



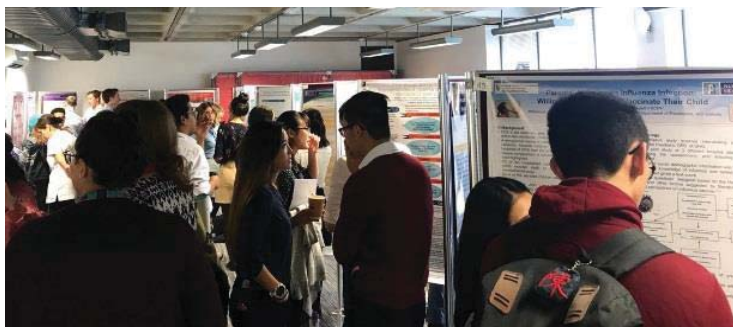
OÉ Gaillimh
NUI Galway



 **UCC**
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

The School of Medicine,
NUI Galway
is delighted to host the
**5th Annual Atlantic Corridor
Medical Student
Research Conference**

Thursday 8th November, 2018
Clinical Science Institute



OÉ Gaillimh
NUI Galway



UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

School of
Medicine

Atlantic Corridor Medical Student Research Conference Schedule 2018

**Clinical Science Institute,
National University of Ireland, Galway (NUIG)**

Schedule – at a glance

Oral Presentations

Small Lecture Theatre (1031)

09.30 – 10.00:	Registration + Refreshments
10.00 – 10.10:	Opening Address
10.10 – 11.40:	Oral Presentations I
11.40 – 12.00:	Coffee
12.00 – 12.40:	Plenary Lecture
12.40 – 13.00:	Presentation of Tarpey Scholarships
13.00 – 14.00:	Lunch + Poster Session (Room 2012)
14.00 – 15.30:	Oral Presentations II
15.30 – 15.45:	Prize-giving and Closing Address

10.00: Opening Address: Dr Carmel Malone, Head of School of Medicine

ORAL PRESENTATIONS I

10.10: **Presenter:** Chloe Conlon (NUIG)

Title: *Tumour conditioning by cyclophosphamide to enhance Natural Killer cell cytotoxicity in Multiple Myeloma.*

10.25: **Presenter:** Dervla Devine (UCC)

Title: *An Assessment of UCC students' knowledge of fatal fetal anomalies and termination of pregnancy for fetal abnormalities.*

10.40: **Presenter:** Alan Keane (NUIG)

Title: *The Effect of Conditioned Medium Obtained from Syndecan-2 Positive Selected Mesenchymal Stromal Cells on Endothelial Cell Migration and Tubulogenesis.*

10.55: **Presenter:** F. Fouhy (UCC)

Title: *Liver function in a cohort of women with Gestational Diabetes.*

11.10: **Presenter:** Helen Mannion (NUIG)

Title: *Sleep Disturbance in Older Patients in the Emergency Department: Prevalence, Predictors and Associated Outcomes.*

11.25: **Presenter:** Jeremy Lee Kay Hock (UCC)

Title: *Tips and Tricks to Perform Intra-operative Cholangiogram during Single Incision Laparoscopy for Cholecystectomy.*

11.40: **COFFEE BREAK**

12.00: Plenary Lecture by Professor Michael Kerin,
Head of Discipline of Surgery and Vice Dean of College of
Medicine, Nursing and Health Sciences

12.40: Presentation of Tarpey Scholarships

13.00: **LUNCH + POSTER SESSION (ROOM 2012)**

ORAL PRESENTATIONS II

- 14.00: **Presenter:** Sarah Murphy (NUIG)
 Title: *An Econometric Analysis of Growing Up in Ireland Data, to Look at the Incidence of Illnesses Among Breastfed, Non-Breastfed and Exclusively-Breastfed Cohorts.*
- 14.15: **Presenter:** Ryan Kelly (UCC)
 Title: *A Multidisciplinary Approach to Clinical Supervision: Charter of Best Practice in Medicine, Dentistry, and Pharmacy.*
- 14.30: **Presenter:** Liezel Ravenscroft (NUIG)
 Title: *Exploring the Effect of Social Media on Human Papillomavirus Vaccine Uptake and Attitudes.*
- 14.45: **Presenter:** R. McCarthy (UCC)
 Title: *Sonographic Features of Resistant Infantile Developmental Dysplasia of the Hip*
- 15.00: **Presenter:** Nicole Sim (NUIG)
 Title: *An investigation of how saliva and salivary proteins may interact with polyphenol-rich beverages to alter their available antioxidant capacity.*
- 15.15: **Presenter:** A. O'Brien-Horgan (UCC)
 Title: *Incidents and Risk Factors of Chronic Post-Total Knee Arthroplasty Pain in an Irish Population.*
- 15.30: **PRIZE-GIVING AND CLOSING ADDRESS**

POSTER PRESENTATIONS - Room 2012 (top floor)

- Poster 1:** **An ultrastructural study of the venom gland of the false widow spider, *Steatoda Nobilis*; and the in vitro cytotoxicity of its venom in a human breast cancer cell-culture model.**
Abbas Syed, Jaffar¹, Salciute, K.², McDermott, E.², Thompson, K.², Dugon, M.³, Dunbar, J.³, Dockery, P.², O' Brien, S.², Canney, M.², Black, A.²
¹School of Medicine, NUI Galway.
²Department of Anatomy and ³Department of Zoology, NUI Galway.
- Poster 2:** **Retrospective analysis of patients referred for arteriovenous fistula formation.**
Kucey, Andrew¹, Doireann Joyce², Teresa O'Neill³, Greg Fulton², Brian J. Manning²
¹ School of Medicine, University College Cork
²Department of Vascular Surgery and ³Department of Nephrology, Cork University Hospital, Wilton, Cork
- Poster 3:** **Fistula failings: To identify, explore and explain utilisation of arterio-venous fistulae (AVF) for vascular access for patients on haemodialysis.**
Thomas Butler¹, D Connolly², C Judge², D Reddan² ¹.
¹School of Medicine, NUI Galway, Ireland
²Nephrology Department, Galway University Hospital, Galway.
- Poster 4:** **Characterising post-operative pain following peripheral nerve block regression in patients who have undergone open reduction and internal fixation of ankle fractures.**
Clare Keaveney Jimenez¹, Dr Brian O'Donnell²
¹University College Cork
²Cork University Hospital
- Poster 5:** **A Review of Delays in Administration of Parenteral Systemic Chemotherapy in the Day Ward Setting.**
Dominic Butler[¹], E. Flaherty[²], P. Donnellan[²]
¹School of Medicine, NUI Galway
²Department of Medical Oncology, University Hospital Galway (UHG).
- Poster 6:** **Nursing Home Residents with Dementia – Pattern of Referral to Specialist Palliative Care Services.**
Edward Ahern¹, Professor Tony O' Brien²
¹ University College Cork
² Marymount University Hospital and Hospice
- Poster 7:** **Role of Aerobic Exercise in Cancer Rehabilitation and Recovery.**
Pragya Chopra, Ananya Gupta

Discipline of Physiology, NUI Galway

Poster 8: An observational study, of the utility of BRAF and MEK combination therapy in metastatic melanoma in a regional cancer centre.
Fionnuala Crowley, Derek G. Power

School of Medicine, University College Cork.

Poster 9: Functional Characterisation of Purinergic Signalling in Synoviocytes for Potential use in Osteoarthritis.
¹Clinton, Noel, ²Quinlan, L.

¹Discipline of Physiology, NUI Galway.

²CÚRAM, Centre for Medical Devices, NUI Galway.

Poster 10: An Assessment of Buccal Oestrogen Receptor Expression in Patients Diagnosed with Oestrogen Receptor Positive Breast Cancer as a Potential Non-Invasive Marker of Response to Tamoxifen Therapy
Kehoe JD, Corrigan MA, Fleming CA

Cork Breast Research Centre, Cork University Hospital, Cork, Ireland

Poster 11: Paediatric Emergency Medicine (PEM) Resource Utilisation - can we plan in advance?

¹Christina Gillespie, ²S. O'Gorman

¹School of Medicine, NUI Galway.

²Emergency Department, Letterkenny General Hospital.

Poster 12: Cross-sectional study to assess the need to provide contraceptive services to women attending Addiction Services at Cork Kerry Community Healthcare
Julia Olioiff ¹, Dr. Tanya O Shea ², Dr. Anna Marie Naughton ³

¹ School of Medicine, University College Cork.

² Addiction Services, Cork Kerry Community Healthcare

³ Adult Homeless Integrated Service HSE South

Poster 13: Optimization of macromolecular crowding (MMC) in human umbilical cord mesenchymal stem cell culture (hUCSC) for the development of a wound healing cell therapy product.

Hand, A., Du, S., O'Brien, T.

Regenerative Medicine Institute (REMEDI), Biosciences Research Building, NUI Galway.

Poster 14: Is your child in danger? An exploration of adolescent Sports Related Injuries presenting to an Emergency Department.

Maher LC, Perry IJ, Griffin E.

Department of Public Health and National Suicide Research Foundation,
University College Cork

Poster 15: Aspartyl-aminopeptidase is an early-stage biomarker for CLL.
Pramath Kakodkar¹, Sanket Mohan More ¹, Kostas Stamatopoulos², Csaba Ortutay³ and Eva Szegezdi¹.

¹Apoptosis Research Centre, NUI, Galway.

²Institute of Applied Biosciences (INAB), Centre for Research & Technology, Hellas (CERTH), Thessaloniki, Greece,

³University of Tampere, Tampere, Finland.

Poster 16: An Assessment of Inhaler Technique and Adherence in Cystic Fibrosis and the Development of mHealth Tools to Improve It.
LA Harris^a, BJ Plant^b

^aSchool of Medicine, University College Cork.

^bCystic Fibrosis Unit and Department of Respiratory Medicine, Cork University Hospital.

Poster 17: Development of a Novel Massive Open Online Course in Travel Medicine.
Lim, BCW.[^{1,2}], Aida Lina Alias.[²], Hasnain Zafar Baloch.[²], Lydia Lee Sze Teng.[²], Flaherty, G.[^{1,2}].

¹School of Medicine, NUI Galway.

²International Medical University, Kuala Lumpur, Malaysia.

Poster 18: An analysis of potential drug-drug interactions in an aging HIV cohort.
Pádraig Gardiner¹, Dr. Gabriella Rizzo²

¹School of Medicine, University College Cork;

²Department of Medicine, Cork University Hospital

Poster 19: Use of γ -H2AX as an indicator of DNA repair capacity in breast cancer cell lines.

Elizabeth Maher¹, Joana Passos² and Helen Dodson².

¹ School of Medicine, NUI Galway, and

² Discipline of Anatomy, CMNHS, NUI Galway

Poster 20: An audit of LLETZ procedure in a Cork City colposcopy clinic.
Rebecca Howley¹, Dr Matt Hewitt^{1,2}

¹University College Cork, School of Medicine.

²Cork University Maternity Hospital.

Poster 21: Audit of use of Lean Six Sigma Methodology shows reduction of inpatient waiting time for Peripherally Inserted Central Catheter (PICC) Insertion.
Aoife Murray, P. Hughes, M. Brennan, J. Hynes, S. Eustace, S. Gilchrist, A. Dolan, LP Lawler.

Dept of Radiology, Mater Misericordiae Hospital, Dublin 7.

Poster 22: Is heart rate variability (HRV) a predictor of intraventricular haemorrhage (IVH) in preterm infants?
Sarah Donoghue¹, John O' Toole², Vicki Livingstone², Eugene Dempsey²

¹School of Medicine, UCC.

²INFANT and Cork University Maternity Hospital

Poster 23: Investigation of the immune modulating effects of low dose chemotherapy in colon cancer and its role in mediating macrophage function.
Alison O'Mahony¹, N Leonard², H Egan², K Lynch², AE Ryan^{2,3}

¹School of Medicine, NUI Galway

²Immunology Group, Regenerative Medicine Institute (REMEDI), NUI Galway.

³Discipline of Pharmacology and Therapeutics, NUI Galway.

Poster 24: The Effects of Mirena on the Myometrial Vascular Bed in Patients with Menorrhagia
Sarah Kennedy¹, P Dockery²

¹ University College Cork

² National University of Ireland, Galway.

Poster 25: Depression, anxiety and quality of life in a palliative population: a comparative study across different settings -hospital and community.
Salmon, Caoimhe^{1,2}, Reilly L^{3,4}, McMahan E¹, Doherty AM^{1,2}.

¹ Department of Psychiatry, Galway University Hospital.

² School of Medicine, NUI Galway.

³ Department of Palliative Care, Galway University Hospital.

⁴ Galway Hospice Foundation, Renmore.

Poster 26: Parental Attitudes towards HPV Vaccination: A Qualitative Study.
S Creed¹ T Foley²

¹School of Medicine, University College Cork, Cork.

²General Practitioner and Lecturer, Department of General Practice, UCC.

Poster 27: Potential of Extracellular Vesicles (EVs) in Patient Serum as Circulating Biomarkers of Breast Cancer.
Shafik Lidia, Khozi B., Challapalli R., O'Neill C., O'Connell E., Giligan K., Dwyer, R.M

Discipline of Surgery, Lambe Institute for Translational Research, School of Medicine, NUI Galway.

Poster 28: Cardiovascular risk assessment in asymptomatic patients with inflammatory arthritis.
Tommy Harty¹, Miriam O'Sullivan², Sinéad Harney³

¹University College Cork

²Our Lady's Hospital, Co. Leitrim

³Cork University Hospital

Poster 29: Parental Attitudes to Influenza Infection: Willingness to Annually Vaccinate Their Child.

Woon, Yuxin¹, Moylett, E.^{1,2}

¹ School of Medicine, NUI Galway.

² Department of Paediatrics, NUI Galway.

Poster 30: Real world practice patterns for NSCLC patients in an Irish setting: a multi-centre study on targetable gene alterations.

Wanyi Kee¹, William Mullaly², Colum Dennehy², John Greene², Deirdre Kelly², Richard Martin Bambury², Brian Healey Bird³

¹University College Cork, School of Medicine, Cork

²Cork University Hospital, Department of Medical Oncology, Cork

³Bon Secours Hospital, Department of Medical Oncology, Cork

**Oral
Presentation
Abstracts**

Abstract Title:

Tumour conditioning by cyclophosphamide to enhance Natural Killer cell cytotoxicity in Multiple Myeloma

Authors and Affiliations:

Conlon, C.¹, Egan, H.², Leonard, N.², Lynch, K.² and O'Dwyer, M.²

1. School of Medicine, NUI Galway.
2. Haematology Department, Biosciences, NUI Galway.

Introduction:

Multiple Myeloma (MM) is the second commonest haematological malignancy in Europe and remains incurable. Genetic and micro-environmental factors are involved in disease progression. Natural Killer (NK) cells, which normally kill tumour cells, are dysfunctional in MM.

Aim:

To establish whether treatment of MM cells with low-dose cyclophosphamide, a chemotherapeutic drug with immunomodulatory properties, enhances the cytotoxicity of NK cells.

Methods:

The MM cell-line MM1s was treated with cyclophosphamide at [2.5µM] and [10µM] or vehicle-control. After 24hrs, media was replaced with cyclophosphamide-free media which then was collected at 24hrs and 48hrs of culture. The NK cell-line KHYG1 labelled with Tag-it violet cell tracker-dye, was exposed to MM1S-derived culture-media for 24hrs and incubated with MM1S at different NK:MM ratios (0.25:1 and 0.5:1) for further 24hrs. MM1S cell death was then estimated in the Tag-it violet negative population by flow cytometry using Propidium Iodide. Data in this ethically approved study was analysed by Flowjo and Prism Graph Pad 6.

Results:

KHYG1 exposed to the 24hrs MM1S-derived culture-media did not show any significant increase in cytotoxicity. In contrast, a significant difference was seen in MM1s cell death at both ratios ($p=0.0419$ at 0.25:1 and $p=0.0248$ at 0.5:1) when KHYG1 cells were exposed to 48hrs derived culture media from MM1S treated with 10µM cyclophosphamide.

Conclusions:

Exposure of KHYG1 cells to 48hrs culture-media derived from MM1S treated with 10µM cyclophosphamide significantly increases KHYG1 cytotoxicity against MM cells excitingly suggesting treatment of MM with low-dose cyclophosphamide may restore and/or enhance functionality of NK cells in MM.

References:

Dosani, T., Carlsten, M., Maric I. and Landgren, O. (2015) 'The cellular immune system in myelomagenesis: NK cells and T cells in the development of myeloma [corrected] and their uses in immunotherapies', *Blood Cancer Journal*, 5e306.

Pallasch, CP., Leskov, I., Braun, CJ., Vorholt, D., Drake, A., Soto-Feliciano, YM., Bent, EH., Schwamb, J., Iliopoulou, B., Kutsch, N., van Rooijen, N., Frenzel, LP., Wendtner, CM., Heukamp, L., Kreuzer, KA., Hallek, M., Chen J. and Hemann, MT. (2014) 'Sensitizing protective tumour microenvironments to antibody-mediated therapy', *Cell*, 156(3):590-602

Title: An assessment of UCC student's knowledge of fatal fetal anomalies and termination of pregnancy for fetal abnormalities.

Dervla Devine¹, Keelin O' Donoghue^{1,2}, Stacey Power¹, Sarah Meaney^{1,2}

¹Pregnancy Loss Research Group, The Irish Centre for Fetal and Neonatal Translational Research (INFANT), University College Cork, Cork, Ireland

²National Perinatal Epidemiology Centre, University College Cork, Cork, Ireland

Introduction: The objective of this study is to assess UCC student's knowledge of fatal fetal anomaly (FFA) and termination of pregnancy for fetal abnormality (TOPFA).

Materials and Methods: This descriptive study was conducted with UCC students registered for 2017-2018. Data were collected using an online questionnaire. 20,106 students received the survey, 520 answered the survey, 478 of which were completed responses. The survey consisted of fact based questions with a view to ascertaining knowledge level of students around FFA and TOPFA.

Results: Overall, 99.62% (519/521) were comfortable with the topic while only 0.38% (2/521) were uncomfortable with the topic and terminated the survey. Almost half (48%; 232/479) correctly defined FFA with a lack of knowledge demonstrated around the incidence of FFA in Ireland. A small number (6%; 28/476) of students thought Down Syndrome is a FFA while only 24% (117/478) could identify Patau Syndrome as a FFA. 8% of students considered Cerebral Palsy to be a FFA and 16% thought Spina Bifida is a FFA. Major disparity was obvious around survivability with a diagnosis of FFA; 13% thought a baby will not survive once born, while 16% believed a baby can survive for years.

Discussion: Deficits in knowledge were identified in accurately defining FFA, survivability, services made available to couples and classification of FFAs. This gap in student knowledge stresses the need for more readily available and accurate public health and college education campaigns, especially now with legislation about to be introduced to allow TOPFA in Ireland for the first time.

Abstract Title:

The Effect of Conditioned Medium Obtained from Syndecan-2 Positive Selected Mesenchymal Stromal Cells on Endothelial Cell Migration and Tubulogenesis

Authors and Affiliations:

Keane A⁽¹⁾, Cullen E⁽¹⁾, O'Brien T^(1, 2)

1. NUI Galway, Ireland.
2. Galway University Hospital, Ireland

INTRODUCTION: Diabetic Foot Ulcers (DFU) are a leading cause of amputation(1) and will be experienced by up to 25% of individuals living with diabetes mellitus (DM)(2). Delivery of bone marrow-derived mesenchymal stromal cells (BM-MSC) has demonstrated improved wound healing in animal models of diabetic ulcers(3). Syndecan-2 (CD362) is a trans-membrane heparan sulfate proteoglycan which has been implicated in angiogenesis (4). CD362+ selected BM-MSCs represent a promising therapy for DFU and it is hypothesised that they may accelerate angiogenesis in vitro.

AIM: To compare the efficacy of conditioned media (CM) obtained from CD362+ BM-MSC and Plastic Adherent (PA)-BM-MSC on EC migration and tubulogenesis using in vitro testing.

METHODS: CM was collected from CD362+ and PA-MSCs. Scratch assays were performed to measure Endothelial Cell (EC) migration under the following conditions: MSC-CM and positive / negative controls. Scratches were imaged at 0hrs and 10hrs and percentage closure was quantified. Matrigel assays were performed to measure EC tubulogenesis using MSC-CM and positive/negative controls. Images were taken at 18hrs and the number of tubules was quantified.

RESULTS: CM from CD362+ and PA-MSCs significantly increased EC migration compared to the negative control (26% and 23% increase, respectively). CM also significantly increased tubulogenesis compared to the negative control (111% and 110% increase, respectively). No significant difference was observed between CD362+-MSC-CM and PA-MSC-CM.

CONCLUSION: CM obtained from both PA-MSCs and CD362+-MSCs accelerated EC migration and tubulogenesis in vitro, at a comparable rate. In conclusion, the selection of MSCs based on cell surface expression of CD362 does not impact their pro-angiogenic properties.

REFERENCES:

1. IDF Diabetes Atlas. 8th edition ed. Brussels, Belgium: International Diabetes Federation; 2017.
2. Singh N, Armstrong DG, Lipsky BA. Preventing foot ulcers in patients with diabetes. JAMA. 2005;293(2):217-28.

Liver function in a cohort of women with Gestational Diabetes

Fouhy F¹, Tuthill A², Culliney L³, O'Mahony L³, Kelly D³, O'Riordan M^{3,4}

¹ Medical Student, School of Medicine, University College Cork

² Department of Endocrinology, Cork University Hospital,

³ Cork University Maternity Hospital

⁴ Department of Obstetrics and Gynaecology, University College Cork.

Abstract

Objective: We wished to describe liver function using alanine transaminase (ALTs) liver enzyme in a cohort of women with Gestational Diabetes Mellitus (GDM) and to investigate the prevalence of raised ALTs in this group. We also wished to explore the relationship between raised ALT levels and other factors affecting pregnancy outcome, such as BMI, gestational age at birth, large for gestational age baby and HbA1c at diagnosis.

Method: We analyzed data from almost 1263 women attending the Diabetes in Pregnancy Clinic between the years of 2014-2016. Women who are diagnosed with GDM in our service generally have a routine liver function tests (LFTs) done at diagnosis. Data was available on 995 women. The patients with abnormal LFTs were looked at further to rule out other conditions associated with abnormal LFTs specifically liver disease prior to pregnancy, pre-eclampsia and cholestasis of pregnancy.

Results: 24.3% of participants were noted to have raised ALT levels. When this was adjusted for confounding factors the percentage was found to be 23.9%. The mean value of the raised ALT was 74.4 units (95% CI 64.45-84.37) in the group with raised ALTs. There was a non-significant association between abnormal ALT and raised BMI. 53.8% of those women with raised ALTs had macrosomic babies (>4.5kg).

Conclusions: Abnormal LFTs are surprisingly common in women with GDM. This is still high when significant diagnoses are excluded. There is a trend towards an association with raised maternal BMI. This has been poorly described in the literature but may represent a group of women who may be at increased risk of Fatty Liver Disease in latter life.

Abstract Title:

Sleep Disturbance in Older Patients in the Emergency Department: Prevalence, Predictors and Associated Outcomes.

Author and Affiliations:

Helen Mannion¹, Rónán O'Caoimh^{1,2}

1. College of Medicine, Nursing & Health Sciences, NUI Galway, Ireland
2. Frailty Service, Department of Geriatric & Stroke Medicine, University Hospital Galway.

Introduction:

Impaired sleep is common in hospital, potentially resulting in poor clinical outcomes and increased total cost of healthcare [1]. Little is known about sleep disturbance among older adults attending Emergency Departments (ED).

Aim:

Assess the prevalence, predictors and impact of sleep disturbance in a large university hospital ED and investigate differential effects on overnight-boarders.

Methods:

Following ethics approval, 152 patients consented to this single-centre cross-sectional pilot study. Data were collected from consecutive patients ≥ 70 admitted medically. Patients completed a study-specific questionnaire comprising validated measures assessing overnight sleep quality (Richards Campbell Sleep Questionnaire/RCSQ), baseline sleep (Pittsburgh Sleep Quality Index/PSQI) and insomnia (Insomnia Severity Index/ISI). Additional variables included medications, trolley location, hours spent in ED and night-time noise levels. Patients were reassessed 48 hours later. Statistical analysis included Pearson-Chi Square and Mann-Whitney U-test.

Results:

The median age of patients was 80 years (IQR=74-84); 61% were male (n=92). Most, 68%, were ED boarders (n=103). The median duration spent in ED was 23 hours (IQR=18-31); median duration slept in ED was 1 hour (IQR=0-3). Most, 70%, reported impaired sleep quality at baseline and 15% reported clinical insomnia. Overnight sleep quality was significantly poorer for ED boarders compared with non-boarders: median RCSQ scores of 22(IQR=10-55) vs 71(IQR=46-80), respectively,($p < 0.001$). Median length of stay (LOS) was 6 days (IQR=4-10) and there was no significant difference between boarders and non-boarders,($p = 0.84$).

Conclusion/Discussion:

Sleep disturbance is prevalent among older adults admitted through ED. After adjusting for confounders, ED boarders experienced significantly poorer sleep. While no impact on LOS was evident, further analysis is planned to examine 30 and 90-day readmission rates.

References:

- [1] Ensrud KE, Blackwell TL, Redline S, et al. Sleep Disturbances and Frailty Status in Older Community-Dwelling Men. *Journal of the American Geriatrics Society*. 2009;57(11):2085-2093. doi:10.1111/j.1532-5415.2009.02490.x

Title

Tips and Tricks to Perform Intraoperative Cholangiogram during Single Incision Laparoscopy for Cholecystectomy

Authors and Affiliations

Jeremy Lee Kay Hock¹, Roxanne Teo² and Stephen Chang Kin Yong^{3,4}

¹College of Medicine and Health, University College of Cork, Ireland

²School of Medicine, University of Glasgow, Scotland

³Glad Clinic, Mount Elizabeth Hospital, Singapore

⁴Department of Surgery, Yong Loo Lin School of Medicine, National University of Singapore, Singapore

Abstract

Introduction: Laparoscopic Cholecystectomy (LC) has been the “gold standard” approach for the removal of gallbladder to treat gallstone disease since the early 1990’s. Routine Intraoperative Cholangiography (IOC) is often carried out during Conventional Laparoscopic Cholecystectomy (CLC) to visualise the biliary anatomy and enable prompt management of unanticipated Common Bile Duct (CBD) injuries. Single-Incision Laparoscopic Cholecystectomy (SILC) offers better cosmesis and reduced pain, which was reported by various groups. However, routine IOC is not performed during SILC due to technical difficulties. Our paper aims to describe a technique that could be utilised to perform IOC during SILC.

Materials and Methods: A total of 18 patients who had undergone IOC during SILC via the umbilical port were studied in detail. Details of the operative methods and the results of IOC during SILC were discussed in this article.

Results: All of our 18 patients successfully underwent IOC during SILC (100% success rate). A total of 15 patients’ IOC (83.3%) were normal and 2 patients’ IOC (11.1%) detected aberrant anatomy that involved the direct insertion of the sectoral duct into the common hepatic duct. Only 1 patient’s IOC (5.5%) reported the finding of a biliary stone in the lower end of the bile duct, and the patient required post - operative Endoscopic Retrograde Cholangiopancreatography (ERCP) for its removal.

Conclusion: We believe that our technique is advantageous in that it does not require any additional ports or percutaneous needle puncture. It was also successfully performed in all 18 of our patients without any intraoperative complications.

Abstract Title:

An Econometric Analysis of Growing Up in Ireland Data, to Look at the Incidence of Illnesses Among Breastfed, Non-Breastfed and Exclusively-Breastfed Cohorts.

Author and Affiliations:

Murphy. S¹, Queally. M², Brennan. S^{1,3}, O'Neill. S²

1. School of Medicine, NUI Galway
2. JE Cairnes School of Business & Economics, NUI Galway
3. Department of General Practice, NUIG Medical Academy-Donegal.

Introduction:

The nutritional advantages of breast-feeding (BF) and its protection against infection has been documented globally. Nevertheless, Ireland has one of the lowest BF rates in the world.

Aim:

Explore whether Irish data conforms with the international literature: increased BF protects against childhood morbidity.

Methods:

Permission obtained to access "Growing Up in Ireland"(GUI) data. Using GUI data (excluding those with missing values) the nine-month cohort, 9,879 babies, was analysed (Stata 14 SE). Data were weighted to ensure balance on observable confounders, increasing reliability of estimated differences in outcomes. Average morbidity for the BF group was compared to weighted data for the Non-BF group. Further analysis considered those Exclusively-BF vs. Non-Exclusively BF. Level of significance determined using effect (likelihood of developing illness) and $p < 0.05$.

Results:

Prevalence of illness among Non-BF babies(3,987) was significantly higher than in those BF(5,892): illness (effect[p-value]). Chest infection (-0.06[p<0.001]), ear infection (-0.04[p<0.001]), asthma (-0.03[p<0.001]), respiratory illness (-0.02[p<0.001]), number of times baby admitted to hospital (-0.03[p=0.002]).

Prevalence of illness among Non-Exclusively BF babies (5,163) was significantly higher than in those Exclusively-BF(4,716): illness (effect[p-value]). Chest infection (-0.04[p<0.001]), asthma (-0.03[p<0.001]), eczema (-0.03[p=0.002]), ear infection (-0.03[p=0.002]), number of times baby admitted to hospital (-0.02[p=0.002]), cold (-0.03[p=0.006]), skin problems (-0.02[p=0.007]), respiratory illness (-0.01[p=0.007]), average number of nights spent by baby in hospital (-0.17[p=0.009]), feeding problems (-0.01[p=0.03]).

Conclusion:

The results indicate Irish data conforms with international data: BF provides major protection against childhood morbidity, most notably, chest infection, ear infection, asthma and respiratory illness. Greater protection is provided to Exclusively-BF over Non-Exclusively BF children.

Title:

A Multidisciplinary Approach to Clinical Supervision: Charter of Best Practice in Medicine, Dentistry, and Pharmacy

Authors

Ryan Kelly¹, Leah Falvey¹, Sydney Saikaly², Sarah Jameel², Lisa Palubiski¹, Jessie Schoenberg¹, Kate Wang¹, Annie Hung¹, Ciarán Gosnell³, Cian Crowe³, Heather Eames³, Dylan Burke³ and Dr. Helen Hynes¹.

¹ UCC School of Medicine, ² Cork University Dental School and ³ School of Pharmacy, UCC

Introduction:

Clinical Supervision is integral to training of healthcare professionals. The Irish Medical Council guidelines outline “A Doctors’ Duty to Educate”. Other healthcare professionals’ roles in education are not clearly defined by their respective governing bodies. The aim of this project is to improve student experience of clinical supervision, thus ensuring competent, confident, healthcare professionals upon graduation. The objective of this project was to gain knowledge of the student experience in a number of different healthcare disciplines.

Methods:

Representatives from University College Cork Schools of Medicine, Dentistry and Pharmacy convened to share multidisciplinary student perspectives. Each school then presented the student experience of clinical supervision outlining both positive and negative aspects and acknowledging inherent challenges faced. Key points were discussed and common themes were identified. Using the Model United Nations Resolutions, a Charter of Best Practice was produced to provide a framework for an ideal form of clinical supervision.

Results:

All schools recognised the importance of Clinical Placement to gain exposure, experience, and develop skills. The Charter focuses on three key areas: the responsibility of the School, the responsibility of the Supervisor, and the responsibility of the Student.

Discussion:

The Charter wishes to open dialogue around the area of clinical supervision and inform strategies for best practice. It is intended that universities will engage with and implement this Charter of Best Practice in order to achieve an ideal model of clinical supervision. This Charter intends to further empower the student community to deliver high quality healthcare in the future.

Abstract Title:

Exploring the Effect of Social Media on Human Papillomavirus Vaccine Uptake and Attitudes.

Author and Affiliations:

Ravenscroft, L¹, Herzig. M^{1,2}

1. School of Medicine, NUI Galway.
2. Department of Paediatrics, University Hospital Galway (UCHG).

Introduction:

Although the Human Papillomavirus (HPV) vaccine was proven safe, uptake in Ireland declined by 31% following its introduction in 2011. Meanwhile, information online questioning the vaccine's safety increased.

Aim:

Determine parents' intent to vaccinate their children with the HPV vaccine, reasons why they wouldn't and explore if social media influenced this decision.

Methods:

A cross-sectional study was conducted on a sample of 337 parents. Participants were recruited in the Paediatric Outpatient Department, UCHG and asked to complete a survey. UCHG Research Ethics Committee granted ethical approval. SPSS-24 was used to analyse results, tests included Pearson's chi-square and Independent Sample t-test. Level of significance: $p < 0.05$.

Results:

232(72.7%) participants would vaccinate a daughter and 207(65.7%) would vaccinate a son. On a scale of 1-10(where 10=positive,) the mean (standard deviation) attitude towards HPV vaccination was 7.13(2.5) which was significantly lower than attitudes towards vaccination in general 7.62(2.3) (mean difference=0.494, $p=0.017$). Concerns over vaccine safety was the main reason parents wouldn't vaccinate a daughter 82(94.3%) or a son 80(74.1%). Of parents who encountered information online, a significantly higher proportion had concerns over vaccine safety regarding daughters (concerns:53(64.6%), no-concerns:6(37.5%), $p=0.043$). Similarly, regarding sons, a significantly higher proportion had concerns over vaccine efficacy (concerns:22(81.5%), no-concerns:40(50.0%), $p=0.004$).

Conclusion:

Results show that although attitudes towards the HPV vaccine are less positive than towards vaccination in general, intent to vaccinate among parents is still high. However, social media has become an influencing factor in parents' decision to vaccinate by contributing to concerns over vaccine safety and efficacy.

Sonographic Features of Resistant Infantile Developmental Dysplasia of the Hip

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¹Medical Student, University College Cork, ²Consultant Paediatric Orthopaedic Surgeon, South Infirmary and Victoria Hospital Cork (SIVUH)

Introduction: Developmental Dysplasia of the Hip is extremely common, occurring in approximately 15-20/1000 live births. Dysplastic hips are treated in the Pavlik Harness based on their sonographic features. This study examined the success rate of Pavlik harness treatment in SIVUH and the association between sonographic features and treatment outcomes.

Methods: A retrospective chart review was conducted in patients who underwent Pavlik harness treatment between January 2015 - December 2016 at SIVUH (n =80, no. of hips=122). Patients were stratified based on successful and unsuccessful treatment outcomes. Unsuccessful treatment outcome was characterised by abandonment of harness treatment or surgical intervention following completion of harness treatment. Successful treatment outcome was characterised by those who completed harness treatment but who did not require surgical intervention.

Results: 82.2% hips were successfully treated with the Pavlik harness, 23 of these displayed a residual dysplasia, and 17.2% hips failed harness treatment completely. The mean alpha angle in those successfully treated was 53.58° (48.35° in those with residual dysplasia) compared to 42.1° in those who were unsuccessfully treated (p <0.001). A relationship exists between an alpha angle <42° and unsuccessful treatment outcome (p <0.001). Both femoral head cover and Graf classification are individually associated with treatment outcomes (both p <0.001), as is family history (p <0.05). However, logistic regression confirmed that alpha angle, femoral head cover and Graf classification were significant predictive factors (all p <0.05).

Discussion: Pavlik Harness treatment in hips with an alpha angle <42° should either be ceased earlier or omitted as a treatment option as these hips are unlikely to be successfully treated. Additionally, there is a high rate of Pavlik Harness disease among hips which persist with this treatment despite there being a lack in successful progression of treatment.

Abstract Title:

An investigation of how saliva and salivary proteins may interact with polyphenol-rich beverages to alter their available antioxidant capacity

Author and Affiliations:

Sim, N. [¹], Gallagher, A. [¹], Horrigan, L. [²];

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Polyphenols are well-known antioxidants¹. However, the physiological effects of commercially-available, polyphenol-rich beverages are unknown due to the lack of human studies. This study explores the bioavailability of dietary antioxidants by investigating how human saliva interacts with hawthorn, blueberry, cranberry, red-grape juices, and green tea. Approval was granted by NUI Galway Research Ethics Committee, and informed written consent was obtained. For each experiment, saliva was collected from 10 - 14 healthy participants by the passive drool method, and centrifuged prior to analysis. The beverages (diluted 1/100) were incubated both alone and with saliva for 20 minutes. Antioxidant capacity (AC) was measured using the colourimetric Folin-Ciocalteu assay and AC was expressed in gallic acid equivalents. Similar to prior research², significant interaction was observed between hawthorn juice (HT) and saliva ($p = 0.003$), whereby AC was blunted by 7.1% when they were incubated together, compared to when incubated separately. Saliva also showed significant interaction with blueberry juice (BB) ($p = 0.005$; blunting of 6.0%), but not with the other beverages. To investigate possible protein-polyphenol interactions, HT and BB were incubated with human albumin. Significant interaction occurred between 1mg/mL albumin and both HT ($p = 0.008$; blunting of 5.0%), and BB ($p = 0.005$; blunting of 6.1%), and also between 10mg/ml albumin and both HT ($p < 0.001$; blunting of 25.0%), and BB ($p < 0.001$; blunting of 19.7%).

The results suggest that available antioxidants from consumption of certain beverages may be lower than expected, possibly due to protein-polyphenol interactions. Further study is necessary.

References:

1. Pandey, K.B. and Rizvi, S.I., 'Plant polyphenols as dietary antioxidants in human health and disease', *Oxidative Medicine and Cellular Longevity*, 2009 Nov-Dec; 2(5), p. 270-278
2. Killeen, S. et al., 'Saliva interacts with hawthorn juice to reduce its antioxidant capacity', *AISANH*, 2017, Vol. 5, Issue no. 1, p. 25-28

Incidents and Risk Factors of Chronic Post-Total Knee Arthroplasty Pain in an Irish Population

Authors: O'Brien-Horgan, A.¹ Murphy, L.² Woodhouse, E.³ McBride, I.² Mannion S.^{1,2}

1. School of Medicine, University College Cork
2. Department of Anaesthesia, South Infirmery Victoria University Hospital, Cork
3. Graduate of Biomedical Engineering, Dublin City University

Introduction:

Chronic post-surgical pain (CPSP) is a well-known complication post-operatively. However, there is little data to be found on CPSP post total knee arthroplasty (TKA). The aim of this study was to determine the risk factors for development of CPSP when undergoing TKA in an Irish population.

Materials and Methods:

A retrospective random sample was carried out on a population of 502 patients who attended SIVUH for TKA between January 2015 and July 2016. A confidence interval of 95% was obtained through review of 218 patient charts. SPSS and Microsoft Excel were utilised to analyse the data gathered. Outcomes of CPSP were measured at 6 months post-TKA by standard interview using the Oxford Knee Score.

Results:

Women are more likely to undergo TKA, 61% of the randomised sample was female. Women are also significantly more likely to suffer from CPSP (44%) versus their male counterparts (25%). An ASA score of 1 was linked with greater incidence of CPSP (55%) compared with ASA scores of 2 and 3 (34% and 36% respectively). Use of an Attune implant was shown to have a decreased incidence of CPSP (33%) versus the use of Triathlon implant (39%). The anteromedial approach was superior to that of the medial parapatellar approach in improving patient outcomes (31.5% vs 36.5% incidence of CPSP). Neither age nor knee operated on affected the incidence of CPSP.

Conclusion:

This retrospective study has demonstrated that healthy (ASA 1) women having a TKA using the Triathlon implant via a medial parapatellar approach have a higher incidence of CPSP after TKA.

Overall the incidence of CPSP was 36.5%.

Future research is required to determine if some of these risk factors are modifiable.

POSTER

Presentation

Abstracts

Abstract Title:

*An ultrastructural study of the venom gland of the false widow spider, *Steatoda Nobilis*; and the in vitro cytotoxicity of its venom in a human breast cancer cell-culture model.*

Authors:

Abbas Syed, J. ⁽¹⁾. Salciute, K ⁽²⁾. McDermott, E.⁽²⁾. Thompson, K ⁽²⁾. Dugon, M.⁽³⁾. Dunbar, J ⁽³⁾. Dockery, P. ⁽²⁾. O' Brien, S. ⁽²⁾. Canney, M. ⁽²⁾, Black, A. ⁽²⁾.

Author Affiliations:

- (1) School of Medicine, NUI Galway.
- (2) Department of Anatomy, NUI Galway.
- (3) Department of Zoology, NUI Galway.

Abstract:

Steatoda nobilis (false widow spider) is an invasive species and the first spider in Ireland and the UK of medical importance¹. Its cytotoxic venom may have therapeutic potential.

Aim:

To further understand the anatomy of its venom gland and responses to treatment with venom in a breast cancer cell-culture model.

Methods:

Spiders were fixed (immersion) and glands dissected. Glands were processed for scanning and transmission electron microscopy, plus light microscopy. An MCF-7 cell line was cultured and exposed to venom (diluted). Exposure time points: 5 minutes – 1 hour. Cells were fixed and stained for β -tubulin, actin microfilaments and E-cadherin, and examined (confocal microscopy).

Results:

The venom gland is spiral-shaped with a central lumen enclosed in a collagenous tunica and elliptical muscularis. Epithelial venom cells are present in the sub-tunica, containing venom vesicles (varying size). Ultrastructural stereological analysis was performed on glands (on nuclei, mitochondria and rough endoplasmic reticulum). It appeared that the muscle was composed of ~1.7% nuclei; the epithelium was composed of 4.6% nuclei, 2.1% mitochondria and 3.6% rough endoplasmic reticulum. The histology corroborates with EM findings (epithelial layer surrounding central lumen).

In cell culture experiments, control cells were more abundant than treated cells. Confocal microscopy displayed altered levels of actin, β -tubulin and, adherens junctions between control and treated groups.

Conclusion:

This investigation has furthered understanding of the false widow gland. The reduction in cells may have been because of venom treatment (directly or indirectly). This preliminary study demonstrates that venom of *Steatoda nobilis* may contain substances with potential for therapeutics.

Retrospective analysis of patients referred for arteriovenous fistula formation

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¹ School of Medicine, University College Cork

² Department of Vascular Surgery ³Department of Nephrology, Cork University Hospital, Wilton, Cork

Objectives:

CKD prevalence is rising quickly due to an aging population and increasing incidence of risk factors. Hemodialysis is often the renal replacement therapy of choice for end-stage kidney disease; this necessitates vascular access creation. Autogenous arteriovenous fistulae (AVF) is the gold standard for haemodialysis vascular access. This study aims to determine outcomes of patients who are referred for vascular access consultation.

Methods:

The current study is a retrospective analysis of patients who underwent AVF creation between 2015 and 2016 at a single institution.

Results:

A total of 137 patients underwent AVF formation during the study period. Most procedures were performed under local anaesthetic (n=135) and all were day case interventions. 67.8% were male (n=93, females n=44, 32.1%) with a mean age of 58.45 years old. Primary brachiocephalic AVF (BCAVF) formation accounted for 73 (53%) of the operations, while 48 (35%) radiocephalic AVF (RCAVF) were created. A post-operative bruit or Doppler signal was present in 99.2% of AVFs (n=136). 80.8% (n=105) had adequate AVF vessel maturation. HD needling was successful in 75.8% of BCAVFs (n=47) and 61.4% of RCAVFs (n=27). Seven cases (5%) incurred complications post-operatively: infection (n=4); steal syndrome (n=2); and limb engorgement (n=1). 69.7% of AVF patients (n=83) ended up using their fistula successfully for hemodialysis.

Conclusions:

This study shows that AVF creation outcomes from our institution are comparable to international standards reported in the literature. The high maturation rate of autogenous AVFs and low perioperative morbidity support them as the preferred modality for HD vascular access.

Abstract Title:

Fistula failings: To identify, explore and explain utilisation of arteriovenous fistulae (AVF) for vascular access for patients on haemodialysis.

Authors and Affiliations:

T Butler¹, D Connolly², C Judge², D Reddan^{2 1}.

1. School of Medicine, NUI Galway, Ireland
2. Nephrology Department, Galway University Hospital, Galway.

Introduction:

Blood is accessed for haemodialysis using an arteriovenous fistula (AVF) or central venous line (CVL). AVF is the preferred method as it is associated with less complications and lower levels of mortality and morbidities¹.

Aim:

Quantify, explore and compare the use of AVF and CVL's in the Galway dialysis population. Consider the impact this has on clinical indicators and to investigate AVF creation over the last four years.

Methods:

We collected data through the KDCPMS database and patient surveys. The active access data and demographics were collected for all prevalent haemodialysis patients in the Merlin Park University Hospital (MPUH) haemodialysis unit. Data was collected for all AVF creations from 2015-2018. Summary statistics and mean differences were calculated using IBM SPSS 25.

Results:

Between 2015 and 2018, 68 fistulae were created. The mean (SD) time from referral to creation was 9(12) months and the longest time was 6 years. There were 59 prevalent haemodialysis patients in MPUH at the time of data collection; 71% (n=42) were male and the mean (SD) age was 68(15). 25% (n=15) of patients had an active AVF. Patients with AVF, compared to patients with CVL, had blood flow rates 53.3mls/min (29.5 to 77.1) higher (p<0.001) and had URR adequacy values 0.0555 (0.0134 to 0.0976) higher (p=0.011).

Conclusion:

The numbers of patients dialysing with an AVF is below international standards of 60%². AVFs are associated with improved clinical indicators and more AVFs need to be created. Potential solutions include having protected time in theatre which would reduce the time from referral to creation.

References:

1. Ravani, P., Palmer, S.C., Oliver, M.J., Quinn, R.R., MacRae, J.M., Tai, D.J., Pannu, N.I., Thomas, C., Hemmelgarn, B.R., Craig, J.C. and Manns, B., 2013. Associations between hemodialysis access type and clinical outcomes: a systematic review. *Journal of the American Society of Nephrology*, 24(3), pp.465-473.
2. Kumwenda, M., Mitra, S. & Reid, C. (2000). CLINICAL PRACTICE GUIDELINE VASCULAR ACCESS FOR HAEMODIALYSIS UK Renal Association 6th Edition Final Version. Available from: <https://renal.org/wp-content/uploads/2017/06/vascular-access.pdf> (Accessed 25/08/18).

Title: Characterising post-operative pain following peripheral nerve block regression in patients who have undergone open reduction and internal fixation of ankle fractures.

Authors and Affiliations: Clare Keaveney Jimenez¹, Dr Brian O'Donnell²

¹University College Cork

²Cork University Hospital

Introduction: Peripheral nerve blocks (PNBs) are a common and effective analgesic modality in orthopaedic surgery. Following ankle fracture surgery, rebound pain has been reported on block regression. Defined as a quantifiable increase in acute pain after PNB resolution⁽¹⁾, rebound pain is poorly understood.

Methods: We conducted a prospective, observational cohort study of patients undergoing ankle fracture open reduction and internal fixation (ORIF). Prior to surgery patients received ultrasound guided popliteal and saphenous blocks. Multimodal oral analgesics were prescribed. Patients were assessed at 6, 12, 18 and 24 hours after block administration, for the presence of the PNB and pain score on the numerical rating scale. Analgesics administered throughout these time periods were recorded.

Results: Eleven consecutive patients were included. PNB offset was seen in 2 patients at 12 hours and in a further 7 patients at 18 hours with reported median pain scores of 8[7-9] and 5[0-10], respectively. Two patients who remained pain-free at 18 hours, despite block resolution then, proceeded to experience pain score spikes to 7 and 8 at 24 hours. Increases in pain resulted in reciprocal increased opioid rescue analgesia requests. 3 patients remained pain-free throughout the study period.

Discussion: Rebound pain is a real and clinically important problem upon resolution of PNBs in patients following ankle fracture ORIF. The findings presented are consistent with other reports of rebound pain. This data will inform clinical practice development.

(1) Williams BA, Bottegal MT, Kentor ML, Irrgang JJ, Williams JP. Rebound pain scores as a function of femoral nerve block duration after anterior cruciate ligament reconstruction: retrospective analysis of a prospective, randomized clinical trial. *Reg Anesth Pain Med* 2007;32:186–92

Abstract Title:

A Review of Delays in Administration of Parenteral Systemic Chemotherapy in the Day Ward Setting.

Authors and Affiliations:

D. Butler^[1], E. Flaherty^[2], P. Donnellan^[2]

1. School of Medicine, NUI Galway
2. Department of Medical Oncology, University Hospital Galway (UHG).

Introduction:

National Cancer Control Programme (NCCP) recommends that patients start new parenteral systemic chemotherapy in the oncology day ward (DW) within 15 working days from referral. There is a lack of data concerning the delays before treatment starts and during treatment for medical oncology (MO) patients in the DW.

Aims:

To explore delays in starting and during IV chemotherapy regimens for MO patients in the DW.

Method:

This was a retrospective review of 65 MO patients who commenced first line intra-venous (IV) chemotherapy in the UHG DW July-August 2017. The delay from referral until start of treatment was recorded and the schedule for the first 10 weeks of treatment was investigated, all delays measured in working days. Data was obtained from MOSAIQ oncology database and analysed using IBM SPSS 25. 95% significance level used.

Results:

53.8% exceeded 15 days from referral until treatment started, of this 82.9% due to DW capacity and 17.1% for medical reasons. 43.1% of patients received concomitant radiotherapy (RT); their mean rank and median delay until treatment [23.55&11.00] was lower than other patients [40.15&22.00] ($p < 0.001$). Delays before treatment showed no significant difference between curative and palliative regimens ($P = 0.222$) nor between weekly, 2 weekly and 3 weekly regimes ($p = 0.473$). Once treatment started, 1.5% had a delay due to DW capacity during the first 10 weeks.

Conclusion:

Capacity is a major cause of delays for MO patients starting IV chemo on the DW, but causes minimal delays once treatment starts. RT patients appear to be prioritised in starting treatment above other MO patients.

Title: Nursing Home Residents with Dementia – Pattern of Referral to Specialist Palliative Care Services.

Authors and Affiliations: Edward Ahern¹, Professor Tony O’ Brien²

¹ University College Cork

² Marymount University Hospital and Hospice

Introduction: Nursing home residents with a dementia diagnosis require on-going, multi-dimensional assessment of need. A proportion of such patients will benefit from specialist palliative care (SPC) input. However referrals of some patients in the terminal stages of disease places a considerable burden on services and may be of limited benefit to the patient and family. This research was set to examine differences in referral times to SPC between nursing home residents with dementia and other categories of patients. Characterising these referrals to assess the complexity of care required was also completed.

Materials and Methods: A retrospective chart review of patients referred to the regional SPC service during the 6 month period July 2016 – December 2016 was undertaken. The data was collated on a standardised template. Four categories of patients were determined: dementia in the nursing home, dementia outside the nursing home, malignant diagnoses and non-malignant diagnoses.

Results: The time from referral to death in patients with dementia was significantly shorter compared to other referrals. A high proportion of these referrals were in the urgent category and needed a visit within one day. The majority of patients with dementia in the nursing home died in the nursing home.

Discussion: Dementia patients are a unique group within the field of SPC. They are referred later than other categories of patients despite also having a life limiting diagnosis. This research also provides insights into the end of life treatment of dementia patients and offers information for future treatment of this group.

Abstract Title:

Role of Aerobic Exercise in Cancer Rehabilitation and Recovery.

Authors and Affiliations:

Pragya Chopra, Ananya Gupta

(Discipline of Physiology, NUI Galway)

Introduction:

Cancer treatment involves the use of toxic chemotherapeutic agents that deteriorate patient's health and fitness. Post-treatment support is required for appropriate management of cancer. Exercise programs have shown to increase aerobic capacity, muscle strength, balance and mobility improving patient's health and reducing debilitating effects of cancer cachexia.

Aim:

This study aims to evaluate cardiopulmonary fitness and improvement in muscle strength in cancer rehabilitation patients and design an exercise program to improve their fitness.

Method:

In this study, 13 female cancer survivors (aged 44 to 66 years) were assessed over 4 months. The changes in aerobic capacity were evaluated by measuring changes in muscular strength (one-repetition maximum/1RM), cardiopulmonary function (VO₂ max), heart rate recovery (HRR), balance and mobility (sit to stand test) between baseline and follow-up. The exercise regime was followed regularly (minimum 150 minutes of moderate exercise a week) by the volunteers and improvements were assessed monthly.

Results:

In the first two phases of assessment significant improvement (60-70% of 1RM) in muscle strength and balance was observed in 8 out of 13 participants. An increase in HRR and VO₂ max was recorded for all participants, with a remarkable increase in HRR and 1RM for 2 of them, over a period of 12 weeks. The final assessment is still on-going and will help us to establish the overall success of the program.

Conclusion:

The exercise therapy improved the cardiopulmonary fitness, muscle strength and balance in cancer rehabilitation patients improving their quality of life. Therefore, an exercise program will be beneficial to patients recovering from cancer treatment.

Title: An observational study, of the utility of BRAF and MEK combination therapy in metastatic melanoma in a regional cancer centre.

Authors: Fionnuala Crowley, Derek G. Power

School of Medicine, University College Cork.

Introduction: Trametinib (MEK inhibitor) combined with Dabrafenib (BRAF inhibitor), targeted therapy for BRAF mutated metastatic melanoma, was introduced in Ireland in 2012. The clinical outcomes of these drugs have not been evaluated in an Irish population. The relationship between toxicity and outcome has to date not been studied.

Methods: A retrospective chart review of all patients (n=41), treated with dabrafenib alone or in combination with trametinib from May 2012 to September 2018 was carried out. Clinicopathologic variables were recorded. The clinical course of all patients was examined in detail. Treatment outcomes were measured using progression free survival (PFS), overall survival (OS) and objective response rates (ORR).

Results: 39% of patients experienced grade 3 or greater of a side effect, necessitating a dose reduction. The median PFS of patients who experienced side effects was 12.29 months (95% CI 4.045 to 20.535) versus 5 months (95% CI 2.215 to 7.785) in patients who didn't experience side effects (p=0.003). The median PFS for patients who had their dose reduced due to side effects was 16.55 months (95% CI 0.426 to 32.674) versus 5.520 (95% CI 3.972 to 7.068) in those whose doses remained the same (p=0.024). The ORR among all patients was 82.9%. When patients with brain involvement (n=12) were removed, the median PFS was 12.35 months (95% CI 0.42 to 24.280) and median OS was 18.19 months (95% CI 13.412 to 22.968).

Conclusion: The median OS of 18.19 months in patients without brain metastases is lower than the clinical trials median of 25.6 months. This is likely due to our heterogenous population. Our results highlight a statistically significant relationship between toxicity and overall survival. A similar situation has been reported with immunotherapy. These findings may impact clinical practice.

Abstract Title:

Functional Characterisation of Purinergic Signalling in Synoviocytes for Potential use in Osteoarthritis.

Authors and Affiliations:

¹Clinton, N.P., ²Quinlan, L.

1. School of Medicine, Dept of Physiology, NUI Galway.
2. CÚRAM, Centre for Medical Devices, NUI Galway.

Introduction:

Osteoarthritis (OA) is a degenerative disease of joints. In mammalian articular joints chondrocytes and synovial fibroblasts are mainly responsible for maintaining elements of joint function. The roles of these cells include production and secretion of pericellular / extracellular matrix and articular joint lubricants. This secretory role requires extracellular calcium and involves activation of calcium ion channels expressed on membranes of synovial fibroblast cells. Synoviocytes are found in synovial membrane, and inflammation is thought to be key in the developing OA. Looking into extracellular signalling (purinergic signalling) could give an insight into the role of synoviocytes in OA and a route to treatment.

Aims:

Compare synoviocytes, treated and untreated, with the inflammation cytokine tumour necrosis factor alpha (TNF α). Using immunofluorescence and calcium imaging to look at the expression of calcium channels and the activity of this channels when activated by nucleosides and purine nucleotides e.g. ATP.

Method:

Human synoviocytes were cultured in 2D culture and treated with TNF- α for 24 hours. Cells were cultured on glass coverslips loaded with the fluorescent dye fluo-4 for 40 minutes and imaged on an inverted Zeiss Axiovert 200 microscope. Cells were excited at 480nm, and activated by addition of various agonists ATP or 4- α PPD and responses recorded.

Results and Conclusion:

It's clear from the live cell calcium imaging studies that cells in the inflamed state are more active when ATP is added. These pilot works suggest that there is a link between inflammation and calcium activity which is promising for future investigations into applications for OA.

An Assessment of Buccal Oestrogen Receptor Expression in Patients Diagnosed with Oestrogen Receptor Positive Breast Cancer as a Potential Non-Invasive Marker of Response to Tamoxifen Therapy

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¹Cork Breast Research Centre, Cork University Hospital, Cork, Ireland

Background: Adjuvant anti-oestrogen therapy reduces mortality in Oestrogen Receptor (ER) positive breast cancer by up to 50%. However, therapeutic efficacy is heterogeneous which can negatively impact on individual outcomes. Currently, it is not possible to assess response to hormonal therapy non-invasively. Previous studies have postulated that the buccal mucosa expresses both ER α and ER β . This pilot study sought to verify the expression of these receptors and assess their utility in breast cancer care.

Methods: Buccal mucosal swabs were obtained from a sample of ER+ breast cancer patients attending the Regional Breast Cancer Centre in Cork University Hospital. Patients receiving adjuvant tamoxifen, aromatase inhibitor and no hormone therapy were equally represented. Following standard cytological procedures for sampling and cell extraction, immunohistochemistry was performed to quantify the ER α and ER β expression from each sample. These results were to be correlated with the magnitude of ER expression in the corresponding breast tissue.

Results: 9 patients were analysed in total. Mean age was 62 for tamoxifen subjects (n=3), 59 for aromatase inhibitor subjects (n=3) and 57 for non-hormonally manipulated subjects (n=3). 9/9 breast tissue samples were strongly ER+, 8/9 were PR+ and only 1/9 was HER2+. Tumour size, grade and nodal status were variable. Despite adequate cell yields, ER expression was not identified on buccal mucosal samples from any cohort.

Conclusion: It is unlikely that buccal mucosal ER expression is a non-invasive marker for assessing response to tamoxifen therapy. Further research will be required to identify, evaluate and enable the utilisation of alternative surrogates.

Abstract Title:

Paediatric Emergency Medicine (PEM) Resource Utilisation - can we plan in advance?

Authors and Affiliations:

1. **C. Gillespie**, School of Medicine, NUI Galway.
2. **S. O'Gorman**, Emergency Department, Letterkenny General Hospital

Introduction:

Best practice protocol suggests that complete 'audio-visual separation' of paediatric and adult patients is optimal for a child's care in the ED [1]. This essentially requires two individual EDs within a hospital and so establishing when demand is highest would allow for more accurate advance resource allocation. This study aims to look at paediatric presentations to the ED and the resources required for these patients in order to optimise resource allocation.

Method:

Data was collected from the hospital database and patient clinical records for all paediatric presentations to a mixed ED over a 4 week period regarding day and time of presentation, length of time in the ED (Patient Experience Time/PET), investigations performed, treatment provided and disposition. Comparisons were drawn between school term and school holidays/weekends.

Results:

570 paediatric patients attended the ED over the 28 day period, 319 during school term (14 days) and 251 during holidays/weekends (14 days). Attendance peaked between 1pm and 5pm during school term and 3pm to 9pm during school holidays/weekends. Over the study period, Wednesdays were the busiest (103 presentations) and Fridays were quietest (71 presentations). Mean PET was 3.6 hours. Resource demand was greatest during school term but the nature of care required didn't change significantly based on the academic calendar.

Conclusion:

Demand for PEM services is greatest during school term and peak presentation time for paediatric patients to ED varies with the academic calendar. The data from this study may assist with planning for paediatric services within this ED and hospital.

References:

- [1] 'A National Model of Care for Paediatric Healthcare Services in Ireland Chapter 24: Paediatric Emergency Medicine', HSE (Health Service Executive) - Clinical Strategy and Programmes Division, RCPI (Royal College of Physicians of Ireland)

Available at: <http://www.hse.ie/eng/services/publications/Clinical-Strategy-and-Programmes/Paediatric-Emergency-Medicine.pdf>

Title

Cross-sectional study to assess the need to provide contraceptive services to women attending Addiction Services at Cork Kerry Community Healthcare

Authors and Affiliations

Julia Olioiff¹, (UCC medical student), Dr. Tanya O Shea² (GP, Addiction Services, Cork Kerry Community Healthcare), Dr. Anna Marie Naughton³ (GP, Adult Homeless Integrated Service HSE South).

1 School of Medicine, University College Cork.

2 Addiction Services, Cork Kerry Community Healthcare

3 Adult Homeless Integrated Service HSE South

Abstract**Introduction**

Women with substance use disorders who have unintended pregnancies face unique challenges. A common strategy for preventing unintended pregnancies among women with substance use disorders is to increase their use of long acting reversible contraception (LARC). This study assessed the pregnancy history and contraceptive use of women attending Addiction Services at Cork Kerry Community Healthcare, and their access to contraceptive services. The need for a contraceptive service within Addiction Services at Cork Kerry Community Healthcare was evaluated.

Materials and Methods

The study utilized a questionnaire administered by healthcare providers to 40 women ages 18-50 attending Addiction Services at Cork Kerry Community Healthcare. Results were compared to Irish national data on unintended pregnancy and contraceptive use.

Results

80% of participants had unintended pregnancies, and 25% had 3 or more unintended pregnancies. Of participants with children, 22% lived with their children, 37% had a child in care, and 33% had a child living with another family member. Of participants who were currently sexually active, 40% were not on LARC. 22.5% of total participants reported never having received information on pregnancy prevention. 92.5% of all participants reported that they would use a contraceptive service provided by Addiction Services at Cork Kerry Community Healthcare.

Discussion

This study highlights the need to increase contraceptive services for women attending Addiction Services at Cork Kerry Community Healthcare. Addiction services are ideal locations to also access contraceptive services because service users already attend these clinics frequently for treatment, and thus have continuity of care with healthcare providers.

Abstract Title:

Optimization of macromolecular crowding (MMC) in human umbilical cord mesenchymal stem cell culture (hUCSC) for the development of a wound healing cell therapy product.

Author and Affiliations:

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1. NUI Galway.
2. REMEDI, Biosciences Research Building, NUI Galway.

Funding: Wellcome Trust Vacation Scholarship

Introduction:

Non-healing diabetic foot ulceration results in significant human suffering and is a major burden on healthcare system resources. 15% of diabetic patients will develop a foot ulcer and 12-25% of these patients will require amputation.

Aim:

Our main objectives were to optimize the macromolecular crowding concentrations for human umbilical mesenchymal stem cell culture and then, to assess the cell viability and collagen I deposition in hUCSC with MMC treatment.

Methods:

We expanded the hUCSC and cultured them either with or without MMC at concentrations of 0,10,25,75,100 µg/ml. At days 3, 5 and 7 we assessed the cell morphology using light microscopy, assessed collagen I deposition using SDS-PAGE and assessed cell viability using alamarBlue.

Results:

Highest collagen type I deposition occurred at concentrations of 75 µg/ml with collagen γ , β 11, β 12, α 1(I) and α 2(I) deposition in Day 3, 5 and 7.

Greatest cell viability occurred at:

- 100µg/ml (123.81% alamarBlue reduction) on Day 3,
- 75µg/ml (93.73% reduction) on Day 5, and
- 100µg/ml (108.87% reduction) on Day 7.

Conclusion:

Optimal concentration of MMC for collagen type I deposition occurred at 75µg/ml. Our optimal cell viability (at this concentration) was at Day 5.

Title: *Is your child in danger? An exploration of adolescent Sports Related Injuries presenting to an Emergency Department.*

Authors & Affiliations: Maher LC (University College Cork), Perry IJ (Professor of Public Health, School of Public Health, University College Cork), Griffin E (National Suicide Research Foundation, University College Cork).

Introduction:

Sports Related Injuries (SRI) are a source of physical pain, emotional burden and financial costs. The objective of this study was to fulfil a limitation of current literature calling for injury rates in individual sports. A secondary objective was to provide an up-to-date description of SRIs presenting to Emergency Departments as regards sport involved, age and gender differences, body part involved, diagnosis and follow-up management.

Methods:

This descriptive epidemiological study involved a retrospective analysis of SRIs affecting 13-19 year olds presenting to Tallaght Hospital from 1st January to 31st December 2014. In order to calculate population at risk, the catchment area of Tallaght Hospital was estimated using data from the National Registry of Deliberate Self Harm. IBM SPSS Statistics 24 and Microsoft Word were employed for data analysis.

Results:

Over the 12-month period, 8401 13-19 year olds presented to Tallaght Hospital Emergency Department. Of these, 1735 cases (20.7% of all attendances) were due to SRI. There was a bimodal distribution of presentations across the year, peaking in spring and autumn. A steady decline in presentations was observed with increasing age. Males were affected in 75.1% of all presentations. Soft tissue injury (45.9%) and fracture (33.4%) constituted the majority of diagnoses. Upper Limb (38%) and lower limb (34%) were the most common body parts injured. Follow-up management was primarily non-existent (40%) or fracture clinic (34%). Football was the most frequently implicated sport (16 injuries/1000 persons/year).

Discussion:

The data from this study may be useful in formulating much needed prevention strategies.

Abstract Title:

Aspartyl-aminopeptidase is an early-stage biomarker for CLL.

Authors and Affiliations:

Pramath Kakodkar [¹], Sanket Mohan More [¹], Kostas Stamatopoulos [²], Csaba Ortutay [³] and Eva Szegezdi [¹].

[1] Apoptosis Research Centre, NUI, Galway.

[2] Institute of Applied Biosciences (INAB), Centre for Research & Technology, Hellas (CERTH), Thessaloniki, Greece,

[3] University of Tampere, Tampere, Finland.

ABSTRACT:

CLL is the most common adult leukaemia driven by malignant plasma cells. CLL is a highly heterogeneous cancer, with the indolent to aggressive phenotypes varying by patients and disease course. Thus, identification of early stage biomarkers of aggressive disease course is crucial for early intervention. Current therapies for CLL target the kinases driven by abnormal B cell receptor (BCR) signalling. Common gene targets of these kinases may serve as biomarker for active BCR signalling driving aggressive disease course. Analysis of 14 transcriptomic datasets of B cells and 107 CLL samples led to the identification of 32 genes whose expression correlated with BCR signalling kinases: ZAP-70, AKT, MAPK, BTK, and PI3K. Hazard ratio (HR) associated with the collective expression of this 32 gene-set appeared to be a very strong prognostic predictor (HR=37.79). Stepwise elimination of genes from the 32, led to the identification of a predictor gene set (SMARCA4, CSRP2, ST6GAL1, and DNPEP). Of these genes, aspartyl aminopeptidase (DNPEP) had the most significant contribution to the collective HR and is associated with a high hazard ratio (HR=3.93). Molecular analysis revealed that expression of DNPEP mRNA in primary CLL cells had a significant correlation with high risk groups of Rai Classical stages I-II vs III-IV (p=0.01938), 0 vs III-IV (p=0.001456). Function of DNPEP was tested by using a novel small-molecule inhibitor, which showed dose-dependent cell death in CLL cell line MEC-1 when treated in adjunct with BH3-mimetic. Therefore, DNPEP is a target for diagnosis and therapeutic intervention, whose role warrants further studies.

Title: An Assessment of Inhaler Technique and Adherence in Cystic Fibrosis and the Development of mHealth Tools to Improve It

Authors: LA Harris ^a, BJ Plant ^b

^a School of Medicine, University College Cork.

^b Cystic Fibrosis Unit and Department of Respiratory Medicine, Cork University Hospital.

Introduction: Cystic Fibrosis (CF) is an autosomal recessive condition with a prevalence of approximately 70,000 people worldwide. Inhaled Bronchodilators and Inhaled Corticosteroids (ICS) are frequently prescribed in CF, as well as in the treatment of asthma. However, little has been done to identify the specific drugs prescribed, to assess patient adherence to these medications, or to assess the standard of inhaler technique in Cystic Fibrosis patients.

Materials and Methods: Information on inhaler prescriptions was collected through a chart review of CF patients at the CF Unit, Cork University Hospital. Inhaler technique was assessed in one subset of patients using validated scoring systems and a self-reported adherence questionnaire was distributed to a further subset.

Key Results: 64.2% (N=173) were prescribed a Short-Acting B₂ Agonist (SABA), 52% were prescribed an ICS/Long-Acting B₂ Agonist Combination (ICS/LABA), and 15% were prescribed a Long-Acting Anticholinergic Bronchodilator. 29.5% of patients had an elevated IgE reading recorded in the preceding 12 months. Reversible PFTs were recorded in 11.6%.

83.3% (n=42) of patients demonstrated suboptimal inhaler technique (One-Sample t-test, $p < 0.001$), with the lowest mean score (0.594) achieved in the “Additional Steps” category ($p < 0.001$).

70.3% (n=37) self-reported an adherence rate of 81%-100% ($p < 0.01$). 26% (n=34) of patients identified difficulty in remembering to take ≥ 1 of their inhalers as a barrier to adherence.

Discussion: SABA and ICS/LABA inhalers were both shown to be prescribed in a majority of CF patients. Both the elevated IgE levels present in almost one third of the population and reversibility exhibited on PFTs in over ten per cent of patients suggest the presence of an asthmatic phenotype of CF among this population.

Few patients demonstrated satisfactory inhaler technique. Key steps identified for improvement of technique include allowing sufficient time between doses and rinsing of the mouth after corticosteroid inhalation. Self-reported adherence levels were high, but it is important to acknowledge that this result may be subject to response bias. Remembering to take doses was identified as a key barrier requiring attention in order to improve adherence.

Abstract Title:

Development of a Novel Massive Open Online Course in Travel Medicine.

Author and Affiliations:

Lim, BCW.^[1,2], Aida Lina Alias.^[2], Hasnain Zafar Baloch.^[2], Lydia Lee Sze Teng.^[2], Flaherty, G.^[1,2].

[1] School of Medicine, NUI Galway.

[2] School of Medicine, International Medical University, Kuala Lumpur, Malaysia.

Introduction:

Massive open online courses (MOOCs) are designed to accommodate large numbers of geographically dispersed learners. NUI Galway has a longstanding collaboration in travel medicine with its partner medical school, IMU. Few healthcare students receive exposure in travel medicine. We aimed to develop a novel MOOC in travel medicine suitable for undergraduate healthcare students.

Methods:

A course development team, comprising a travel medicine academic from NUI Galway, local IMU faculty and instructional/graphic designers, was convened in November 2017. The MOOC proposal was subsequently refined. Online course construction commenced in December 2017 and involved communication between team members based in Malaysia and Ireland. Lectures were recorded January-July 2018. Development of learning materials is ongoing, with a target completion date of December 2018.

Results:

The MOOC will be delivered to two multinational cohorts annually and is organised into five four-themed units: travel health risk assessment; pre-travel health advice; tropical infectious diseases; specialised travellers; and illness in returned travellers. MOOC participants will invest approximately 25 hours of learning in the course. Pedagogical methods include short video lectures, expanded lecture notes, webinars, a discussion forum, and formative quizzes. Learners completing the MOOC have the option of completing an MCQ to receive a printable certificate of achievement. The MOOC will be evaluated by surveying all course participants.

Conclusions:

This is the first MOOC in travel medicine and it may provide a model for development of collaborative international e-learning courses. It will address a significant deficit in undergraduate health professional education.

An analysis of potential drug-drug interactions in an aging HIV cohort.

Author: Pádraig Gardiner¹, Dr. Gabriella Rizzo²

1 School of Medicine, University College Cork; 2 Department of Medicine, Cork University Hospital

Introduction: The advent of antiretroviral drugs has transformed the treatment of HIV and has led to a dramatic increase in life expectancy of HIV patients. As a result HIV patients are living longer and are more likely to acquire comorbidities which require pharmacological management. This increased pill burden is likely to lead to an increase in potential drug-drug interactions (PDDIs) between antiretroviral drugs and co-medications.

Methods: The files of HIV patients, aged 50+ (n=140), attending the ID clinic in CUH were analysed to obtain demographic data. The pharmacy records of those patients were then analysed to obtain their ART regimens and co-medications. These were then screened for interactions using the University of Liverpool interaction database.

Results: 74.6% of patients studied took at least one co-medication with 49.2% of those patients having at least one potential drug interaction. A total of 23 yellow flag, 81 orange flag and 6 red flag interactions were detected. Of all medications prescribed 34.8% of those were found to have the potential to interact. Statins and Cholecalciferol were found to contribute the most to potential interactions causing 19% and 17.2% of the interactions detected respectively. Odefsey, Darunavir/Cobicistat and Darunavir/Ritinovir were found to have red flag interactions with Esomeprazole (3), Lercanidipine (2) and Clopidogrel (1) respectively. Of the variables examined, only an increased number of co-medications was found to increase the risk of a PDDI.

Conclusions: Care must be taken when prescribing for older HIV patients in order to optimise both their HIV care and co-morbid conditions.

Abstract Title:

Use of γ -H2AX as an indicator of DNA repair capacity in breast cancer cell lines.

Author and Affiliations:

Elizabeth Maher¹, Joana Passos² and Helen Dodson².

1. School of Medicine, NUI Galway, and
2. Discipline of Anatomy, CMNHS, NUI Galway

ABSTRACT:

DNA damage is a threat to genome stability and contributes to the process of tumorigenesis. H2AX, an abundant histone variant, is phosphorylated in response to DNA damage. Antibody detection of this mark, γ H2AX, is used in the laboratory and clinic to measure the DNA damage response. The number of γ H2AX foci and corrected total nuclear fluorescence (CTNF) signal was measured in three breast-derived cell lines which were untreated, treated with etoposide (10 μ M) or doxorubicin (0.2 μ g/ml). The cell lines, MCF10A, BT474 and MDA-MB231, model normal mammary epithelial cells, luminal-B and triple-negative breast cancer (TNBC), respectively. Cells were treated for 2hrs, fixed, stained and Z-stacks collected by confocal microscopy. The experiment was repeated 3 times and 20 cells per experiment were analysed using ImageJ and SPSS.

In untreated cells there was a statistically significantly higher number of foci and CTNF measured in the MDA-MB-231 (median CTNF 120) compared to BT474 (29) which are also statistically significantly higher than measured in MCF10A cells (9).

Both MCF10A and BT474 showed a statistically significantly higher number of foci and CTNF signal when treated with either doxorubicin or etoposide. However, the MDA-MB-231 responded differently to treatment with doxorubicin showing no difference when compared to when untreated.

These results show that cells derived from TNBC have a significantly higher amount of DNA damage than luminal-B and normal-derived cells.

Also, the TNBC-derived cells did not respond as expected to doxorubicin treatment. This resistance to DNA damage response activation following treatment with this chemotherapeutic agent warrants further investigation.

Title: An audit of LLETZ procedure in a Cork City colposcopy clinic

Authors and Affiliations: Rebecca Howley¹, Dr Matt Hewitt^{1,2}

¹ University College Cork, School of Medicine

² Cork University Maternity Hospital

Introduction: Large loop excision of the transformation zone (LLETZ) is the gold standard for treatment of cervical intraepithelial neoplasia (CIN), a premalignant condition of the uterine cervix. Excision depths should not exceed 12mm to minimise future obstetric risk. Prognosis is determined by the presence or absence of CIN at the margin of conisation. The aim of this study is to audit the LLETZ procedure in St Finbarr's colposcopy clinic by assessing depth of excision and margin rates and comparing these with current guidelines.

Materials and Methods: A retrospective study of all LLETZ performed between January 2016 – March 2018. The following factors were analysed: age, indication for LLETZ, colposcopist seniority, disease severity, margin status, specimen dimensions and number of excisions.

Results: 694 LLETZ met criteria for inclusion in the study. The mean depth of excision was 8.57mm (SD: 4.4). 576 (83%) were \leq 12mm. In total, there were 551 (79.4%) cases of CIN with 375 (68.1%) of these having high-grade dysplasia (CIN 3). Excisions were deeper when performed as a repeat LLETZ compared with first excision (mean 9.91mm versus 8.34mm, $P = 0.001$). Positive margins were found in 212 (30.5%) excisions. Deeper excisions, high grade CIN and colposcopist seniority were not found to influence margin status.

Discussion: Compliance with current guidelines on the use of LLETZ is good. However, excision depths exceeded 12mm in a number of cases. Depth of excision was greater in repeat LLETZ. No predictive factors for margin involvement were identified.

Abstract Title:

Audit of use of Lean Six Sigma Methodology shows reduction of inpatient waiting time for Peripherally Inserted Central Catheter (PICC) insertion

Author and Affiliations

Murray AS, Hughes P, Brennan M, Hynes J, Eustace S, Gilchrist S, Dolan A, Lawler LP.

Department of Radiology, Mater Misericordiae University Hospital, Eccles St, Dublin 7.

Introduction:

Lean Six Sigma is a methodology that relies on a collaborative team effort to improve performance by systematically removing waste, reducing variation and introducing consistency (1). PICCs have become standard of care for short to medium term venous access, and delayed insertion can delay treatment and prolong hospital stay.

Aim:

The aim of this project was to audit use of Lean Six Sigma methodology to reduce in-patient waiting time for insertion of PICCs.

Materials and Methods:

A review of inpatient PICC placement over a 6 month period identified factors that contributed to delays in PICC turnaround time (TAT). Applying Lean Six Sigma methodology, controllable factors were identified and changes implemented to reduce the TAT in a consistent manner. Results were audited after 6 months and 2 years.

Results:

The initial review showed the number of PICCs placed each day was highly variable with an average TAT of 3.7 days and 38% patients waiting over 4 days. Changes included patient preparation the day before, a designated porter, and two priority slots as first cases on the interventional radiology list. This simple approach saw the average turnaround time fall to 1.4 days at 6 months and 2.18 days at 2 years.

Conclusions:

By applying Lean Six Sigma methodology to the complex multifactorial processes involved from ordering a PICC to its final insertion, it was possible to identify areas for improvement and to introduce simple, effective measures which resulted in a significant sustained decrease in TAT.

References:

1. Amaratunga T, Dobranowski J. Systematic Review of the Application of Lean and Six Sigma Quality Improvement Methodologies in Radiology. Journal of the American College of Radiology. 2016;13(9):1088-1095.e7.

Title: Is heart rate variability (HRV) a predictor of intraventricular haemorrhage (IVH) in preterm infants?

Sarah Donoghue, School of Medicine, UCC

Supervisor: Professor Eugene Dempsey, Consultant Neonatologist, Cork University Maternity Hospital

Co-Investigators: John O' Toole, Vicki Livingstone, INFANT and Cork University Maternity Hospital

Introduction

IVH occurs in up to 30% of babies born before 28 weeks gestation, causing significant short and long term problems. HRV is a measure of autonomic function controlled by cardiorespiratory reflexes. Recent literature has suggested that depressions in HRV and decelerations are sometimes witnessed clinically if an acute central nervous system injury occurs, such as haemorrhage.

Aim

This study aims to describe HRV as a prognostic tool in diagnosing IVH.

Methods

This project analysed ECG data from 28 preterm infants who have been enrolled in the CUPID trial in CUMH.

- 1) An epoch of ECG free from major artefacts was extracted from the long-duration recordings. ECG was pruned and transformed into EDF.
- 2) The ECG R-peaks were identified by visual inspection using a UCC HRV Analysis software.
- 3) The HRV was computed from the R-R interval as in 1).

From the HRV, 7 features were extracted which were predetermined in 1996 by the TFESC and NASPE.

Results

6 of the 28 babies developed IVH. Aged 6 hours, a number of HRV features were associated with the development of IVH. These included sd of RR interval (45.3 vs 272 miliseconds, p value 0.046) and HF power (275 vs 104, p value 0.046).

Discussion

Some features of HRV are associated with the development of an IVH in a preterm's first 6 hours of life. A larger cohort of infants is needed to validate these features which may be a useful early biomarker for infants at risk of IVH.

Reference:RM Goulding, NJ Stevenson, DM Murray, V Livingstone, PM Filan, & GB Boylan, (2015). Heart rate variability in hypoxic ischaemic encephalopathy: correlation with EEG grade and two-year neurodevelopmental outcome. Pediatric Research, 77(5), 681–687. <https://doi.org/10.1038/pr.2015.28>

28 preterm infants:<32 weeks gestation

INFANT:Irish Centre for Foetal and Neonatal Translational Research

CUMH:Cork University Maternity Hospital

CUPID:(Clamping the Umbilical cord in Premature Deliveries is a Randomised Controlled Pilot Trial)-a prospective randomised trial of umbilical cord management

TFESC:Task Force of the European Society of Cardiology

NASPE:North American Society of Pacing and Electrophysiology.

Abstract Title:

Investigation of the immune modulating effects of low dose chemotherapy in colon cancer and its role in mediating macrophage function.

Author and Affiliations:

A O'Mahony¹, N Leonard², H Egan², K Lynch², AE Ryan^{2,3}

1. School of Medicine, NUI Galway
2. Immunology Group, Regenerative Medicine Institute (REMEDI), NUI Galway.
3. Discipline of Pharmacology + Therapeutics, NUI Galway.

Introduction:

Colorectal cancer is a leading cause of cancer-related death worldwide. Treatment limitations include resistance to conventional chemotherapy. Although traditionally believed to be immunosuppressive, emerging evidence demonstrates that many chemotherapeutics stimulate immune cells in a dose-dependent manner. When bound to antibodies attached to pathogens, Fcγ receptors on macrophages stimulate tumour cell phagocytosis. This is antibody-dependent cellular phagocytosis (ADCP).

Aims:

To establish the existence of this immune-stimulatory phenomenon in colon cancer in the context of drugs likely to be used in combination with monoclonal antibody-based immunotherapies for colon cancer treatment.

Methods:

HT29 colon cancer cell media was placed on THP-1 macrophages for 24 and 48 hours. Using flow cytometry, it was observed that Fcγ receptor CD64 expression decreased after 48 hours, suggesting the tumour microenvironment decreases the potential of macrophages to mediate ADCP. In an attempt to reverse this, HT29 cells were treated with low dose cyclophosphamide for 24 hours. After washing with PBS, subsequent media was collected at 24 and 48 hours and placed onto macrophages.

Results:

It was observed that at 48-hour time we had a restoration of CD64. This potentially indicates that low dose cyclophosphamide overcomes the tumour microenvironment mediated decrease in CD64, potentially increasing macrophage ADCP ability.

Conclusion:

These findings support evidence that chemotherapeutics stimulate immune cells in a dose-dependent manner. Our findings suggest that low dose cyclophosphamide could be used to overcome the tumour microenvironment mediated suppression in CD64. Future work will confirm the functional consequences of macrophage activation on tumour cell clearance in these assays.

THE EFFECTS OF MIRENA ON THE MYOMETRIAL VASCULAR BED IN PATIENTS WITH MENORRHAGIA

S Kennedy BSc (hons) ¹, P Dockery PhD ²

¹ University College Cork

² National University of Ireland Galway

INTRODUCTION: The Mirena intrauterine system (IUS) has greatly improved treatment options for women with menorrhagia. Although the effects of locally administered progesterone on the endometrium have been thoroughly investigated, its effects on the myometrium have not been explored.

AIMS: This study aims to quantify the vasculature of non-gravid myometrium and determine any morphological changes within the myometrial vascular bed after IUS exposure in patients with menorrhagia.

MATERIALS AND METHODS: Myometrial tissue was obtained from women with menorrhagia undergoing elective hysterectomy. Pilot study participants were divided into two study arms; patients with an IUS inserted 6-10 weeks prior to surgery (n=4), and patients never exposed to an IUS (n=4). Fluorescent and Masson's Trichrome staining techniques were applied for light microscopy imaging. Stereological techniques were employed to provide unbiased estimations of tissue morphology.

RESULTS: This study measured a significant change in myometrial vasculature after exposure to IUS treatment. Patients given IUS treatment showed an increased radial diffusion distance per blood vessel ($p < 0.05$), a trend towards decreased numbers of blood vessels per mm^2 ($p = 0.055$) and decreased length density ($p = 0.055$). We measured no change to the ratio of smooth muscle cells and extracellular matrix within the myometrium ($p > 0.05$).

DISCUSSION: Overall, this pilot study has shown that locally administered progesterone causes alterations within the myometrium. This provides a novel insight into the effect of progesterone on myometrial vasculature and further study may lead to a better understanding of hormonal adenomyosis treatment and breakthrough bleeding.

Abstract Title:

Depression, anxiety and quality of life in a palliative population: a comparative study across different settings - hospital and community.

Author and Affiliations:

Salmon, C^{1,2}, Reilly L^{3,4}, McMahon E¹, Doherty AM^{1,2}.

- [1] Department of Psychiatry, Galway University Hospital.
- [2] School of Medicine, NUI Galway.
- [3] Department of Palliative Care, Galway University Hospital.
- [4] Galway Hospice Foundation, Renmore.

Introduction:

Depression is common among patients receiving palliative treatment, with prevalence rates of 25% reported, and is associated with reduced quality of life. Little research has been conducted into the role of adjustment disorder in these symptoms, and there is no published data regarding prevalence of depression or anxiety symptoms across palliative settings: at home, in hospice and in acute hospital. Management plans focus on managing distressing physical pain symptoms, while psychological problems may also have a significant effect on quality of life. Understanding adjustment and depressive disorders in this population better may allow the development of targeted treatments to improve quality of life.

Aim:

To examine the relationship between symptoms of depression, anxiety and adjustment disorder in a palliative population across three settings.

Methods:

Patients attending the Palliative Medicine services were recruited to cross-sectional study. We used the following validated measures: Hospital Anxiety and Depression Scale (HADS), the short form of the Adjustment Disorder-New Module scale (ADMN-6) and the EQ-5D to measure quality of life.

Results:

Of 60 patients approached 40 agreed to participate, [23 (38.333%) males/females]. The mean scores on HADS were highest in the setting 1, with mean scores of A and B in setting 2 and setting 3.

Conclusion:

Depressive symptoms and adjustment disorders are common in this population across the three clinical settings. Further research will examine treatment options.

Title: Parental Attitudes towards HPV Vaccination: A Qualitative Study

Authors and Affiliations: S Creed¹ T Foley²

1. School of Medicine, University College Cork, Cork, Ireland
2. General Practitioner and Lecturer, Department of General Practice, University College Cork, Cork, Ireland

Introduction

The Human Papillomavirus (HPV) vaccine protects against cervical cancer, reducing the risk by over 70%. Over the past 3 years the vaccination rate in Ireland has dropped considerably. Despite a renewed campaign, current figures indicate a 61% uptake, which is still below the target of 80%. While anti-HPV vaccination groups have been blamed, the specific reasons for poor uptake remain unclear.

The aim of this study is to explore current parental attitudes towards the HPV vaccine.

Methods

A qualitative study using face-to-face interviews with parents of girls aged 11-13 years, who had not yet received the HPV vaccine. Interviews, all in Co Cork, were audio-recorded, transcribed verbatim and analysed for emergent themes, using a grounded theory approach.

Results

18 interviews were performed with 19 participants (14 female and 5 male), average age 45.5 years (range 39-55 years) and average interview duration was 42 minutes (range 24-56 minutes). Reasons parents agree to HPV vaccination include the desire to protect and trust in medical opinion, while barriers included fear of side effects, lack of information, peer-pressure, and concern regarding promiscuity or premature sexual behaviour. The greatest sources of influence on parents were the local GP and the media.

Discussion

Notwithstanding improved HPV vaccination rates recently, significant parental concerns remain, resulting in continued suboptimal rates of vaccination. Clinicians need to be aware of the impact of negative HPV reports by the media. Specific concerns raised by parents need to be addressed in detail and disseminated to this important target audience.

Abstract Title:

Potential of Extracellular Vesicles (EVs) in Patient Serum as Circulating Biomarkers of Breast Cancer.

Author and Affiliations:

Shafik L., Khozi B., Challapalli R., O'Neill C., O'Connell E., Giligan K., Dwyer R.M

(Discipline of Surgery, Lambe Institute for Translational Research, School of Medicine, NUI Galway).

Introduction:

There is an urgent need for a biomarker to support early detection of breast cancer to improve patient survival. Breast cancer cells actively secrete extracellular vesicles (EVs) containing microRNAs(miRs), which may be reflective of cell characteristics. EVmiRs may represent an ideal biomarker of disease.

Aim:

To isolate EVs from sera of breast cancer patients and healthy controls and investigate the presence of miRs of interest.

Methods:

Following ethical approval and informed consent, EVs were isolated from sera of breast cancer patients (n=20) and healthy controls(n=20) using differential centrifugation, microfiltration and ultracentrifugation. Nanoparticle tracking Analysis (NTA) was used to determine the number and size of EVs. RNA was extracted from EVs using the MagnaPure system, reverse transcribed and amplified using PCR targeting miR-181b. Protein Estimation was conducted using a BCA assay.

Results:

EVs were successfully isolated from all serum samples (n=40). NTA revealed singly dispersed vesicles, with the majority of a size similar to exosomes (30-150nm). The range of EV concentrations was 5.11×10^9 /ml to 8.9×10^{10} /ml with a significantly higher concentration detected in breast cancer patient sera compared to healthy controls ($p < 0.05$). There was no relationship between protein yield and EV concentration ($\rho = 0.124$, $p = 0.293$). miR-181b was detectable in 6 of 20 breast cancer sera and 15 of 20 healthy control samples.

Conclusion:

Protein yield is not a suitable indicator of EV concentration and direct measurement using NTA is required. miR-181b is more strongly detected in EVs of healthy individuals than breast cancer patients, however a larger sample size is required to validate these findings.

Title: Cardiovascular risk assessment in asymptomatic patients with inflammatory arthritis.

Authors and Affiliation: Tommy Harty, UCC, Dr Sinead Harney, Consultant Rheumatologist, CUH, Dr Miriam O Sullivan, Consultant Rheumatologist, Our Lady's Hospital, Co. Leitrim;

Background

Cardiovascular disease (CVD) in patients with rheumatoid arthritis (RA) [Avina-Zubieta 2012] and other inflammatory joint disorders (IJD) [Polachek et al 2017], is significantly increased compared to the general population. For RA, the extent of this increased risk is comparable to that reported for patients with diabetes mellitus (DM), [Van Halm 2009] and requires immediate and targeted cardiovascular (CV) risk management.

Methods

The SURF-RA questionnaire regarding traditional cardiovascular risks and current and past medications was distributed to all patients with a IJD attending the Rheumatology Clinic at CUH.. Traditional and rheumatoid specific CVD blood markers were assessed in this cohort of patients. Disease activity was measured using the DAS28 formula. Comparisons of patients with varying levels of disease activity with respect to their CV risk profile was examined using Mann Whitney U tests. Correlation testing was used to assess CV risk and disease activity.

Results

The analysis included 116 patients with IJD. Of which, 75 had a diagnosis of RA, 22 had a diagnosis of psoriatic arthritis (PsA), 17 had a diagnosis of ankylosing spondylitis. Disease activity was positively correlated to HbA1c level [$r = .294, p < 0.05$] and to QRISK3 score [$r = .252$], however this result was not statistically significant.. No significant association was found when comparing different rheumatological treatments and with varying degrees of disease activity. Patients with IJD were found to be under-managed in terms of medicating for specific CV risk factors.

Discussion

Patients with a higher level of disease activity had a higher cardiovascular event risk profile. Comorbidities in patients with chronic diseases including RA have been shown to be under-recognised and under-treated [Dougados et al 2014]. This remains the case in the population examined and cardiovascular management in patients with IJD requires re-evaluation in line with EULAR recommendations.

References

Avina-Zubieta JA, Thomas J, Sadatsafavi M, et al. Risk of incident cardiovascular events in patients with rheumatoid arthritis: a meta-analysis of observational studies. *Ann Rheum Dis* 2012;6:1524–9.

Polachek A., et al 2017. Risk of Cardiovascular Morbidity in Patients With Psoriatic Arthritis: A Meta-Analysis of Observational Studies. *Arthritis Care & Research* Vol. 69, No. 1, January 2017, pp 67–74

Van Halm VP, Peters MJL, Voskuyl AE, et al. Rheumatoid arthritis versus diabetes as a risk factor for cardiovascular disease: a cross-sectional study, the CARRE Investigation. *Ann Rheum Dis* 2009;68:1395–400.

Dougados M, et al. Prevalence of comorbidities in rheumatoid arthritis and evaluation of their monitoring: results of an international, cross-sectional study (COMORA). *Ann Rheum Dis*. 2014 Jan;73(1):62-8. doi: 10.1136/annrheumdis-2013-204223. Epub 2013 Oct 4.

Abstract Title:

Parental Attitudes to Influenza Infection: Willingness to Annually Vaccinate Their Child.

Author and Affiliations:

Woon, Y. (1), Moylett, E. (1,2)

(1) School of Medicine, NUI Galway.

(2) Academic Department of Paediatrics, NUI Galway.

Introduction: Influenza is a highly infectious, acute viral respiratory tract infection which causes severe or fatal complications in young children.¹ As Ireland anticipates possible recommendations for universal annual paediatric influenza vaccine, it becomes crucial to identify the key factors affecting routine influenza vaccination uptake.²

Aim: To explore parental knowledge and attitudes towards influenza infection and the factors affecting willingness to routinely vaccinate their child.

Methods: This descriptive study involved interviewing parents (n=300) who attended the paediatric Outpatient Department at University Hospital Galway. An initial pilot study assisted with standardizing the questionnaire. Ethical approval was granted by Galway Clinical Research Ethics Committee and data were analyzed using SPSS.

Results: Majority of respondents were Irish (n=251, 83.7%) and 236 (78.7%) had private health insurance. Most common age range was 31-40 (n=163, 54.3%). Less than 40% had completed a Bachelor's degree (n=113, 37.7%). Most participants (n=226, 75.3%) agreed with annual influenza vaccine for their child if recommended. The factors below were shown to affect potential annual influenza vaccine uptake (p<0.05).

Variables	Willing to vaccinate
1) Positive general perception towards childhood immunization	96.1%
2) Parents who received influenza vaccine	56.2%
3) Positive childhood immunization experiences	98.7%
4) Amongst community supporting influenza vaccination	73.9%
5) No concerns on influenza vaccine	88.5%
6) High test score for parental knowledge in influenza vaccine	28% achieved full marks

Conclusion: The overall feedback for routine paediatric influenza vaccination was positive. Parental knowledge, attitudes, prior history of vaccination and social norms each had an independent influence on parents' willingness to vaccinate their child.

References:

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Real world practice patterns for NSCLC patients in an Irish setting: a multi-centre study on targetable gene alterations

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Introduction The management of advanced NSCLC has evolved with the discovery of targetable alterations in *EGFR*, *ALK*, *ROS1*, and *BRAF* genes. The aims of this study were to characterise the incidence of gene alterations, and treatment outcomes for Irish NSCLC patients in the real-world setting.

Methods A retrospective study of NSCLC patients from two Irish oncology centres with samples sent for molecular testing between September 2009 and May 2018 was performed.

Results 67/370 (18.1%) patients harboured ≥ 1 targetable gene alteration(s) – molecular testing, performed to variable extents, identified alterations in *EGFR* (57/349, 16.3%), *ALK* (6/199, 3%), *BRAF* (3/60, 5%), and *ROS1* (1/45, 2.2%) genes. *KRAS* mutations, which are non-targetable, were found in 32/81 (39.5%) patients. Patients with private health insurance (24% vs 14%, $p=0.006141$) – a surrogate marker of socioeconomic status and light/never smoking – were more likely to harbour a targetable alteration. Patients with ≥ 1 *EGFR* alteration(s) receiving first-line *EGFR*-TKI ($n=26$) had 50% ORR, PFS of 9.3 months, OS of 26.8 months. Patients ($n=4$) with de novo *T790M* and sensitising *EGFR* alterations who received first-line *EGFR*-TKI had 66% ORR, PFS of 17.0 months, OS of 28.7 months. *ALK*-positive patients who received first-line crizotinib ($n=4$) had 75% ORR, PFS of 6.5 months.

Discussion The incidence of targetable alterations is comparable with other Caucasian populations. Targetable alterations were associated with surrogate markers of higher socioeconomic status. Interestingly, *KRAS* mutations were more frequent in the Irish NSCLC population, and patients with de novo *T790M* resistance and coexisting sensitising *EGFR* alterations still exhibit sensitivity to *EGFR*-TKIs.