J. Mitchell<sup>1</sup>, S. Cremin<sup>2</sup>

*1School of Medicine, 2G.U.M./S.T.D. Clinic, Victoria Hospital, Cork*

**Introduction:** The transmission of sexually transmitted infections (STI's) and human behaviour are intrinsically linked. For this reason, a clear understanding of the behavioural and demographic characteristics that increase the risk of acquiring these infections is vital for effective STI control. This study aimed to establish risk factors for the acquisition of genital herpes simplex virus (HSV) infection.

### **Materials and Methods**

A retrospective chart review, examining demographic, behavioural and diagnostic data of patients who attended a Cork STI clinic from 2011 to 2015 inclusive. Multivariate logistic regression models were used to study the epidemiological features of patients with a genital HSV infection (N=296) in comparison to a control population of patients with negative screen (N=307).

### **Results**

Female gender (P<0.001), age (P<0,001), ethnicity (P<0.03) and reason for clinic visit (P<0.001) were significant predictors of genital HSV in both sexes. Males and Females aged between 25 to 30 years had the highest odds of acquiring genital HSV (P<0.001). Patients who were of Irish ethnicity were 51% less likely to have a genital herpes infection than their non-Irish counterparts. Females who were less than 17 years at coitarche were more likely to present with the infection than those who abstained until age 22 or older (OR: 7.427, P<0.01). High number of sexual partners was inversely proportional to risk of presenting with HSV infection for both males and females. Alcohol and drug use were not significant predicting factors of HSV infection. Consistent condom use was very low in both the sample population and in all subjects (11.8% and 14.5% respectively).

### **Conclusion**

Genital HSV infection was associated with multiple sexual and demographic risk factors Risk factors for acquiring a genital HSV infection were different for males and females and this is important to recognise when tailoring educational campaigns for target groups. Classic risk taking behaviours such as high number of sexual partners and alcohol consumption were not associated with increased risk of genital HSV infection. Public health campaigns directed at encouraging young people to delay the onset of sexual activity and use condoms consistently need to be evaluated.

**Title:** The Prevalence of Alcohol Related Admissions to ED in UCHG on Sunday Mornings between 0.00am and 6.00am between July 2015 and June 2016

**Authors:** Lorcán Ó Maoileannaigh [1], Dr. Brian McNicholl [2], Dr David Evans [3], Dr. Diarmuid O'Donovan NUIG School of Medicine [1], Emergency Department GUH [2], Public Health Department HSE West [3].

**Funding Source:** NUIG College of Medicine Summer Scholarship Fund/Public Health Department, HSE West

## **Introduction**

Alcohol consumption higher than the national recommended guidelines<sup>3</sup> is common in Ireland<sup>4</sup> with over 40% of adults binge drinking at least once a month. Knowledge of the prevalence of alcohol related presentations in Emergency Departments (ED) are limited. There is no, nationally agreed, systematic way of counting alcohol related presentations.

## **Aim**

To categorise and identify trends in alcohol related presentations to ED between midnight Saturdays and 06.00 Sundays, between July 2015 and June 2016. Data was also collected for 4 Wednesday afternoons for comparative purposes. The secondary aim is to examine the feasibility of such regular data collection.

## **Materials and Methods**

The hospital IT system was used to study scanned ED records. Alcohol related presentations were categorised as: "Injuries", "Intoxication", "Medical Condition as a result of harmful Alcohol Consumption", "Social Problems", "Mental Health" and "Indirect". Demographic information, admission method and time spent in ED were also collected. SPSS was used for analysis.

## **Results**

To date over 300 alcohol related presentations have been identified. Analysis will be completed mid-September. Upon completion, we will have the first point prevalence data on alcohol related ED attendances in Ireland.

## **Discussion and Conclusion**

Alcohol related presentations are a significant burden on EDs on Saturday nights. Reducing alcohol related harm is a national priority; addressing the burden requires improved information systems and data collection. The results of this study are being used to develop a national point prevalence study of alcohol related ED attendances. Further discussion will be presented with the complete data.

(1) <http://www.yourdrinking.ie/about-alcohol/what-is-a-standard-drink/>

(2) <http://www.healthyleireland.ie/about/research/healthy-ireland-survey/>

**Title:** LLETZ (Large Loop Excision of the Transformation Zone) Fragmentation: Impact on Margin Assessment and Cervical Biopsy –LLETZ Correlation

**Authors:** Bridget Melley<sup>1</sup>, Kerry Alcorn<sup>2</sup>, Terri Muldoon<sup>3</sup>

1 University of Limerick, Graduate Entry Medical School, 2 Letterkenny University Hospital, 3 GMIT & University Hospital Galway.

### **Introduction**

LLETZ is a standard technique employed for both diagnosis and treatment of cervical malignancy and premalignant states. This study aims to obtain scientific evidence in support of the NHSCSP recommendation to remove 80% of LLETZ specimens in a single fragment. Relationships between LLETZ fragmentation and the ability to accurately assess LLETZ margins, the proportion of endocervical margin involvement and the punch biopsy-LLETZ agreement will be investigated. Relationships between patient age and LLETZ fragmentation and the acetowhite grade and the grade of the subsequent punch biopsy will also be studied.

### **Materials & Methods**

Retrospective analysis was performed on the histopathological reports of 416 females who attended LUH for sequential punch-biopsy and LLETZ from 2010-2015 inclusive. Statistical analysis involved a chi-square test, correlation coefficient calculation, Cohen's kappa test and verification of results using Analyse-It statistical software (Microsoft Excel® add-on).

### **Results**

Interpretable margins were observed in 96.99% of intact LLETZ compared to 73.36% of fragmented specimens ( $p < 0.0001$  at  $\alpha = 0.05$ ). Endocervical margin involvement was most frequent when the LLETZ was removed in 3 or more fragments. No statistically significant relationship was observed between LLETZ fragmentation and biopsy-LLETZ agreement or patient age.

### **Conclusion**

It was concluded that the NHSCSP recommendation for LLETZ removal is supported by scientific evidence. The most clinically significant finding demonstrated was the negative impact of LLETZ fragmentation on reliable margin interpretation and endocervical margin involvement, and therefore on patient management.

**Title:** Does Age Influence the Duration of Mechanical Ventilation Post Coronary Artery Bypass Graft Surgery?

**Authors:** Donnacha Hogan<sup>1</sup>, Mr Shane O'Driscoll<sup>2</sup>, Mr Paul Cullen<sup>2</sup>, Prof Kishore Doddakula<sup>2, 3</sup>

(1) Medical School, University College Cork

(2) Cardiothoracic Department, Cork University Hospital, Lecturer, University College Cork

## **Introduction**

Age is known to be a major risk factor for patients undergoing cardiac surgery, however its precise risks are incompletely understood. The aim of the present study was to assess the impact of age on the duration of mechanical ventilation following Coronary Artery Bypass Grafting (CABG).

## **Methods**

A retrospective cohort study was performed. 2 groups (Group O  $\geq 70$  years old, Group U  $< 70$  years old) were created and the most recent 100 patients in each group undergoing isolated CABG up to 30/06/16 were included. Patients undergoing emergency surgery or who had previous cardiac surgery were excluded. Following ethical approval, data were obtained from computerised databases (ICIP, iPIMS, PATS). Statistical analysis was performed using SPSS v22.

## **Results**

No statistically significant difference in ventilation times was observed between the two groups ( $15.2 \pm 8.9$  hours vs  $13.7 \pm 11$  hours,  $p=0.29$ ). However, in a subgroup analysis excluding patients with pre-operative pulmonary disease, an increase in ventilation times was observed in Group O ( $15.38 \pm 9.1$  hours vs  $12.1 \pm 7.7$  hours,  $p=0.012$ ), with a correlating increase in ICU length of stay ( $64.9 \pm 54.1$  hours vs  $39.3 \pm 31.3$  hours,  $p<0.001$ ) and time to discharge ( $12.3 \pm 12.1$  days vs  $8.7 \pm 5.9$  days,  $p=0.015$ ).

## **Conclusions**

Age appears to impact the duration of mechanical ventilation, ICU length of stay and time to discharge in patients without pre-existing pulmonary disease, but not when these patients are included in the analysis. This may reflect a successful selection of older patients likely to tolerate surgery well, and/or more significant underlying pulmonary disease in the younger cohort.

**Title:** Investigation of long-term oxygen therapy prescription and determination of cost of provision among chronic obstructive disease patients in Co. Donegal.

**Authors:** D.O'Flynn, V.Keatings, P.McLaughlin

**Affiliations:** Department of Internal Medicine, Letterkenny General Hospital, Letterkenny, Co. Donegal  
Funding was received from the NIUG undergraduate research committee.

## **Introduction**

Long-term oxygen therapy (LTOT) is the prescription of home oxygen for patients with long-term breathing problems like chronic obstructive pulmonary disease (COPD). It is recommended in by the British Thoracic Society (BTS) [1] in patients with certain lung problems, including COPD. Outside of these recommendations there is little evidence of benefit. The aim of this study is to discover those patients receiving unnecessary LTOT and determine the cost associated with this.

## **Methods**

The study was carried out primarily as a retrospective analysis of the cohort of LTOT patients in Donegal, 176 patients in total. Their past medical records were examined, as were their past lab and spirometry results. Patients were also interviewed to determine quality of life and LTOT usage data.

## **Results**

123 met inclusion criteria. 36(29%) of patients did not meet the BTS requirements for LTOT. 40% of patients interviewed were using their LTOT less than the minimum 15 hours per day. Of 33 excluded deceased patients 10 were still receiving payment for LTOT.

## **Conclusion**

Results suggest there are a considerable number of erroneous LTOT prescriptions. Many patients using LTOT are not using the recommended amount, reducing cost-benefit. Moreover there are deceased patients still receiving payment. There is therefore scope to reduce cost and LTOT prescription.

[1] Hardinge M, Suntharalingam J, Wilkinson T. Guideline update: The British Thoracic Society Guidelines on home oxygen use in adults. *Thorax*. 2015;70(6):589-591

**Title:** Cystic Fibrosis-Associated Liver Disease And Vitamin A: Investigating The Relationship And Presence Of Liver Disease Over Time

**Authors:** Sheera Fingold<sup>1</sup>, Barry Linnane<sup>1, 2</sup>, Donna Daly<sup>2</sup>

<sup>1</sup> University of Limerick, Graduate Entry Medical School, <sup>2</sup> University Hospital Limerick

## Introduction

Cystic Fibrosis (CF) is an autosomal-recessive illness that affects the lungs and digestive system. CF associated liver disease (CFALD) develops in 10- 30% of patients, usually before adolescence.

## Aims

To establish a relationship between having low Vitamin A, and the prevalence of liver disease in paediatric patients with CF. The results from this study should guide physicians toward supplementing Vitamin A, as there is statistically significant evidence of a relationship between decreased Vitamin A and a higher incidence of CFALD.

## Materials & Methods

Serum vitamin A levels were examined in 63 paediatric CF patients in this retrospective, cohort study: children without CFALD, indeterminate CFALD, and determinate CFALD (based on Our Lady's Children's Hospital, Crumlin, designation of liver status).

## Results

Patients with determinate CFALD have 47% lower levels of Vitamin A than patients without CFALD, and patients with indeterminate CFALD have 10% lower levels of Vitamin A than patients without. There is a statistically significant difference between the median Vitamin A levels of those with determinate CFALD and those without (median of 188.5 vs. 330.0mcg/unit,  $p=0.002$ ). There is no significant difference between those with indeterminate CFALD compared to patients without (median of 339.5 vs. 330.0mcg/unit,  $p=0.80$ ).

## Conclusion

Studies show that 69% of doctors don't supplement Vitamin A<sup>2</sup>. In accordance with the now-established relationship between low Vitamin A levels and liver disease, it is reasonable to recommend supplementation of Vitamin A, as it plays an important role in immunity and cell differentiation, and a deficiency is known to cause xerophthalmia and night-blindness<sup>3</sup>.

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3. Herrmann, U., Dockter, G. and Lammert, F. (2010). Cystic fibrosis associated liver disease. *Best Practice & Research Clinical Gastroenterology*, 24(5), pp.585-592.



**Title:** Burnout, physical activity and extracurricular activity in medical students

**Authors:** Philip Macilwraith, Final year medical student, University College Cork

Dr Deirdre Bennett, Senior Lecturer, Medical Education Unit, University College Cork

**Affiliations:** The authors have no affiliations to declare

## **Introduction**

Burnout is common in medical professionals and can impact on patient care and career fulfillment. In medical students, burnout is associated with increased levels of stress and lower productivity; however, it is unclear what factors contribute to its development. This study sets out to investigate whether physical activity levels and extracurricular activity engagement predict burnout in medical students.

## **Materials and Methods**

Medical students (n=1221) at University College Cork completed either an online or a written questionnaire assessing: emotional exhaustion (EE), depersonalization (DP), personal accomplishment (PA), physical activity and extracurricular activity engagement.

## **Results**

Still being tabulated, Maslach Burnout Inventory and IPAQ scores for the whole population and by demographic group will be presented, as will the relationship between burnout and physical exercise.

## **Conclusion**

Levels of burnout in the student population are significant and the findings of the study will help to target interventions at appropriate levels of the course and within subgroups of students. The relationship with exercise is complex and requires further study.

**Title:** Assessment of the association of FOXP3 positive tumour infiltrating lymphocytes with therapeutic response in triple negative breast cancer

**Authors:** Elhelali, R.1, Glynn, S.1, Callagy, G.1,2, Shallaby, A.1, Webber, M.1, O'Loughlin, Mark.1, Jentsch, L.K.1, de Jong, K.1

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1. Discipline of Pathology, Lambe Institute for Transitional Research, School of Medicine, NUI Galway.
  2. Discipline of Pathology, NUI Galway, Clinical Science Institute.
- This research project was funded by the Wellcome Trust Biomedical Vacation Scholarship.

**Introduction**

Recent evidence supports stromal tumour infiltrating lymphocytes (sTILs) as an independent prognostic factor in triple negative breast cancer (TNBC).<sup>1</sup> However, the number of co-variables included in most analyses are small and the relevance of lymphocyte sub-populations is unclear. Assessment of sTILs on tissue microarrays (TMAs) would facilitate more thorough representation of sTILs and sTIL subpopulations in TNBCs.

**Aims**

- I. To investigate if sTIL assessment using TMAs is reliable for TNBC.
- II. To evaluate the role of Forkhead Box P3 (FOXP3) positive lymphocytes in TNBC.

**Materials and Methods**

Training in scoring sTILs was provided and was based on recommendations from the international TILs working group<sup>2</sup>. A TMA series was constructed from a study of 383 TNBC cases from 365 patients that attended GUH from 1999-2015. Ethical approval was not required as all relevant data was previously collected and anonymised. The TMA sTILs were scored and compared to full face sections (FFS) from the same cases. Anti-CD4, anti-CD8 and FOXP3 were optimised using a small subset of TNBCs.

**Results**

sTILs were only assessable in 25% of TMAs, due to confounding factors (limited tumour, cores folded, necrosis etc.). Nonetheless, there was an association between sTILs on TMA cores and FFS for 91 cases (kendalls tau\_b 0.36, p < 0.001). FOXP3+ lymphocytes constituted a minority of TILs in TNBC (<5%).

**Discussion/Conclusion**

nsTIL assessment on TMAs may require a larger sample size, as many are difficult to score. sTILs in TNBC include a small proportion of FOXP3+ lymphocytes, which will be examined in a larger series.

**References:**

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**Title:** Implementation of 2% Chlorhexidine Gluconate Washcloth Preoperatively to Reduce Surgical Site Infections Following Paediatric Surgical Procedures

**Authors:** Rafael Solimano<sup>1</sup>, Erik Skarsgard<sup>2</sup>, Kourosh Afshar<sup>3</sup> and Julie Bedford<sup>2</sup>

**Affiliations:** 1. University of Limerick, Graduate Entry Medical School; 2. Department of Surgery, BC Children's Hospital, Vancouver, BC, Canada; 3. Department of Urologic Sciences, BC Children's Hospital, Vancouver, BC, Canada

### **Introduction**

Surgical site infections (SSI) are a common post-operative complication in pediatric hospitals following all types of surgical procedures. Aim: To introduce the pre-operative antiseptic cleansing with 2% chlorhexidine gluconate (CHG), alcohol-free, no-rinse washcloths (CHGcleansing) as a quality improvement initiative to decrease SSI at a paediatric hospital with a high SSI rate.

### **Materials & Methods**

A literature review was performed on the use of CHG-cleansing in the paediatric population, after which stakeholder education/readiness was documented with focus groups and pre/post questionnaire-assessments. Subsequently, after the evaluation of a one-month pilot-implementation of CHG-cleansing, a targeted, standardized CHG-cleansing regime began.

### **Results**

The reviewed studies showed CHG-cleansing lowers SSIs in the adult population, and that there was no published evidence in the paediatric population. Stakeholder response to the initiative was positive, with no perception of increased workload. After the introduction of CHG-cleansing, the number of parents receiving pre-operative bathing instructions for their child increased from 46% to 93% ( $p=0.0002$ ). Seventy-seven patients have so far received CHG-cleansing with an SSI rate of 3.9% versus the preimplementation rate of 5.3%.

### **Conclusion**

Staff education, parent education and the use of CHG-cleansing with 2% CHG washcloths on the morning of surgery was implemented in a paediatric population with high acceptability, and a highly significant increase of parents receiving pre-operative bathing instructions. An apparent decrease in SSI rates is noted in the post-implementation phase, however statistical significance cannot be determined at this time as the observation period has not been completed.

**Title:** An evaluation of healthcare worker familiarity with Female Genital Mutilation (FGM) in three Irish hospitals

**Authors:** Ruth Nagle, University College Cork Dr. Mairead O'Riordan, Department of Obstetrics and Gynaecology, Cork University Maternity Hospital.

### **Introduction**

FGM is a profoundly damaging practice affecting over 200 million girls and women globally. It is estimated that there are several thousand women with FGM currently living in Ireland.

### **Materials and Methods**

An anonymous questionnaire, based on the Royal College of Obstetricians and Gynaecologist's guidelines on FGM, was distributed to healthcare professionals (HCPs) working in the areas of Obstetrics and/or Gynaecology in Cork University Maternity Hospital, University Hospital Waterford and Wexford General Hospital.

### **Results**

There were 112 respondents in total. 70.5% had encountered at least 1 case of FGM, while 48.1% had seen 3 or more cases. 69.7% of those with FGM experience had never documented a case of FGM. 47.9% tended not to refer patients to other HCPs. 65.4% do not screen for FGM and 53.2% were unfamiliar with the geographical prevalence of FGM. 26.1% thought it possible that they had failed to detect FGM during an obstetric examination, while 25% were unsure. 58% of respondents were unfamiliar with the WHO classification system for FGM. 71.8% felt that they were not adequately familiar with FGM and its management. 91.8% requested further training on how best to recognise and manage cases of FGM.

### **Conclusion**

Current management of FGM seems not to be in accordance with RCOG guidelines and further training of HCPs is therefore recommended.

**Title:** Penye nia ipo njia: a pilot audit of surgical services in a rural hospital in Tanzania.

**Authors:** Higgins Patrick<sup>1</sup>, O'Sullivan Lisa<sup>1</sup>, Davis Cian<sup>1</sup>, Corbett Mel<sup>1</sup>, Tiarnan Morris<sup>1</sup>, Mgego Isaac<sup>2</sup>, Arnold Philis<sup>2</sup>, Sepoko Hussein<sup>2</sup>, O'Donovan Diarmuid<sup>1</sup>.

1. College of Medicine Nursing and Health Sciences, National University of Ireland Galway.
2. Berega Mission Hospital, Morogoro, Tanzania.

## **Introduction**

5 billion people do not have access to safe and affordable surgical care in 2016. Of the 313 million procedures undertaken worldwide each year, only 6% occur in the poorest countries, where poor resources and low operative volumes are associated with high case-fatality and complication rates<sup>1</sup>. Berega Mission Hospital is a 120 bed hospital in rural Tanzania which serves a population of 200,000 with one major and one minor operating theatre<sup>2</sup>.

## **Aim**

At the request of the hospital management we undertook a pilot audit to examine current surgical practice in the major operating theatre of Berega Mission Hospital to identify opportunities for quality improvement.

## **Methods**

We identified all procedures carried out in the major theatre during an 18 month period using the operating log and collated the following information from patient notes: age, gender, HIV status, operation, indication, elective or emergency, admission duration, total cost of admission, complications, mortality, antibiotic within one hour of surgery, type of anaesthetic used, blood transfusion requirement post-operatively, need for reoperation, preanaesthetic visit, grade of surgeon and assistant, preoperative blood pressure, pre-operative and post-operative haemoglobin, and if outpatient visit attended. We also included duration of labour, bleeding before labour, gravidity and parity and number of antenatal visit in all maternity cases.

## **Results**

665 procedures were undertaken during the 18 month period of which the charts for 639 (97.5%) were identified. Final results are pending and will be presented on the day.

## **Conclusion**

Better information on surgical practice and outcomes is critical for planning and assuring quality of services in the developing world.

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1. Meara J, Greenberg S. The Lancet Commission on Global Surgery Global surgery 2030: Evidence and solutions for achieving health, welfare and economic development. *Surgery*. 2015;157(5):834-835.
2. Grady D. Where Life's Start Is a Deadly Risk. *The New York Times*. 2009.

**Title: Genetic Disorders Among Irish Travellers**

Niall Byrne<sup>1</sup>, Sally Anne Lynch<sup>2</sup>, Jillian Casey<sup>2</sup>

<sup>1</sup> University of Limerick, Graduate Entry Medical School

<sup>2</sup> Temple Street Children's Hospital

**Introduction**

Irish Travellers are an endogamous, ethnically Irish population numbering approximately 40,000 within Ireland, are known to practice consanguineous marriage. Specialists in all areas of genetics and paediatric medicine at Temple Street Children Hospital (TSCCH) recognise over 90 genetic disorders among traveller patients. As these mutations have not yet been documented, diagnosing rare genetic condition can be an expensive and time consuming task. The aim of this prospective study was to catalogue rare genetic disorders among the traveller population to facilitate rapid and affordable gene specific testing.

**Materials & Methods**

A literature search was carried out to identify traveller mutations. Articles such as case studies which included traveller patients were documented. The phenotypes, genotypes, number of traveller patients, and references were recorded. Relevant experts were contacted in relation to pending papers and individual cases. Mutations from traveller patients attending several hospitals were also included. The conditions, sequence numbers, and mutation nomenclature were corrected.

**Results**

Seventy one mutations were identified within the traveller population and 76 publications were cited.

**Conclusion**

Genetic conditions among the Irish traveller population have never been catalogued. Moreover, gene panels are a costly and time consuming method of identifying unknown genetic abnormalities. So far, we identified 70 mutations in the traveller population with the hope of creating an updatable and accessible database for additional mutations. This will be a valuable tool in aiding clinicians in diagnosis and help reduce the cost of targeted genetic testing.

**Title:** Chronic kidney disease referral appropriateness: a clinical audit

**Authors:** Browne, D.P.1, Smyth, A.2, Reddan, D.2

**Author affiliations:**

1. School of Medicine, NUI Galway
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**Introduction:**

Chronic kidney disease (CKD) is increasing in prevalence<sup>1</sup> 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<sup>2</sup>(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<sup>2</sup>). 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. Glasscock RJ. Referrals for Chronic Kidney Disease: Real Problem or Nuisance? JAMA. 2010;303(12):1201-1203.
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**Funding source:** Nephrology research fund

**Title:** Non-Invasive Cardiac Imaging for Coronary Artery Disease in Renal Transplant Candidates

**Authors:** Erica Walsh, University of Limerick, Graduate Entry Medical School, Dr. Andrew Wragg, Consultant Cardiologist, Barts Health NHS Trust

## **Introduction**

Cardiovascular disease is the leading cause of morbidity and mortality in renal transplant candidates. As a result, pre-operative cardiac screening of potential transplant recipients has become routine. However, there is still no consensus on which non-invasive imaging is optimal for cardiac screening in this population.

## **Aims**

To identify the diagnostic accuracy of non-invasive cardiac imaging modalities for detecting coronary artery disease in order to determine the optimal modality for cardiac screening in renal transplant candidates.

## **Materials & Methods**

A search of the existing literature was performed via the electronic databases Medline and Embase. To be included in this review, studies had to be primary clinical studies which used coronary artery stenosis as measured by coronary angiogram as their reference standard for CAD. Nineteen primary studies met the inclusion criteria.

## **Results**

The sensitivity and specificity of Dobutamine Stress Echocardiogram for identifying coronary stenosis varied between 44-88% and 62-95.2%. The sensitivity of Myocardial Perfusion Scanning ranged from 52% to 87%, and the specificity ranged from 28% to 91%. Computed Tomography Angiography has a specificity of between 63-78% and sensitivity of between 93-100% while Dobutamine Stress Cardiac Magnetic Resonance was found to have 100% sensitivity and 89% specificity.

## **Conclusions**

DSE and MPS appear to have moderate sensitivity and specificity for the detection of angiographic CAD in kidney transplant candidates. However early promising results suggest CTA and DSCMR have a higher sensitivity and specificity in detecting CAD in this population. Further studies are needed to support these findings and to assess whether the current practice of using DSE and MPS is best practice or whether using other forms of non-invasive imaging would be more useful.



**Title:** A Perioperative Checklist: Compliance of Anaesthesiologists.

An audit of NCHD and Consultant compliance with a perioperative anaesthesia checklist in a day surgical unit.

Authors: A. O'Donoghue; Dr. S. Mannion

Affiliations: UCC School of Medicine; SIVUH Dept. of Anaesthesiology

### **Introduction**

While Anaesthesia is regarded as one of the safest clinical specialties, continuing to ensure patient safety requires vigilance<sup>1</sup>. The growing complexity of modern medicine makes it extremely dangerous to rely on the absence of human error. A recent Irish study demonstrated that anaesthesiologists are “not as positively disposed to the surgical checklist as surgeons and nurses”<sup>2</sup>. Our goal is to discover if this is reflected in compliance with the “Anaesthetic Record for Adult Day Surgery” at a Cork Hospital.

### **Objectives and Methodology**

We aimed to assess compliance with the checklist and compare in Non Consultant Hospital Doctor (NCHD) and Consultant anaesthesiologists.

We analysed a representative sample of all general anaesthesia cases performed in a day surgical unit over one year. As data distribution was skewed, a non-parametric Mann-Whitney U test was used to compare compliance in the two groups in SPSS.

### **Results**

In the sample (n=246), mean compliance was 90.9% (95% CI: 89.8-92.0%). NCHD compliance was 93.1% (95% CI: 91.6-94.6%) compared with 90.9% (95% CI: 88.5-92.8%) in the Consultant group. A portion of the sample (n=61) had no indication of what grade the anaesthesiologist was.

Mann-Whitney U test showed higher NCHD compliance not to be significant (U=3694.0, p=0.159).

### **Conclusions**

The NCHD group demonstrated higher compliance, albeit by a small margin. This margin was not statistically significant on analysis. However, 25% of checklists were unsigned and did not indicate staff grade, which greatly reduced our comparative sample, and could be a major confounding factor. Future research on this topic would involve assessing anaesthesiologist attitudes to the checklist using a questionnaire method.

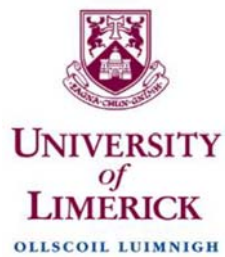
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