School of Medicine

Undergraduate Research Day

Wednesday 3rd October 2018

Large Lecture Theatre (1030)
Clinical Science Institute
Introduction

I am delighted to welcome you to the annual School of Medicine Undergraduate Research day. This year 90 students and 75 supervisors took part in the programme. Today you will hear about research performed in a wide range of Disciplines here on campus, at the Sligo, Donegal and Mayo Academies, affiliated hospitals and abroad.

The level of engagement from students has been exemplary throughout the year, from funding applications in February to workshops and seminars throughout the summer months. Students were awarded over €78,000 in external competitive funding from the Wellcome Trust and Health Research Board. Students were also generously supported by funding from the School of Medicine, Travel Medicine Society of Ireland, Donegal Clinical Research Academy and other sources secured by project supervisors. Impressive research outputs are beginning to accumulate, with students’ work being presented at national and international meetings.

This programme would not be possible without the dedicated supervisors, who assist in preparation of grant applications, provide a stimulating and supportive research environment, and help with abstract preparation and presentation skills. Gloria Avalos continues to provide invaluable statistical support through tutorials here on campus and at the Academies. I would like to thank members of the School of Medicine Research Committee who were involved in abstract marking and preparations for the day. I am also very grateful to Máire Joyce who helped with organisation of the meeting, and all the adjudicators who have committed to reviewing the work presented today.

The John D. Kennedy Memorial Lecture will be delivered by Professor Dara Byrne, Personal Professor Simulation Education in Healthcare and Director of Simulation Saolta University Health Care Group and Irish Centre for Applied Patient Safety and Simulation (ICAPSS).

Finally I would like to thank the Head of School, Dr Carmel Malone and the Dean of the College, Professor Timothy O’Brien, for their ongoing support of the programme.

Dr Róisín Dwyer
Coordinator of the School of Medicine Research Programme
School of Medicine Research Committee

- Dr Dearbháile Morris, Chairperson
- Máire Joyce (Admin Support)
- Dr Róisín Dwyer
- Professor Matthew Griffin
- Dr Sharon Glynn
- Dr Declan McKernan
- Dr Aideen Ryan
- Professor Stewart Walsh
- Dr Aideen O’Doherty
- Dr Helen Dodson
- Dr Martin O’Halloran
- Dr Conall Dennedy
- Professor Timothy O’Brien

Adjudicators for Oral Presentations

- Prof Andrew Smyth
- Dr Sinead Lydon
- Dr Declan McKernan
- Dr Laura Barkley
- Dr Michael Reilly
- Dr Kerry Ward

Student Adjudicators:

- Ellen Brooks
- Fiona Cullen
- Niall Gray
- Patricia Hayes

Adjudicators for Poster Presentations:

- Katie Gilligan
- Úna McVeigh
- Dr Conor Judge
- Dr Sarah Cormican
- Dr Mark Gurney
- Dr Oliver Treacy
<table>
<thead>
<tr>
<th>Oral Presentation Session I</th>
<th>Chair: Professor Garry Duffy</th>
</tr>
</thead>
</table>
| **9.00** Welcome and Opening Address: Dr Carmel Malone  
*Head of School of Medicine* | **9.10** Ahmed, Owais  
Evaluating the reliability of two questionnaires for determining the health-related quality of life of older adults living in Irish nursing homes. |
| **9.20** Conlon, Chloe  
Tumour conditioning by cyclophosphamide to enhance Natural Killer cell cytotoxicity in Multiple Myeloma. | **9.30** Davey, Matthew  
Clinico-pathologic correlates and oncologic impact of Oncotype DX in the West of Ireland. |
| **9.40** Duignan, Erica  
Outcomes of a Neuro-Endocrine Tumor Database for Improved Patient Care at an Academic Tertiary Referral Hospital. | **9.50** Hehir, Aoife  
What are the experiences of caregivers of school-aged children with high-functioning autism in accessing and utilising health care services? A cross-sectional survey. |
| **10.00** Keane, Alan  
The Effect of Conditioned Medium Obtained from Syndecan-2 Positive Selected Mesenchymal Stromal Cells on Endothelial Cell Migration and Tubulogenesis. | **10.10** Logan, Holly  
Bovine Aortic Arch: A Novel Risk Factor for Intracranial Haemorrhage. |
| **10.20** Mannion, Helen  
Sleep Disturbance in Older Patients in the Emergency Department: Prevalence, Predictors and Associated Outcomes. | **10.30** Coffee Break + Poster Viewing CSI 2010 |

<table>
<thead>
<tr>
<th>Oral Presentation Session II</th>
<th>Chair: Dr Sonja Khan</th>
</tr>
</thead>
</table>
| **11.00** McDonnell, Tara  
Mechanisms underlying the increased fracture risk associated with Type 2 Diabetes Mellitus | **11.10** McGarry, Jennifer  
Elevated Expression of PD-L1 in Tumour Specific Stroma from Breast Cancer Patients. |
| **11.20** McHugh, Fiachra  
Transcatheter Aortic Valve Implantation in Patients with Severe Bicuspid Aortic Valve Stenosis: First Global Prospective Study. | **11.30** Moran, Matthew  
Prostate MR: 'the MAN-ogram', no longer just a cancer staging tool. |
| **11.40** Murphy, Sarah  
An Econometric Analysis of Growing Up in Ireland Data, to Look at the Incidence of Illnesses Among Breastfed, Non-Breastfed and Exclusively-Breastfed Cohorts. | **11.50** Mustafa, Ilyas  
Calculation and analysis of the proportion of avoidable attendances at a rural Irish Emergency Department. |
| **12.00** Neo, Wee Xuan  
Impact of Middle Cerebral Artery Occlusion (MCAO) and Reperfusion on Microglia, MMP9 expression, and micro-vessels in a Sprague Dawley rat model. | **12.10** Piong, Chee Lin  
Prevalence of Polypharmacy, depression, and anxiety in 197 older patients in Sligo. |
<table>
<thead>
<tr>
<th>Time</th>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.20</td>
<td>Ravenscroft, Liezel</td>
<td>Exploring the Effect of Social Media on Human Papillomavirus Vaccine Uptake and Attitudes.</td>
</tr>
<tr>
<td>12.30</td>
<td></td>
<td>Lunch and Poster Viewing CSI 2010</td>
</tr>
</tbody>
</table>

### Oral Presentation Session III

**Chair:** Dr Martin O’Halloran

<table>
<thead>
<tr>
<th>Time</th>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.40</td>
<td>Sim, Nicole</td>
<td>An investigation of how saliva and salivary proteins may interact with polyphenol-rich beverages to alter their available antioxidant capacity</td>
</tr>
<tr>
<td>14.50</td>
<td>Walsh, Mary</td>
<td>Tackling Sepsis: Improving Performance of Peripheral Blood Cultures (PBCs) in Non-Consultant Hospital Doctors (NCHDs) using a simulation-based intervention incorporating precision teaching.</td>
</tr>
<tr>
<td>15.00</td>
<td>Wong, Benjamin</td>
<td>Seawaters and Risk of Human Exposure to Antibiotic Resistant Bacteria.</td>
</tr>
<tr>
<td>15.10</td>
<td>Zainol Abidin, Zudafienah</td>
<td>Development of a microbial burden-responsive antimicrobial hydrogel for the prevention of catheter related infection.</td>
</tr>
<tr>
<td>15.20</td>
<td>Zhang, Anyi</td>
<td>Can left atrium reverse remodelling be used as an indication for improved functional status of patients who have undergone mitral valve intervention for mitral regurgitation?</td>
</tr>
<tr>
<td>15.30</td>
<td></td>
<td>Coffee + Poster Viewing</td>
</tr>
</tbody>
</table>

### Invited Lecture and Prize Giving

**22nd John D. Kennedy Lecture**

Professor Dara Byrne, Personal Professor Simulation Education in Healthcare and Director of Simulation Saolta University Health Care Group and Irish Centre for Applied Patient Safety and Simulation (ICAPSS)

“Simulation Based Education in the 21st Century”

**Presentation of Prizes**

Dr Carmel Malone, Head of School of Medicine

**Pizza Reception Hosted by MedSoc, CSI Canteen**
<table>
<thead>
<tr>
<th>Poster Board</th>
<th>Presenting Author</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abbas Syed, J.</td>
<td>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.</td>
</tr>
<tr>
<td>2</td>
<td>Abdul-Fattah, S.</td>
<td>Bridging the gap: an evaluation of palliative day care services.</td>
</tr>
<tr>
<td>3</td>
<td>Ahmad Fuad, M.F.</td>
<td>Development of calcaneus bone phantom for benchtop testing in microwave-based diagnostic of osteoporosis.</td>
</tr>
<tr>
<td>4</td>
<td>Ahmad Saifuddin, M.L.</td>
<td>A Retrospective Study: Assessment and Management of Acute Kidney Injury in Letterkenny University Hospital.</td>
</tr>
<tr>
<td>5</td>
<td>Al Shizawi, T.</td>
<td>Breastfeeding and maternal health outcomes: a review of systematic reviews</td>
</tr>
<tr>
<td>6</td>
<td>Alrumhi, D.</td>
<td>An educational tool - a pictorial review of orbital emergencies.</td>
</tr>
<tr>
<td>9</td>
<td>Butler, T.</td>
<td>Fistula failings: To identify, explore and explain utilisation of arteriovenous fistulae (AVF) for vascular access for patients on haemodialysis.</td>
</tr>
<tr>
<td>10</td>
<td>Chai, S.Y.</td>
<td>Developing Parameters for Improved Trapeziometacarpal Joint Prostheses - Data from Cadaveric Joints</td>
</tr>
<tr>
<td>12</td>
<td>Chin, M.</td>
<td>Quantifying fibrous capsule formation around an implant for treatment of diabetes using Micro Computed Tomography (MicroCT).</td>
</tr>
<tr>
<td>13</td>
<td>Chopra, P.</td>
<td>Role of Aerobic Exercise in Cancer Rehabilitation and Recovery.</td>
</tr>
<tr>
<td>14</td>
<td>Clinton, N.</td>
<td>Functional Characterisation of Purinergic Signalling in Synoviocytes for Potential use in Osteoarthritis.</td>
</tr>
<tr>
<td>15</td>
<td>Edward, S.L.</td>
<td>Survey of Nurses' readiness to the use of ASQ-3 Questionnaire for Core Developmental Surveillance Checks.</td>
</tr>
<tr>
<td>16</td>
<td>Eow, S.Y.</td>
<td>Role of actinomycoses in chronic tonsillitis.</td>
</tr>
<tr>
<td>17</td>
<td>Fahy, R.</td>
<td>Otoendoscopy - A new eye on the ear.</td>
</tr>
<tr>
<td>18</td>
<td>Flynn, D.</td>
<td>Health needs of homeless people in Galway</td>
</tr>
<tr>
<td>19</td>
<td>Forde, I.</td>
<td>Towards shared decision-making in consultations: Assessing the feasibility and acceptability of the Diabetes Medication Choice Decision Aid to facilitate involvement of people with type 2 diabetes in decisions about medication adjustment</td>
</tr>
<tr>
<td>20</td>
<td>Ganter, N.</td>
<td>After the transition: An investigation into attendance at Adult Mental Health Services by patients referred by Child and Adolescent Mental Health Services in a geographically-defined catchment area.</td>
</tr>
<tr>
<td>21</td>
<td>Gillespie, C.</td>
<td>Paediatric Emergency Medicine (PEM) Resource Utilisation - can we plan in advance?</td>
</tr>
<tr>
<td>Page</td>
<td>Author</td>
<td>Title</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>22</td>
<td>Hand, A.</td>
<td>Optimization of macromolecular crowding (MMC) in human umbilical cord mesenchymal stem cell culture (hUCSC) for the development of a wound healing cell therapy product.</td>
</tr>
<tr>
<td>23</td>
<td>Hasnol, M.H.</td>
<td>Retrospective analysis of last minute travellers attending a specialist travel medicine clinic in Ireland.</td>
</tr>
<tr>
<td>25</td>
<td>Kakodkar, P.</td>
<td>Aspartyl-aminopeptidase is an early-stage biomarker for CLL.</td>
</tr>
<tr>
<td>26</td>
<td>Le, Ashley</td>
<td>Diabetes and Dementia: prevalence and comorbidities in active cases attending Psychiatry of Old Age and Geriatric Medicine services in the North West of Ireland.</td>
</tr>
<tr>
<td>27</td>
<td>Lim, B.</td>
<td>Development of a Novel Massive Open Online Course in Travel Medicine.</td>
</tr>
<tr>
<td>28</td>
<td>Lun Lim, Z.</td>
<td>Impact of Time and Changing Demographics on Triple Negative Breast Cancer Subtypes and Outcomes in the West of Ireland 2001-2015</td>
</tr>
<tr>
<td>29</td>
<td>Maher, E.</td>
<td>Use of γ-H2AX as an indicator of DNA repair capacity in breast cancer cell lines.</td>
</tr>
<tr>
<td>31</td>
<td>McDermott, D.</td>
<td>The characteristics and prognosis of patients with Critical Limb Ischaemia (CLI) who may benefit from autologous stem cell therapy.</td>
</tr>
<tr>
<td>32</td>
<td>Ni Theimhneáin, R.</td>
<td>Retrospective analysis examining the effect of macrophage infiltration to the tumour microenvironment on the therapeutic response of advanced melanoma.</td>
</tr>
<tr>
<td>33</td>
<td>O'Sullivan, D.</td>
<td>A systematic review of the prognosis of patients with apparent treatment resistant hypertension (aTRH)</td>
</tr>
<tr>
<td>34</td>
<td>Oh, Ke En</td>
<td>Travel medicine research in the new millennium: a bibliometric analysis of articles published in Travel Medicine and Infectious Disease, 2003-2018</td>
</tr>
<tr>
<td>35</td>
<td>O'Mahony, A.</td>
<td>Investigation of the immune modulating effects of low dose chemo-therapy in colon cancer and its role in mediating macrophage function.</td>
</tr>
<tr>
<td>36</td>
<td>O'Regan, A.</td>
<td>An exploratory study on the prevalence of human papillomavirus in patients with inflammatory bowel disease</td>
</tr>
<tr>
<td>37</td>
<td>Power, R.</td>
<td>Characterising an Inflammatory Model of Osteoarthritis in Human Chondrocytes.</td>
</tr>
<tr>
<td>38</td>
<td>Quek, R.</td>
<td>Validation of a western scoring system on large Asian series of outcomes following elective laparoscopic cholecystectomy; a value driven outcome based analysis.</td>
</tr>
<tr>
<td>39</td>
<td>Salmon, C.</td>
<td>Depression, anxiety and quality of life in a palliative population: a comparative study across different settings - hospital and community.</td>
</tr>
<tr>
<td>40</td>
<td>Shafik, L.</td>
<td>Potential of Extracellular Vesicles (EVs) in Patient Serum as Circulating Biomarkers of Breast Cancer.</td>
</tr>
<tr>
<td>41</td>
<td>Tan, Cerie</td>
<td>A survey on patient's attitudes and perceptions of bio-banking for Breast Cancer Research in Ireland.</td>
</tr>
<tr>
<td></td>
<td>Name</td>
<td>Title</td>
</tr>
<tr>
<td>---</td>
<td>------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>42</td>
<td>Tang, Wen Xi</td>
<td>Role of Mitophagy Receptors in Regulating UPR signalling.</td>
</tr>
<tr>
<td>43</td>
<td>Teh, Natalie</td>
<td>'How should she be managed?' Representations of patients and doctors in the discourse of case vignettes.</td>
</tr>
<tr>
<td>44</td>
<td>Teo, Ruey Ying</td>
<td>Non-invasive imaging of the carotid artery using co-registered photoacoustic and duplex ultrasound.</td>
</tr>
<tr>
<td>45</td>
<td>Woon, Y.</td>
<td>Parental Attitudes to Influenza Infection: Willingness to Annually Vaccinate Their Child.</td>
</tr>
<tr>
<td>46</td>
<td>Zainol Abidin, Zuhairi</td>
<td>Assessing hemodynamic and mechanical functionality of a novel intra-left ventricular device in an ex-vivo model.</td>
</tr>
<tr>
<td>47</td>
<td>Murray, AS</td>
<td>Audit of use of Lean Six Sigma Methodology shows reduction of inpatient waiting time for Peripherally Inserted Central Catheter (PICC) insertion</td>
</tr>
</tbody>
</table>
Oral Presentation Abstracts
Abstract Title:

*Evaluating the reliability of two questionnaires for determining the health-related quality of life of older adults living in Irish nursing homes.*

Authors and Affiliations:

**Ahmed, O.,** and **Barrett, E.**

School of Nursing & Midwifery, NUI Galway.

Background:

It has become increasingly more common to use health-related quality of life (HRQoL) scales such as the Nottingham Health Profile (NHP) as an outcome measure in the assessment of chronic disease and quality of life in older adults. Newer instruments have since been developed, such as the Investigating Choice Experiments for the Preferences of Older People Capability Index (ICECAP-O) that measures wellbeing in a broader sense. However, inter-rater reliability of these tools in Irish older adults living in nursing homes is not clear.

Objectives:

The primary aim of this study was to evaluate the intra-rater reliability of the ICECAP-O and NHP scales for use in nursing homes.

Method:

Questionnaires were administered to 25 older adults living in two Irish nursing homes, who were part of a larger feasibility study. Repeat measurements were taken after two weeks. Specific training was received prior to the study to ensure a standardized approach. The study was approved by NUI Galway Research Ethics Committee. Data analysis was carried out using SPSS v24.

Results:

Cronbach's alpha calculated for the NHP was 0.73, whereas for the ICECAP-O it was 0.65. Interclass correlation coefficient (ICC) was 0.88 for the total NHP score and 0.75 for the ICECAP-O index score. An 11% Ceiling effect was found for the total NHP scores.

Conclusions:

Interviewer-administered NHP is a more feasible and reliable indicator of HRQoL in older adults than the ICECAP-O. This finding is important for researchers who wish to measure HRQoL as an outcome within interventional studies.
**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:**  

Abstract Title:
Clinico-pathologic correlates and oncologic impact of Oncotype DX in the West of Ireland.

Authors and Affiliations:
DAVEY Matthew, ELLIOTT Jessie A, MEDANI ABD ELWAHAB Sami, KERIN Michael J

Background:
Breast Cancer is the most prevalent cancer among women worldwide, and is the leading cause of death via cancer in women (1). Oncotype DX is a genomic assay assessing 16 genes that are strongly linked to Breast Cancer, and 5 other genes comparator reference genes (2). It is an algorithm used to assess the likelihood of the recurrence of breast cancer, as well as the likelihood of a patient seeing a benefit from being treated with chemotherapy.

Oncotype DX testing may facilitate personalisation of treatment, minimizing treatment associated toxicity among patients at low risk of recurrence. The aim of this study was to determine the impact of Oncotype DX with respect to adjuvant oncologic treatment, disease-free and overall survival.

Methods:
Consecutive patients with non-metastatic ER/PR+, HER-2 negative, axillary node negative breast cancer treated from 2001-2015 were studied, with Oncotype DX testing undertaken as routine since 2011. Clinicopathologic correlates of the Oncotype score were determined, and independent predictors of disease-free (DFS) and overall survival (OS) assessed using multivariable Cox proportional hazards regression.

Results:
725 patients were studied for whom Oncotype DX results were available in 244 (33.4%). Mean±SD Oncotype score was 18.4±8.2 with 53.4%, 39.7% and 6.9% exhibiting scores of <18, 18-30 and >30, respectively. Oncotype score was significantly associated with lower ER (P<0.001) and PR (P<0.001) positivity, greater Ki67 (P=0.001) and pT stage (P<0.001), with ER score (P=0.05), PR score (P<0.001) and Ki67 (P=0.016) independently predicting Oncotype score. Adjuvant chemotherapy utilisation was 58.1% versus 62.1% among patients who underwent Oncotype testing (P=0.34), with no change in DFS (P=0.87) or OS (P=0.49). Oncotype score did not impact DFS or OS on univariable or multivariable analysis.

References:

Abstract Title:

Outcomes of a Neuro-Endocrine Tumor Database for Improved Patient Care at an Academic Tertiary Referral Hospital

Authors

Erica Duignan, Nessa Keane, Marcia Bell, Derek T O’Keeffe

Abstract:

Clinical audit is an integral part of good patient care. Neuroendocrine Tumors (NETs), rare epithelial neoplasms with predominant neuroendocrine differentiation, can arise in most organs of the body. They have an incidence of 0.2-2.5 cases per 100,000 population, a prevalence of 35 cases per 100,000/year and account for 0.5% of all cancers. NET management is complex. Endocrinologists are often involved due to the hormone profile of the clinical disease, as well as oncologists, pathologists and radiologists. The goal of this project was to integrate best practice international guidelines on the management of NETs into a novel online NET patient database. This would ensure accurate audit and assessment of our NET patients and optimum management per the latest recommendations. With ethical approval, we combined patient data from all the hospital computer systems to create a unique online profile for each patient. Our work to date has shown that at UHG there are 43 NET patients (60% male) and the mean age of diagnosis is 50.1 years. 18 patients (41.86%) have a pheochromocytoma. Mean age of diagnosis is approximately the same for each class of NET (52.65 years), however for Midgut and Gastric NET patients it is 42 years. The average time since last biochemistry follow up for Hindgut NET patients was over 4 years compared to 7 months for Pancreatic NET patients. This data will be used for improving clinical care by allowing us to organize specialized NET clinics thereby ensuring that all patients are managed according to best international practice guidelines.
Abstract Title:

What are the experiences of caregivers of school-aged children with high-functioning autism in accessing and utilising health care services? A cross-sectional survey.

Authors and Affiliations:

Hehir, A¹, Walsh, C², Lydon, S¹

1. School of Medicine, NUI Galway.
2. Discipline of General Practice, NUI Galway.

Introduction:
Individuals with Autism Spectrum Disorder (ASD) are more likely to experience a wide range of physical and mental health problems, and greater mortality, than the general population. This may reflect an inequality in healthcare service provision whereby individuals with ASD have less access to appropriate healthcare. The aim of this study was to identify barriers and unmet healthcare needs experienced by caregivers of school-aged children with autism when accessing healthcare for their child.

Methods:
In this ethically-approved, cross-sectional survey study, caregivers of school age (4.5-18 years) children with autism were recruited through schools in Connacht and support groups (e.g. Autism Ireland). Participating caregivers completed a questionnaire about the individual with ASD for whom they cared which assessed demographic information, unmet healthcare needs and perceived barriers to accessing healthcare.

Results:
To-date, 29 participants have returned questionnaires (82.8% female). In total, 58.6% of caregivers indicated that their child had unmet healthcare needs within the past year, with mental healthcare services being one of the most frequently reported unmet need (27.6%). The most frequently reported barrier to accessing healthcare was sensory issues (96.6%) commonly experienced by the individual with ASD in healthcare environments. Waiting lists for services was also frequently reported as a barrier (72.4% of participants reported this barrier was encountered 'very often').

Conclusions:
Our findings add to the literature indicating that there are substantial unmet healthcare needs and barriers to healthcare access among children with ASD. Further research focused on improving the healthcare experience of persons with ASD is required.
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:

Abstract Title:

Bovine Aortic Arch: A Novel Risk Factor for Intracranial Haemorrhage

Author and Affiliations:

Logan H\textsuperscript{1}, Davy S\textsuperscript{2}.

1. School of Medicine, NUI Galway.
2. Department of Radiology, Clinical Science Institute, NUI Galway.

Introduction:
Berry aneurysms (BA) are pathological dilatations of the circle of Willis (COW). Since ruptured BA's lead to life-threatening subarachnoid haemorrhage, prompt diagnosis and treatment is required.

The vessels supplying the COW originate from the aortic arch (AA) or a major branch. The 'normal' AA pattern consists of three vessels, all of which contribute to the COW. Although described as normal, several variants exist, with the bovine variant (BV), consisting of two branches, accounting for 13%-15% in Ireland.

Most consider BVs as clinically silent. However, a recent paper [1] showed an increased risk of thoracic aneurysms in patients with BV.

Aim:
The aim of this study is to establish if patients with BV are at increased BA risk.

Methods:
Ethical approval was granted by Galway Clinical Research Ethics Committee. All computed tomography cerebral angiography (CTCA) scans performed over a four-year period were retrospectively reviewed (n=1046). Patients without thoracic imaging and those with scans negative for BA were eliminated. Chi-square test was used to establish if the incidence of BV in patients with BA's differed significantly from background incidence.

Results:
Out of 1046 CTCA scans reviewed, 115 patients had a BA, of which 67 had thoracic imaging. Of the 67 patients, 28 had BV, accounting for 42% compared with 15% background incidence. \( P,0.001 \ x^2=26.87, \ dF 1. \)

Conclusion:
This study shows a statistically significant increased risk of BAs in patients with BV; a new finding which has not yet been documented in the literature.

References:
**Abstract Title:**

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

**Author and Affiliations:**

**Helen Mannion**¹, Rónán O'Caoimh¹²

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:**

Abstract Title:
Mechanisms underlying the increased fracture risk associated with Type 2 Diabetes Mellitus

Author and Affiliations:
McDonnell, T.¹, Parle, E.², Gardner, S.³, Carey, J.⁴, Murphy, C.⁴, Coleman, C.⁵, Vaughan, T.², McNamara, L.M.²

1. School of Medicine, NUI Galway;
2. Biomedical Engineering Department, NUI Galway.
3. Leigh University, Pennsylvania, USA
4. Merlin Park University Hospital and University College Hospital, Galway.
5. Biomedical Sciences, NUI Galway.

Introduction:
Type 2 Diabetes Mellitus (T2DM) is a growing epidemic, resulting in 2 million deaths each year and is a leading cause of disability¹. Despite elevated bone mineral density during T2DM, there is a greater risk of fractures, the reason for which is unknown².

Aim: To investigate the mechanisms underpinning the increased risk of hip fractures in T2DM patients(n=4), compared to osteoarthritic (OA)(n=7) and osteoporotic (OP)(n=7) patients.

Methods: Human femoral heads (HFHs) were donated by consenting patients who underwent total hip arthroplasty in 2 Galway hospitals. Ethical approval was granted by the Galway Clinical Research Ethics Committee. HFH trabecular bone was cut and scanned with a Micro CT to evaluate bone volume fraction (BV/TV) and mean mineralisation. A Zwick was used to determine the fracture toughness (Kic), using single edge notched bend beam specimens.

Results: The Kruskal Wallis test showed a difference in Kic mean ranks (Median (mean rank): OA= 0.596(14), OP= 0.345(5.1), T2DM= 0.375(9.3)), with the osteoarthritic group being higher in comparison to the other 2 groups (p=0.008). BV/TV (Median (mean rank): OA= 0.319(14.3), OP= 0.240(6.3), T2DM= 0.212(6.8)) and mean mineralisation (Median (mean rank): OA= 856.439(4.9), OP= 896.676(10.6), T2DM= 939.144(15.8)), was also found to be significantly different across the 3 disease states (p=0.010 and 0.004 respectively).

Conclusion: The lower Kic value in T2DM, compared to osteoarthritic controls, suggests that decreased bone toughness may contribute to the increased fracture risk associated with diabetes. The lower BV/TV and higher mineralisation are likely to cause this reduction in toughness.

References:

Acknowledgements:
This research project was supported by the Health Research Board (HRB). Reference number SS-2018-020.
Abstract Title:

Elevated Expression of PD-L1 in Tumour Specific Stroma from Breast Cancer Patients.

Author and Affiliations:

J McGarry¹, S Lafferty¹, P Loftus¹,², M Kerin¹, LR Barkley¹

1. Discipline of Surgery, School of Medicine, NUI Galway.
2. Orbsen Therapeutics, NUI Galway.

Background:

Mesenchymal stromal cells (SC) are an important component of the breast tumour microenvironment that promote tumour growth, metastasis, angiogenesis and immune-suppression [1]. Thus, identifying tumour specific SC proteins that contribute to carcinogenesis may open new therapeutic paradigms.

Aim:

To identify breast tumour stromal cell (TSC) specific characteristics.

Methods:

Breast tumour samples and tumour associated normal (TAN) tissue were collected from patients (n=6) at University Hospital Galway after ethical consent. SC were isolated from these tissues, characterised by flow cytometry, and immunosuppressive capacity determined using a PBMC co-culture assay. Finally, the RNA profile of isolated SC were analysed using RT-qPCR using the following probes: CAV1, αSMA, FAP, S100A, PD-L1 and PDGFRβ[1] in order to identify genes which are altered solely in breast TSC.

Results:

Phenotypic analysis indicate SC are mesenchymal [2] and possess immunosuppressive properties. Transcriptional profiling of TSC and TAN-SC indicate that PD-L1 expression is significantly increased in TSCs (7±1 mean ± SEM) compared to TANs (2.5±1) from the same patient (p=0.0235, students t-test). αSMA is significantly higher in TSC compared to TAN-SC in 3/6 of patients tested however when combined no significance is observed (TAN 9±2, TSC 13±3 p=0.2673).

Conclusions:

Our data indicates a patient-specific difference in αSMA and a universal difference in PD-L1 expression between TSC and TAN from the same patient. This suggests cutting-edge PD-L1 antibody therapies e.g. pembrolizumab, could be used to reduce the immunosuppressive properties of TSC. Future work is ongoing with the aim of performing RNA-sequencing analysis on these SC populations to identify novel TSC-specific therapeutic targets.

References:


Abstract Title:

Transcatheter Aortic Valve Implantation in Patients with Severe Bicuspid Aortic Valve Stenosis: First Global Prospective Study.

Author and Affiliations:

McHugh F(1), Mylotte D(2).

1. National University of Ireland Galway.
2. University College Hospital Galway.

ABSTRACT:

Bicuspid Aortic Valve (BAV) is a common congenital cardiac abnormality associated with early development of aortic stenosis (AS). All randomised-trials of transcathether aortic valve implantation (TAVI) have excluded BAVs due to anatomical challenges. We aimed to assess outcomes of patients with bicuspid AS undergoing TAVI, and subsequently compare Tricuspid outcomes.

The prospective VITALE I study included 110 Chinese patients undergoing TAVI with the VitaFlow transcatheter valve. Patients with tricuspid AS (TAS) or bicuspid (BAS) were included. Events were adjudicated by the VARC-II guidelines by a clinical-endpoint committee. Multi-slice CT analysis was performed to evaluate differences between TAS and BAS. Relevant statistical tests were performed using SPSS (Version 17).

Among 110 patients, the mean age was 77.7±4.8 years, 45.5% were female, and average STS-score was 8.6±4.1 (TAV=9.2±4.2 vs BAS= 7.6±3.8, P= 0.04). Included are 68 patients (61.8%) with TAV and 42 (38.2%) with BAS. The baseline ejection-fraction (EF) was 57.3±11.9%. Baseline mean transvalvular gradient was 60.5±19.3 compared with 9.8±4.7 12-months post-op (P<0.001). VARC-II defined implant success was 99% and 30-day mortality was 1.8%.

Comparing TAS and BAS at 12 months, the mean transvalvular gradient was 10.1±5.2 and 9.3±3.8 (P=0.4), respectively. New permanent pacemaker insertion was 13.6% for TAS and 6.3% for BAS (P=0.5). 30 patients (64.5%) had paravalvular leak (PVL) on discharge: TAS=18.2% and BAS=9.1% (P=0.5). At 12-months post-TAVI, 54 patients (49.1%) had PVL (TAV=34; BAS=20; P=0.3).

Clinical outcomes between TAS and BAS were excellent. This study provides a basis for BAS to be included in future randomized trials of TAVI.
Abstract Title:

Prostate MR: 'the MAN-ogram', no longer just a cancer staging tool.

Author and Affiliations:

Moran, M., Walsh, L., McCarthy, P.

1. School of Medicine, NUI Galway.
2. Discipline of Radiology, NUI Galway.

Introduction:
The advent of PIRADS v2 has allowed MR of the prostate to extend its role into triaging patients suspected of prostate cancer, from its previous use as a staging study in established disease. We aimed to reveal its altered perception in a modern setting.

Method:
500 consecutive MRIs performed from June 2017- Jan 2018 were analysed in a retrospective review. Patients going for initial diagnosis were split into 16 subgroups, depending on their PSA status, DRE status, and demographics. Staging scans were spilt into their biopsy diagnosed cancer grade, and restaging above Gleason score 6 on diagnosis.

Results:
Significant difference were observed. Amongst the diagnostic groups, most (n=66) were age<70, PSA>6, Neg DRE and previous negative biopsy. 56.1% showed no suspicious lesion (NSL), 42.4% an intra prostatic lesion (IPL) and 1.5% extra prostatic spread (EPS). Overall in previously non-diagnosed patients, 51.4% showed NSL, 45.3% IPL and 3.3% EPS (n=204). In staging scans, 26.5% showed NSL, 50.2% showed IPL and 23.3% EPS (n=215). NSL was highest in Gleason 6 (41.2%, n=97) while highest IPL was 58.5% (n=66) in Gleason 4+3, Highest EPL was Gleason 8+ at 65.5% (n=29). In restaging scans for Gleason 6 tumours (n=65), 80% remained stable since last scan while for Gleason 3+4 tumours and above, 62.5% were stable since last scan (n=16). P value was <0.001 for all.

Conclusion:
A definite role for pre-biopsy scans is established, some patients don't need biopsies. Restaging scans for Tumours >Gleason 6 have a higher chance of progressing since the previous scan.
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. S1,3, 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.
Abstract Title:

Calculation and analysis of the proportion of avoidable attendances at a rural Irish Emergency Department.

Authors and Affiliations:

M.I. Mustafa (5MB student) ¹, S. O'Gorman (Consultant in Emergency Medicine) ²,³

Author Affiliations:
[1] School of Medicine, NUI Galway
[2] Letterkenny University Hospital
[3] Saolta University Healthcare Group

Introduction:
Avoidable/Inappropriate attendees at Emergency Departments may be described as patients who could be managed more effectively and efficiently by other healthcare providers, usually GPs. They are often cited as part of the overcrowding problem at EDs. The Royal College of Emergency Medicine (RCEM) reported a 19.4% avoidable attendance rate on a single day across a number of hospitals. This study aims to ascertain the proportion of avoidable attendances at a rural Irish ED using the RCEM criteria.

Method:
Multiple data points were collected from the clinical records of all patents attending the ED over an 8 day period and entered on to a spread sheet. Data was analysed using the RCEM Sentinel Site Survey questions.

Results:
792 patients were included in the study. 756 (95.5%) were deemed appropriate attenders and 36 (4.5%) were deemed avoidable/inappropriate attenders. Of the 36 patients meeting the RCEM criteria as avoidable/inappropriate attenders 22 (61.1%) were referred to the ED by a GP. The other 14 (38.9%) were self-referred. These 14 attenders were deemed to be the true avoidable/inappropriate attenders and represent 1.7% of the all attenders. There was a clear inverse relationship between age and the proportion of avoidable/inappropriate attenders.

Conclusion:
1.7% of attendances in the study period were deemed to be avoidable/inappropriate. This is a much lower rate than in other centres and may be in part due to the dispersed rural population many of whom live at a distance from the hospital and who are likely to consult a GP.
Abstract Title:

**Impact of Middle Cerebral Artery Occlusion (MCAO) and Reperfusion on Microglia, MMP9 expression, and micro-vessels in a Sprague Dawley rat model.**

Author and Affiliations:

Wee Xuan Neo, Denise Tamberrino (MSc, NUIG), James Prendergast (PhD, NUIG), Andrew Douglas (Post-Doc, NUIG), Karen Doyle (PI, NUIG).

Ischemic stroke is a major cause of death and disability worldwide, affecting an estimated 10 million people worldwide and 23000 people in Ireland (Institute of Public Health Ireland, 2012) and vastly reducing the quality of life in its survivors. However, current acute treatments for managing stroke, such as recombinant tissue plasminogen activator (rTPA) and thrombectomy, only benefit approximately 5% of patients (Fang et al, 2010), partly because its exact pathophysiological mechanism remains to be fully elucidated.

We investigated the impact of Middle Cerebral Artery Occlusion (MCAO) and reperfusion injury on microglia count, the area and volume of the lesion, and Matrix Metalloproteases 9 (MMP9) expression in micro-vessels in a Sprague Dawley rat model of focal cerebral ischaemia.

Ischemic Stroke was induced for 2 hours in male Sprague Dawley rats (n=36), and 30 micron-meter brain slices were subsequently imaged and analysed using Olyvia software and using stereology via ImageJ to characterize differences.

Our results show a significant increase in microglia count (p<0.05) and microglial volume (p<0.05) in the ipsilateral vs contralateral hemispheres. Additionally, increased MMP9 expression was observed following 2hour ischaemia, and 2hour with reperfusion in comparison to sham controls (p<0.05), with increased MMP9 expression in micro-vessels (p<0.05) following ischaemia.

The data from the study improves our understanding of the pathophysiological mechanisms following stroke. More research in this area should be conducted in order to gain a complete appreciation of ischemic stroke & reperfusion pathology, which could facilitate the development of novel treatments and may improve responses to currently available therapies.

1)  Institute of Public Health in Ireland, 2012, Stroke, Briefing

Abstract Title:

Prevalence of Polypharmacy, depression and anxiety in 197 older patients in Sligo.

Author and Affiliations:
PIONG, C. L. [1], McCarthy, G. [2], O'Malley, G [2], Hickey, P [2], O'Sullivan, F [2]

1. School of Medicine, NUIG
2. Sligo University Hospital

(This research is funded by the School of Medicine, NUIG).

Introduction:
With the rising global ageing population, there is an increasing need to correctly identify the factors affecting the health of older patients to facilitate better quality healthcare.

Aim:
This study investigates the prevalence and the correlation to age of polypharmacy and the correlation between polypharmacy, dementia, living alone and family support on depression and anxiety.

Method:
197 patients were identified. Descriptive and correlational analysis was used to assess the relationship between each factor. This research was approved by the Sligo Research Ethics Committee. For non-parametric data, chi-squared, fisher exact and Mann-Whitney U test were used. For parametric data, Pearson's rho.

Results:
197 patients, 19(9.6%) had missing data on medication, 121(61.5%) had more than 5 daily medications, 57(28.9%) had 5 or less daily medications with a mean of 8(4). There was a correlation found between number of medications and depression but not anxiety (P=0.010 and 0.216). There was no correlation found between age and number of medications (P=0.282). There was no correlation found between family support and depression and anxiety (P=0.182 and 0.698). There was no correlation found between living alone and depression and anxiety (P=0.628 and 0.320). There was no correlation found between dementia and depression and anxiety (P=0.323 and 0.330)

Conclusion:
The results suggest that there is a high prevalence of polypharmacy in older patients in Sligo attending secondary care services and that there is a statistically significant relationship between number of medications and depression. This may relate to multiple co-morbidities and/or medication effects and warrants further investigation.
Abstract Title:

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

Author and Affiliations:

**Ravenscroft, L**¹, Herzig, M³,²

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.
Abstract Title:


Author and Affiliations:

Regan, M.1, McNicholas, B.2, Finucane, F., Symth, A., Griffin, T., Griffin, M.3

1 = School of Medicine NUIG,
2 = Department of Endocrinology UCHG,
3 = Department of Nephrology UCHG

Introduction:

T2DM is a risk factor for chronic kidney disease (CKD) and is frequently associated with obesity. Although obesity itself may cause glomerular abnormalities, its independent effect on CKD risk in T2DM is poorly understood.

Aim:

The aim of this study is to establish whether obesity and increasing BMI are risk factors for declining kidney function and for the development of CKD in adults with T2DM.

Methods:

Following ethical approval, a retrospective cohort study was conducted on patients with T2DM managed at a diabetology clinic (2005-2018). Data on BMI, renal function, glycaemic control and lipid management from both initial and most recent clinic visit were analysed. The Student’s t-test, Analysis of variance (ANOVA) and the χ2 test were conducted for between-group comparisons.

Results:

818 patients [males 530 (65%)] were followed for 1.02-13.54 years. At the initial visit, mean age was 55.7±12, mean BMI 32.57 with 508 (62%) having a BMI described as obese. Those with obese BMI showed elevated triglycerides, lower high density lipids, and increase in GFR (p<0.05). Follow-up showed less patients with an obese BMI [439 (54%)], an overall drop in BMI/year of -0.21kg/m2, and an increase in patients with albuminuria [baseline: 64 (8%), follow-up: 104 (12.7%). In the patients in the top 20% of BMI increase, logACR was greater compared to the rest of the cohort (p<0.05).

Conclusion:

Patients had a decrease in BMI while attending clinic but there was an increase in patients with albuminuria over the study period. GFR was higher in obese patients.
Polyphenols are well-known antioxidants\(^1\). 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 research\(^2\), 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:


Abstract Title:

Tackling Sepsis: Improving Performance of Peripheral Blood Cultures (PBCs) in Non-Consultant Hospital Doctors (NCHDs) using a simulation-based intervention incorporating precision teaching.

Author and Affiliations:

M Walsh¹, B Reid McDermott², A de Bhulbh², E O'Dowd², C Madden², C Walsh², S Lydon¹,², D Byrne¹,².

1. School of Medicine, NUI Galway, Ireland.
2. Irish Centre for Applied Patient Safety & Simulation

Introduction:
Research demonstrating ill-preparedness for practice among NCHDs indicates that traditional approaches to skills training are somewhat lacking. Simulation-based interventions incorporating precision teaching offer a novel approach. Behavioural fluency (accurate and rapid performance) can be achieved following relatively short training, with performance retained over time. The project utilises this method to teach PBCs (a 'Sepsis Six' component). Sepsis is a time critical emergency, therefore, accuracy is crucial. Incorrect technique can contaminate samples and necessitate multiple attempts, directly impacting upon patient safety.

Aim:
To evaluate the efficacy of a simulation-based intervention incorporating precision teaching in producing behavioural fluency in PBCs among NCHDs.

Methods:
A task analysis was developed through reviewing best practice documents, and expert input. The fluency criterion (i.e., the expert benchmark) was then established. Following ethical approval, 59 NCHDs were recruited. Participants completed baseline testing and randomisation into three groups; control, intervention and task analysis only. Intervention participants engaged with precision teaching for PBC. Statistics were run in SPSS to summarise participant demographics along with other variables.

Results:
The mean age of participants was 25 years (SD=3), (n=23) of the participants were male. The mean number of PBCs performed in clinical practice prior to the study was 1.44 (SD=4.64), confidence on a scale of 0 to 100 on ability to perform PBC (0 not confident) was 42.71 (SD=24.76). To date, seven of the intervention group (n=20) have reached fluency, in an average of 6.14 trials.

Conclusions:
Participants achieving fluency to date is a positive indication of the outcome of the study.

Funding Source: Health Research Board
Abstract Title:

Seawaters and Risk of Human Exposure to Antibiotic Resistant Bacteria.

Authors and Affiliations:
Benjamin WONG¹, Brigid Hooban², Bláthnaid Mahon², Niamh Cahill², Louise O'Connor², Dearbhaile Morris².
1. School of Medicine, NUI Galway.
2. Antimicrobial Resistance and Microbial Ecology (ARME) Group, Discipline of Bacteriology, School of Medicine, NUI Galway.

Introduction: The aquatic environment represents an important potential transmission route for antimicrobial resistance to humans.

Aim: To examine bathing waters for the presence of antibiotic resistant Enterobacteriaceae (AMR-E) in order to establish human risk of becoming infected with resistant organisms.

Methods: Samples of seawater were collected from 3 different locations on separate dates across the research period. Colilert 18- IDEXX test was performed on each sample. The CapE [3] method was applied in processing and screening through selective agars. Isolates were identified via Matrix-Assisted Laser Desorption/Ionization Time-of-Flight(MALDI-TOF) Mass Spectrometry. Antimicrobial susceptibility testing was done in accordance with the EUCAST criteria. Finally, isolates were screened for CTX-M and STEC associated genes (eae, stx1, stx2, O157, 026) by Real Time PCR.

Results: MALDI-TOF showed that 17/26 isolates identified were Enterobacteriaceae, which included E. coli, Enterobacter cloacae and Klebsiella pneumoniae. Colilert 18- IDEXX results showed an upward trend in coliforms and E. coli. Antibiotic susceptibility testing results showed that 50% of isolates were ESBL producers. From the VTEC PCR results, all samples had the eae gene, 1/5 had stx1/2 genes and 2/5 had the O157 gene. One sample was positive for the eae, stx1/2 and O157 genes, which confirms it as a VTEC. Of all the ESBL-producing Enterobacteriaceae detected from the 3 locations, 85% harboured a blaCTX-M gene: (blaCTX-M-1), where 10/13 isolates were positive for the blaCTX-M-1 gene and 1 isolate was positive for the blaCTX-M-9 gene.

Conclusion: Bathing waters are a reservoir for AMR-E which increases the risk of human colonization. Further investigations are needed to determine the sources of AMR-E.

References:
Abstract Title:
Development of a microbial burden-responsive antimicrobial hydrogel for the prevention of catheter related infection.

Author and Affiliations:
Zudaffenah Zainol Abidin¹, David Monahan², Garry P. Duffy², Liam P. Burke³

1. School of Medicine, NUI Galway.
2. Discipline of Anatomy, School of Medicine, NUI Galway.
3. Discipline of Bacteriology, School of Medicine, NUI Galway.

Introduction:
Catheter-related bloodstream infections (CRBSI) majorly contribute to morbidity and mortality. Hydrogels that release of antimicrobials in the presence of bacteria may prevent biofilm formation on catheter surfaces, thus negating their need for removal which can limit optimal therapy.

Aim:
Investigate the potential of an antimicrobial hydrogel as a microbial burden responsive coating to prevent biofilm formation on central venous catheters.

Methods:
A collection of isolates causing CRBSI in Galway University Hospital were assessed for their biofilm forming ability via crystal violet assay. Their minimum inhibitory concentrations (MICs) for the fluoroquinolone antibiotic levofloxacin were determined via broth microdilution. Responsive drug release from Ascorbyl Palmitate (AP) hydrogels was assessed using the fluorescent dye Nile Red. In vitro efficacy of levofloxacin loaded/unloaded AP hydrogels against CRBSI were assessed by Klebsiella pneumoniae time course killing assays in broth cultures.

Results:
K. pneumoniae, Enterococcus faecalis and Staphylococcus aureus CRBSI isolates formed strong biofilms (OD490 ≥1.2). Their levofloxacin MICs were <0.125, 64 and >256 µg/ml, respectively. AP hydrogels demonstrated release of fluorescent dye in the presence of conditioned bacterial culture media. AP hydrogels reduced the number of K. pneumoniae cells by 2 log10 after 3h and completely inhibited growth between 6 and 24 hours. AP hydrogels loaded with 10 x MIC levofloxacin completely inhibited bacterial growth for at least 80h.

Conclusions:
AP hydrogels with or without levofloxacin inhibited bacterial growth in vitro and have potential for further development as responsive anti-biofilm catheter coatings.

Acknowledgements:
This study was funded by a HRB Summer Student Scholarship 2018.
Abstract Title:

Can left atrium reverse remodelling be used as an indication for improved functional status of patients who have undergone mitral valve intervention for mitral regurgitation?

Authors and Affiliations:

Zhang, A. [5MB student], Macken, E [University Hospital Galway], Soleimaniamiri, S. [Cardiovascular Research Centre], Sharif, F. [University Hospital Galway]

Introduction & Aim:
Left atrial size is known as a prognosticator for future cardiac events and mortality. Enlarged left atrium can be reversed in a process known as Left Atrium Reverse Remodelling (LARR). LARR is observed after mitral valve intervention.

The research aims to show the relationship between the extent of LARR and the improvements in functional markers such as residual mitral regurgitation (MR) and left ventricular ejection fraction (LVEF).

Methods:
49 patients were included in this retrospective longitudinal study. Pre-operative and 6 to 12 months post-operative echocardiography results were obtained for longitudinal comparison. Spearman's correlation test was performed between change in LA dimensions and residual MR and LVEF.

Results:
There is greatest mean change of 8.15 cm² in LA area in patients with change in grade of MR severity of 1. A change of 2 or 3 in grade of MR severity yielded a decrease of 6.12 cm² and 6.53 cm² respectively. In patients with no change in MR severity, there is an enlargement of LA area of 3.55 cm². Correlation studies demonstrated weak linear correlation between MR change and LA change ($r = 0.067, p = 0.683$). Correlation studies also demonstrated weak negative correlation between the percentage change in LA area and change in LVEF. ($r = -0.217, p = 0.143$).

Conclusion:
LARR occur in all MR patients undergoing MV intervention, with the most LARR occurring in patients with mild to moderate MR. There is weak linear relationship between LARR and MR. There is weak negative correlation between LARR and LVEF.
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:


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 importance\(^1\). 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.


Abstract Title:

Bridging the Gap: an Evaluation of Palliative Day-Care Services.

Authors:

Abdul-Fattah, S., Field, CA., & Mc Darby, G.,

Author Affiliations:

1. School of Medicine, NUIG,
2. Health Promotion Research Centre, NUIG,
3. Department of Public Health, HSE West.

Introduction:
Palliative Day Care (PDC) aims to deliver holistic, multidisciplinary, and individual care to achieve maximum quality of life within the limitations of life-limiting illnesses.(1) Due to patient vulnerability and difficulty in evaluating outcomes, there is a paucity of structured research in the field.

Aim:
To assess a PDC service from the viewpoint of patients and healthcare providers, using their experiences to develop an evaluative framework, and to apply a discrete choice experiment (DCE) to determine which service qualities are valued most.

Methods:
A mixed methods pilot study comprising of an initial qualitative phase, informing the subsequent quantitative phase, was conducted at the Galway Hospice. Consent forms were signed prior to participation. Semi-structured interviews with patients and providers (n=38), as well as a DCE (n=23) with 12 choice cards outlining six chosen attributes of the day care services were conducted. Data was analyzed using STATA.

Results:
Of the six attributes that were analyzed through a conditional logit model, four yielded statistical significance (p<0.01): transport, therapies, treatments, and specialist palliative care. The most highly ranked attribute was transport with a coefficient of 0.922(0.136), followed closely by therapies 0.918(0.136). Specialist palliative care was ranked highly at 0.71(0.128) while treatments showed a moderate coefficient 0.41(0.135).

Conclusion:
The qualitative phase identified the importance of a social atmosphere, while the quantitative phase identified that of therapies and intensive medical input; the mixed methods approach supports a holistic model of PDC. The study must be conducted with a larger population in order to inform a nationwide model of care for PDC.
Abstract Title:

Development of calcaneus bone phantom for benchtop testing in microwave-based diagnostic of osteoporosis.

Authors:

Ahmad Fuad, M. F. (1), Amin B. (2), McDermott B. (2), Dunne E. (2), Elahi M. A. (2)

Author Affiliations:

1. School of Medicine, NUI Galway.
2. Translational Medical Device Lab, NUI Galway,

INTRODUCTION:
Microwave imaging is a new emerging modality with promising results in the diagnosis of osteoporosis due to its non-invasive property. Due to the shifting aging population, the need for an easy-to-operate diagnostic device based on the technology is vital for a more efficient in vivo diagnosis of osteoporosis.

AIM:
To explore the different Tissue Mimicking Materials (TMM) for use of microwave imaging and developing a calcaneus bone phantom prototype for benchtop testing.

METHODS:
The dielectric profiles (permittivity, [F/m] and conductivity, [S/m]) of biological calcaneus bones across the 0.5GHz to 10GHz band were identified from the literature. Two types of TMM mixtures from liquid-based materials (TMM A: 50ml of 75% Triton X-100, 25% NaCl) and solid-based materials (TMM B: 50g of 7.5% graphite, 7% carbon black, 85.5% polyurethane, 1ml isopropanol) were fabricated to emulate the biological profiles. A simplistic 3D model of the calcaneus bone was then designed and printed with designing softwares (Autodesk Fusion360, Ultimaker Cura) using polylactic acid (PLA) filament. Finally, measurements were conducted using Keysight Vector Network Analyzer to confirm the stability of the TMM over time.

RESULTS:
Both TMMs almost accurately represent biological dielectric profiles of calcaneus bone at 1.5GHz biological value of 19.8 F/m, 0.48 S/m (TMM A: 15.55 F/m, 0.43 S/m, TMM B: 17.90 F/m, 0.94 S/m) and shows consistency across the band. The data shows a variation of dielectric measurements after 1 month (TMM A: 17.25 F/m, 0.13 S/m, TMM B: 23.60 F/m, 0.49 S/m). While TMM B is more mechanically stable over time, TMM A is favorable in this phantom development since it is more flexible to be contained in the 3D printed shell.

CONCLUSIONS:
This project has managed to develop a novel bone phantom for osteoporosis diagnosis that is still in research in the current literature. Despite the inconsistent data, the presented TMMs used in this project are easy to replicate and stable over time which suggest possibility for future research.

Funding source: School of Medicine.
Abstract Title: A Retrospective Study: Assessment and Management of Acute Kidney Injury in Letterkenny University Hospital.

Authors: ML Saifuddin, A. Moran, E. Slevin.

Author Affiliation: Nephrology Department, Letterkenny University Hospital.

Introduction:
Acute Kidney Injury (AKI) in hospitalised patients is independently associated with increased mortality and prolonged length of stay. Thus, the importance of recognizing AKI followed by appropriate diagnostic work up and treatment cannot be understated.

Objective:
To assess the epidemiology of AKI in patients who were admitted via the emergency department in Letterkenny University hospital (LUH) during acute unselected take, with particular focus on initial recognition and diagnostic work up of AKI and appropriate management.

Methods:
We undertook a retrospective study by analysing medical and surgical admissions occurring via the emergency Department over 4 weeks, total of 841 patients consisting of 3 separate weeks of unselected medical admissions and 1 week of unselected surgical admissions. We also analysed a further 1 week of patient discharges for occurrences of AKI during hospital admission.

Results:
A total of 841 patients were included in the initial analysis. AKI was present on admission in only 24 patients (Total AKI group; 3%). Based on the AKIN criteria, 21 patients had stage 2 AKI while 3 patients had stage 3 AKI.

Discussion:
The initial assessment and management of AKIN2 and AKIN3 in LUH is currently sub optimal with scope for improvement. As the majority of AKI diagnosed in hospital occurs on or very shortly after admission via ED this initial assessment will most frequently done by the medical or surgical SHO on call. Therefore, training in AKI assessment and management for SHOs would likely be of benefit.

References:
Abstract Title:

Breastfeeding and maternal health outcomes: a review of systematic reviews

Authors and Affiliations:


[1] School of Medicine, NUI Galway.
[3] Department of General Practice, NUIG Medical Academy, Donegal.

Abstract:

Breastfeeding is crucial for both the baby and the mother. Studies suggest that it can improve maternal health outcomes. Despite the awareness of its benefits the rates are lower than the recommended levels. The aim of this paper is to review systematic reviews on maternal health benefits of breastfeeding published between 2015-2018. It is hoped that it will contribute to implementation of policies aiming at encouraging breastfeeding in Ireland.

A scoping search was conducted to construct a search strategy. Then, an electronic search was done using Cochrane Library, Medline, Pubmed, and Embase databases. From 45373 papers, 21 systematic reviews met the inclusion criteria. Data from these papers were extracted, analysed and a quality assessment was done using the Assessment of Multiple Systematic Reviews-2 checklist.

Based on the AMSTAR-2, 3 reviews were low quality, 13 were moderate; two were high. 11 out of 21 reviews were done in China and the majority were published in 2015. The reviews discussed different health conditions. These reviews shows that longer duration of breastfeeding was inversely associated with the risk of breast cancer, ovarian cancer, endometrial cancer, and thyroid cancer. Lactation is associated with a decrease in cardiovascular diseases and cardiovascular risk factors (hypertension, diabetes, and postpartum weight retention) and shorter breastfeeding duration was associated with higher rates of depressive symptoms.

The data from these reviews suggest that breastfeeding works as a protective factor against these maternal health problems and by improving breastfeeding rates the incidents of many health problems will decrease.
Abstract Title:
An educational tool - a pictorial review of orbital emergencies.

Authors and Affiliations:
Alrumhi, D., O'Malley, E., McCarthy, P.
- Department of Radiology, University Hospital Galway (UHG).
- Department of Radiology, Sligo University Hospital, Ireland.

Introduction:
A thorough clinical history and examination is key to the accurate identification of orbital emergencies. Radiological imaging also plays a key role especially when patients are unable to cooperate such as the inability to open their eye or for the unconscious patient. Imaging compliments the decision making process, monitors disease progression and aids management. Cross sectional imaging with multi-detector computed tomography (CT) and magnetic resonance (MR) imaging are most commonly utilized, ultrasound and x-rays are also useful.

Aim:
To create a radiologic pictorial review for radiology, emergency and ophthalmic non-consultant doctors (NCHDs) on orbital emergencies which would provide a systematic approach to aid in identifying threats to vision and ensure immediate intervention.

Materials and Methods:
Orbital emergencies were subdivided into four major categories: infection, trauma, vascular disease and inflammation. The patient correspondence database was utilized to identify patients with specific diagnoses within each category. Imaging was reviewed on the picture archiving and communication system (PACS), examples were collected and appraised according to the quality of the imaging findings. The best examples were selected, each image was read and appropriate findings were highlighted for future education purposes.

Results:
A useful tool was created to aid NCHDs in the evaluation of orbital images in a methodical structured manner.

Conclusion:
A systematic approach to evaluating orbital imaging is vital for radiologists and other doctors, particularly when the clinical assessment is difficult secondary to the patients' condition, the environment or the internal nature of presentation of the disease.
Abstract Title:

Therapeutic Mammaplasty: A systemic review.

Authors and Affiliations:

Afiq Rafidzy ANWAR SAMHARI, Manvydas Varzgalis, Alison Johnston

Introduction:
Mammaplasty refers to a group of surgical procedures, the goal of which is to reshape or otherwise modify the appearance of the breast. Therapeutic mammaplasty (TM) is a procedure which combines with a wide local excision with a breast reduction technique resulting in a tumor free, smaller and better breast shape. TM technique extent role of breast conserving surgery allowing to remove large tumors. TM has been reported for a number of years but there has been insufficient data publishing the oncological and aesthetic outcomes.

Methods:
A systematic review was done using the PubMed, Google Scholar, Scopus and Cochrane database to identify studies regarding TM. Selected studies on the oncological, aesthetic and complications was used in this systemic review. Keyword that was used was 'Therapeutic Mammaplasty', 'Oncological Outcomes', 'Aesthetic Outcome' and 'Patient Reported Outcome'

Results:
Most of the studies were retrospective, and no randomized controlled trials were found in the search. Out of the 24 studies that reported the oncological outcomes, only 22 stated the mean tumor size with only 8 reported the mean surgical margin. Other than that only 6 reported the Mean Breast Size/Volume or the Bra Size of the patients preoperatively. The range of median follow-up was between 13 months to 55 months, rates of local of local recurrence and metastasis. Aesthetic outcome was reported in 17 studies. PROMs and aesthetic outcomes were mostly using non-validated tools with only 6 out 17 using validated tools such as Breast-Q™ Questionnaire, Breast Cancer Treatment Outcome Scale, QoL questionnaire and Likert Scale. All studies evaluating aesthetic outcome contained evaluation by clinicians, but included patient views in only 13/17 studies.

Conclusion:
Most studies suggest that the vast majority of woman undergoing therapeutic mammoplasty successfully achieved breast preservation without undergoing a second procedure or a mastectomy. Prospective data and randomized controlled trials is require to identify the quality assurances, and support development of specific assessment tools for this technique in the future.
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 Reddan².**
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 morbidities.¹

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:
Abstract Title:


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.
Abstract Title:

Developing Parameters for Improved Trapeziometacarpal Joint Prostheses - Data from Cadaveric Joints

Authors and Affiliations:
S.Y. Chai, P. Lalor, M. Canney, I. O Brien, D. Connolly, B. Wilkins.

- NUIG School of Medicine,
- NUIG Anatomy Department,
- NUIG Engineering Department.

Introduction:
Osteoarthritis (OA) of trapeziometacarpal (TMC) joint is one of the most common degenerative disorders joints of the hand. (1) This study investigates the relationship between the appearances of the joint visualized by micro-CT scanning and scanning electron microscopy (SEM) and correlate between these methods will give more complete pathological changes that occur in osteoarthritis.

Methods:
Two right TMC joint complexes were obtained from two different cadaveric donors. Donors gave full affirmative written consent for the use of their remains for research purposes. TMC joints from each cadaver were first dissected out with the joint capsule still intact. The joints were then scanned by micro-CT without radiocontrast. After immersing in a radiocontrast medium, the joints were again scanned by micro-CT. The resulting DICOM image stacks from both stained and unstained micro-CT were processed and rendered in 3D to visualize the articular surface. The joint capsules were then opened and the articular surface of both trapezium and first metacarpal were directly visualized using low pressure SEM.

Results:
The damaged area of the joint surface seen directly upon gross visualization correlated with the damaged area seen on microCT with contrast and also on SEM images, while the normal joint appeared normal in each of these methods. The contrast medium seemed to differentially highlight in areas of damage seen on SEM.

Conclusion:
CT imaging without radiocontrast is widely used in the hospital setting to evaluate TMC osteoarthritis. However, it only provides little information on the soft tissues, particularly cartilage. In order to better understand osteoarthritis of this joint we have used SEM and micro-CT with contrast to provide detailed information on the surfaces of cadaveric joints in attempt to correlate this with data from micro CT without contrast in order to try to correlate joint appearance in a clinically relevant modality, with the degree of osteoarthritis as measured by experimental means.

References:
1. The Journal of Hand Surgery / Vol. 32A No. 4 April 2007
Abstract Title:
The use of plasma-treated graphene oxide in Critical Limb Ischemia.

Authors and Affiliations:
Benjamin Chan, Perrine Latrille, Dr Firas Awaja, Professor Timothy O'Brien

- School of Medicine, NUI Galway.
- ENSTBB, Bordeaux INP
- REMEDI, NUI Galway.

Introduction:
Graphene oxide (GO) in suspension has been shown to stimulate angiogenesis (1), and GO paper may provide a novel treatment for Chronic Limb Ischemia (CLI). This study aims to assess angiogenesis-induction properties of GO paper using human umbilical venous endothelial cells, by comparing tubule formation and VEGF concentration in media.

Methods:
5 types of GO disc (thin, thick, multi-layered, thick plasma treated with nitrogen, and thick plasma-treated with oxygen) were prepared in triplicate, and placed between 2 layers of Matrigel with a cell suspension allowed to incubate on top of it. After 18hrs of incubation, media samples were taken and the cells were stained and fixed for fluorescent photography using an inverted confocal microscope, and the results were analyzed using ImageJ and SPSS.

Results:
There was no statistically significant relationship between VEGF levels and well conditions (p-value=0.198>0.05), nor between tubule formation on the disc and VEGF levels (95%CI [-0.138,0.44]). There was, however, a statistically significant increase in tubule population directly on the oxygen-treated disc in comparison to the positive control (95% CI[0.76, 31.24](p-value=0.033) and negative control (95% CI[8.35, 38.82](p-value=0.0001))

Conclusion:
Oxygen-treated GO displayed significantly larger tubule populations compared to the other well conditions, indicating potential induction of angiogenesis. Further experiments needed to determine the exact mechanism of action involved.

References:
1. Graphene Oxides Show Angiogenic Properties
   Sudip Mukherjee, Pavithra Sriram, Ayan Kumar Barui, Susheel Kumar Nethi, Vimal Veeriah, Suvro Chatterjee, Kattimuttathu Ittara Suresh, and Chitta Ranjan Patra
Abstract Title:
*Quantifying fibrous capsule formation around an implant for treatment of diabetes using Micro Computed Tomography (MicroCT).*

Authors and Affiliations:
**Marcus Chin, Eimear Dolan, Scott Robinson, Duffy Garry**

Abstract:
The goal of this study was to develop a method for quantifying fibrous capsule formation around implants for treatment of diabetes using MicroCT. Here we focused on a treatment group called "Group C" which is an encapsulation device prototype, implanted for 2 weeks. Then fixed, stained in Phosphomolybdic Acid (PMA), and imaged by MicroCT.

They were fixed in 10% formalin for 24 hours then dehydrated in ethanol gradient for 1 hour each in 50% then 70% ethanol. Later samples were then fully submerged in PMA solution for 72 hours. Lastly they were washed in 70% ethanol for 10 minutes and placed in fresh 70% ethanol and imaged with a MicroCT to achieve a voxel size of 7.4 µm.

After scanning with MicroCT we imported the files into a software called Mimics to reconstruct implants, using a lasso selection tool to select the membrane of the implant where the fibrous capsule had formed. The segmentation was performed in both the Sagittal and Axial to assess for consistency of the technique. Then after the selections we form a 3D model of the selections are imported to 3Matic a software where we calculated the average thickness and volume of the 3D reconstructions. This approach enables novel volumetric reconstruction of the fibrous capsule surrounding implants for diabetes.
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.
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 (TNFα). 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-αPPD 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.
Abstract Title:

Survey of Nurses' readiness to the use of ASQ-3 Questionnaire for Core Developmental Surveillance Checks.

Author and Affiliations:
EDWARD, Simon Lee., CANNY, Melissa

(Department of Public Health, Galway)

Introduction:
The Ages and Stages Questionnaire (ASQ-3) is a developmental screening tool for children aged 18-24 months which includes 30 items per questionnaire covering 5 domains of development. It is a useful surveillance and screening tool in the identification of developmental delays in children for timely intervention and improved long-term health outcomes (1).

Aim:
To evaluate Public Health Nurses' (PHNs) readiness and attitudes towards the implementation of ASQ-3 Questionnaire for core developmental surveillance checks in County Galway.

Methods:
An adapted questionnaire survey was designed to ask PHNs regarding scheduling of visits, clinical setting, content, duration, and communication aspects developmental surveillance. PHNs were also asked about barriers to the implementation of the ASQ-3 in their service, and any suggested strategies to overcome them. Questionnaire results were then inputted and analysed using Microsoft Excel.

Results:
A total of 35 responses from the 89 PHNs was recorded, giving a response rate of 39%. 27 PHNs are currently using screening tools as part of their developmental checks, this includes 15 (56%) out of the 27 participants who are utilising the Mayo Early Language tool. The vast majority of the PHNs believe that with education and training, and staff support will help enable the successful implementation of the ASQ-3 roll out. However, most of the PHNs believe that time and money required will be a major barrier to the implementation of the ASQ-3 rollout.

Conclusion:
Overall, PHNs provided positive feedback and appear to be open to the implementation of the ASQ-3 rollout in County, Galway.

References:
Abstract Title:

*Role of actinomycoses in chronic tonsillitis.*

Author and Affiliations:

Eow, S.Y.[1], Jaber S.[2], Kilgallen C.[2], Patil N.[2]

1. NUI Galway.
2. Sligo University Hospital.

Introduction:
Chronic tonsillitis is a common condition and tonsillectomies are one of the most common operations in the British Isles. Many studies have reported variable percentage of tonsil specimens with actinomycosis.

Aim:
The aim of the project is to examine the demographic of chronic tonsillitis patient and to make a clinic-pathological comparison between patients with and without actinomyces in their tonsils.

Methods:
This retrospective study has collected histopathological findings for 95 patients undergo tonsillectomy due to chronic tonsillitis between year 2017 and 2018. A number of clinical charts also have been reviewed for the patients' clinic-pathological findings. Clinico-pathological and histopathological comparisons were made between the patients with and without actinomycosis. The data were analysed using IBM SPSS 24.

Results:
In this study, 51 (53.7%) patients were female and 44 (46.3%) patient were male. There are 43 (45.3%) patient who have one or both tonsils containing actinomyces. The median age of the patients was 10 (range 2-61) with interquartile range of 12. The differences in mean ranks for age of patients (p=0.065) and size of tonsils (p=0.194) between patients with and without actinomyces in their tonsils are all statistically not significant. There are also no statistically significant association between gender and presence of actinomycoses in tonsils. The clinic-pathological comparisons between patients with and without actinomyces will be discuss during the presentation.

Conclusion:
This study has suggested that there is no relationship between the presence of actinomyces and obstructive tonsillar hypertrophy.
Abstract Title:
Otoendoscopy - A new eye on the ear.

Author and Affiliations:
Fahy, R (1), Keogh, I.J (1, 2).
1. School of Medicine, NUI Galway.
2. Department of Oto-Rhino-Laryngology, NUI Galway and UCHG.

Introduction:
Traditionally otologic surgeries are carried out under the microscope. Incisions, overnight stays and post op complications need to be considered. Otoendoscopy, (totally trans-canal ear surgery - TESS) is the use of a rigid endoscope to aid visualization during middle ear surgery. TESS is technically challenging, procedures are minimally invasive, endoscopes provide a wide field of view and superior access to complex anatomy. A small but increasing number of otologists are adapting this novel technique worldwide. Our aim is to share our experience of TESS.

Method:
Following ethical approval. A retrospective review of 1,573 ear surgeries from the year 2007 to September 2018 was undertaken. Patient information was compiled from surgical registers and clinical notes. IK performed the first TESS in 2013 at UCHG.

Results:
Microscope was used exclusively from 2007 to 2013. Since 2013 an endoscope has been used in 144 otologic surgeries, procedures included v-tube insertion, tympanoplasty, cholesteatoma surgery and ossicular chain reconstruction. All TESS procedures were carried out as day case surgeries. Procedures were photo documented. TESS is limited by ear canal diameter but is suitable for all ages. Recovery is quicker and less complicated, no external incisions are made. Overall the microscope was used in 1,429 procedures. Otoendoscopy has increased each year for the past 6 years, 48 procedures in 2017 compared to 2 in 2013.

Conclusion:
The use of endoscopes in ear surgeries is increasing. While challenging, otoendoscopy allows improved surgical exposure, better visualization and tackles ear disease efficiently. Recovery is quicker and less complicated.
Abstract Title:

Health needs of homeless people in Galway

Authors and Affiliations:

Flynn, D.¹, O'Loughlin, M.², Goggin, D.², Gavin, J.³, Kiely, B.⁴, Coughlan, E.⁴, O'Donovan, D.¹,²

1. School of Medicine, NUI Galway.
2. Department of Public Health, HSE West.
4. Safetynet Primary Care

Introduction and Aims:
The homeless population in Galway has increased in recent years. We aimed to assess the health status of homeless people in Galway and their access to, and use of healthcare services in order to inform service developments and to provide a baseline against which to measure service changes and developments in future.

Methods:
In July 2018 in collaboration with homeless service providers, a survey of rough sleepers and people using homeless accommodation was conducted using a the Partnership for Health Equity methods used in Dublin, Limerick and Cork in 2013-2016 and in Galway in January 2018. Health screening was offered on the Safetynet Mobile Health Screening Unit.

Results:
Thirty three people completed the July survey: 31 male, 2 female; mean age was 40.4 years (range 18-62); main reasons for homelessness were family and alcohol; 40% had experienced suicidal thoughts in the past 6 months; depression, anxiety and dental problems were reported by more than 40%; 74% are currently smoking. Among those who drink alcohol the mean number of units consumed daily was 25. The health service most used in the past 6 months was the hospital Emergency Department. 40 people had chest X rays and 22 had bloods taken: no new cases of TB or blood borne virus infections were identified.

Conclusion:
There is a high rate of homelessness in Galway city. These people have complex healthcare needs.

The survey should be repeated regularly to monitor the health of this vulnerable population.
Abstract Title:

Towards shared decision-making in consultations: Assessing the feasibility and acceptability of the Diabetes Medication Choice Decision Aid to facilitate involvement of people with type 2 diabetes (T2DM) in decisions about medication adjustment

Authors and Affiliations:

Isobel Forde¹, Máire O'Donnell¹, Sean F. Dinneen ¹,²

1. Discipline of Medicine, NUI Galway;
2. Diabetes Centre, University Hospitals Galway, Ireland

Introduction:

The Mayo Clinic Diabetes Medication Choice decision aid aims to facilitate involvement of people with T2DM in discussions about medication adjustment (1). This decision aid (DA) has not been evaluated in an Irish setting.

Aim:

To assess the feasibility and acceptability of this DA in diabetes clinics in Ireland.

Methods:

This mixed methods study was approved by the Galway University Hospitals Ethics Committee. Patient involvement in discussions about medication adjustment was measured using the validated OPTION tool (2) in audio-taped consultations in which the decision aid was used and not used. Interviews were conducted with patients and clinicians who used the DA.

Results:

5 patients were recruited from 5 outpatient diabetes clinics and 2 primary care diabetes clinics. Mean patient involvement was statistically higher in consultations that used the decision aid than those that did not (31 V 13.8, p < 0.05).

All 5 patients interviewed were satisfied with the decisions made and 4/5 felt they shared the decision-making process with the clinician. Clinicians felt the DA was feasible to use in routine practice but not applicable to all patients and that more training/experience in using the tool would be beneficial. The importance of discussing lifestyle changes (e.g. diet and exercise) in addition to medication changes in managing glycemic control was also thought to be important.

Conclusions:

Use of the DA is feasible in an Irish setting. Recruitment strategies and training requirements in the use of the tool would need consideration before undertaking a more formal assessment of this DA.
**Abstract Title:**

*After the transition: An investigation into attendance at Adult Mental Health Services by patients referred by Child and Adolescent Mental Health Services in a geographically-defined catchment area.*

**Authors and Affiliations:**

Ganter NM(1), Cohen D(3), McDonald C(1,2)

1. School of Medicine, NUI Galway.
2. Department of Psychiatry, University Hospital Galway.
3. HSE Galway/Roscommon Mental Health Services.

**Introduction:**

It is currently recommended that CAMHS patients have a “transition plan” in place if it is planned for them to move to adult services.1 The UK TRACK study found that while many patients transferred from child to adult services, few transfers were good.2 The corresponding study in the Republic of Ireland found that, of the patients who were referred to adult services, there was written documented preparation for transition in just over half of cases. Several patients continued CAMHS attendance past the transition boundary, resulting in resource implications.3

**Hypothesis:**

There is a quantifiable drop off in attendance to psychiatric services when patients transition from CAMHS to AMHS.

**Aims:**

To quantify the number of psychiatric patients who transition from child and adolescent to adult psychiatric services in a three-year period in the South Galway CAMHS catchment area, and their subsequent level of attendance or non-attendance at AMHS.

**Methods:**

This is a retrospective, chart review study. Patients who turned 18 in the years 2015 – 2017 were identified, in the South Galway CAMHS catchment area. We ascertained the number who were referred to AMHS. We investigated their subsequent attendance or non-attendance at adult services, and the number who remained engaged after 12 months. We will calculate basic statistics on demographic and clinical variables and perform further analysis as required. The findings of our research will be presented in the form of a poster and/or oral presentation. We will prepare a manuscript to be submitted for publication in a peer-reviewed journal.

**References:**

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)

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:

Hand, A.¹, Du, S.1,², O'Brien, T.²

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 Y, β11, β12, α1(I) and α2(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.
Abstract Title:
Retrospective analysis of last minute travellers attending a specialist travel medicine clinic in Ireland.

Author and Affiliations:
Hasnol, MH, Flaherty, G.

1. School of Medicine, NUI Galway.
2. School of Medicine, International Medical University, Kuala Lumpur, Malaysia

Introduction:
Last minute international travellers presenting for pre-travel consultation are a vulnerable group since it may not be possible to adequately protect them against infectious disease exposures. This is the first study to analyse last minute traveller patterns in clinical practice.

Methods:
Records of travellers attending the Tropical Medical Bureau (2013-2018) with fewer than 2 weeks remaining before departure were interrogated. The following data were extracted: gender, age, occupation, destination(s), purpose of travel, departure date, travel duration, travel group size, accommodation, past medical history, medications and travel vaccination history.

Results:
Of 7,555 traveller records examined, 1,295 (17.1%) were last minute travellers, of whom 45 (3.5%) were recurrent last minute travellers. Last minute travellers were equally likely to be either male or female. The mean age of last minute travellers was 32.2 years. The most common destination was Asia. Holiday was the most frequent purpose of travel. The mean interval before departure was 7.54 days and the mean travel duration was 7.36 weeks. The majority (454, 35.1%) travelled in pairs. 497 (38.4%) travellers reported a past medical history. 674 (52.0%) travellers had previous travel vaccinations. The majority (1202, 92.8%) of last minute travellers were unable to receive a course of travel vaccines.

Conclusions:
This study provides an insight into the characteristics and travel patterns of last minute travellers. Our findings will inform efforts to access travellers who might otherwise be unable to complete courses of travel vaccinations including hepatitis B, rabies and cholera.
Abstract Title:

Determining patients' preference for treatment of localised low-risk prostate cancer: Designing a Discrete Choice Experiment.

Authors and Affiliations:

- O. Jayasamraj [3MB student, NUI Galway],
- R. Corcoran [Department of Public Health, HSE West],
- F. Sullivan [Prostate Cancer Institute, NUI Galway, Galway Clinic],
- D. O'Donovan [Dept of Public Health, NUIG/HSE West]

Abstract:

There are several treatment options available for patients with low-risk localised prostate cancer. Care outcomes are optimised and regret is minimised if patients have the opportunity to choose their own treatment. A Discrete Choice Experiment (DCE) will be designed to elicit patient preferences for Surgery/Prostatectomy, Brachytherapy (BT) and External Beam Radiation Therapy (EBRT) based on treatment attributes and associated attribute levels. Published literature, patient and clinician consultation revealed five main attributes. To justify inclusion of these attributes into the final DCE, we analysed Patient Reported Outcome Measures (PROMS), namely the Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CP) collected from patients 3 years post treatment. (n=89). The following table details the attributes and attribute levels which we identified and which will be included in our final DCE.

Table 1

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Surgery(A)</th>
<th>EBRT(B)</th>
<th>BT(C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of severe and permanent urinary obstruction:</td>
<td>No Risk</td>
<td>1 in every 1000 treated</td>
<td>1 in every 100 treated</td>
</tr>
<tr>
<td>Risk of severe and permanent urinary incontinence:</td>
<td>1 in every 20 treated (5%)</td>
<td>1 in every 1000 treated</td>
<td>1 in every 100 treated</td>
</tr>
<tr>
<td>Risk of severe and permanent rectal injury:</td>
<td>No Risk</td>
<td>Less than 1 in every 100 treated</td>
<td>1 in every 500 treated</td>
</tr>
<tr>
<td>Time to return to normal activity</td>
<td>100 days</td>
<td>30 days</td>
<td>1 day</td>
</tr>
<tr>
<td>Shared Care</td>
<td>Doctor Only</td>
<td>Doctor &amp; Patient</td>
<td>Doctor, Patient &amp; Family &amp; Friends</td>
</tr>
</tbody>
</table>

The presence of urinary and bowel symptoms 3 years post-treatment justified the identified attributes. Such justification was not possible for prostatectomy (similar data unavailable).
**Abstract Title:**

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

**Authors and Affiliations:**


[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.
Abstract Title:

Diabetes and Dementia: prevalence and comorbidities in active cases attending Psychiatry of Old Age and Geriatric Medicine services in the North West of Ireland.

Author and Affiliations:

Ashley Le[1], Chee Lin Piong[1], Dr Grainne O'Malley[2], Dr Paula Hickey[2], Dr Fiona O Sullivan[2], Prof Geraldine McCarthy[3]

1. Medical Student, NUI Galway.
2. Consultant Physician/Geriatrician Sligo University Hospital.
3. Consultant Old Age Psychiatrist, Psychiatry of Old Age Department, Sligo Leitrim Mental Health Service and NUI Galway.

Background:

Diabetes mellitus (DM) is a risk factor for dementia in older patients. The relationship between DM and brain health is not yet common knowledge amongst health professionals (Marsh et al., 2017). Comorbidity often goes undetected in patients, directly affecting the management (or lack thereof), of their DM due to their mental state.

Aims/Objectives:

To develop a database of patients with dementia attending older persons services in Sligo/Leitrim, identify cases with diabetes and investigate relevant correlations.

Methods:

Medical records of patients with cognitive impairment were analyzed for cases of vascular dementia and DM from Sligo University Hospital, Liscarney House, and St. John's Hospital. Demographic and illness history data was collected from notes and IPMS (HSE database). Correlations investigated using SPSS and analyzed using Pearson's Chi-Square.

Results:

197 patients ≥ 65 years included. Mean age 80.72(8.37), 70(40.1%) male, 118(59.9%) female. 35(18.2%) with DM. Those not diagnosed with DM had related risk factors (eg hypertension, hypercholesterolaemia). 34 had Type2DM, only 1 had Type I. Among DM patients, 7(20.0%) were diagnosed with vascular dementia. (p=0.673), (X2=0.178, df=1, n=197).

Conclusion:

There is no correlation between DM and vascular dementia in this sample. No significant difference between diabetic patients (with Dementia) diagnosed with vascular dementia and those that were not. Those with vascular dementia had associated cardiovascular comorbidities, risk factors for DM. Patients with DM were at risk for Dementia but this was not specific to type, highlighting different pathological processes at play. It is important to recognize this relationship early on to provide effective treatment.

References:

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.
Abstract Title:

Impact of Time and Changing Demographics on Triple Negative Breast Cancer Subtypes and Outcomes in the West of Ireland 2001-2015

Author and Affiliations:
Zi Lun Lim, Cian Martyn, Grace Callagy, Sharon Glynn.

Discipline of Pathology, Lambe Institute for Translational Research, NUI Galway.

Introduction:
2890 new cases of breast cancer are diagnosed each year. We examined the changing incidence and mortality rates of triple negative breast cancer (TNBC) over a 15 year period (2001-2015).

Methods:
Clinical-pathological data for patients with confirmed TNBC (oestrogen receptor, progesterone receptor and HER2 receptor negative), diagnosed between 2001-2015 were collected. Patients were subdivided into 5-year intervals (2001-2005, 2006-2010, 2011-2015) for review of incidence rates, clinical pathological subtypes, tumour grade, tumour size and nodal status and changes in clinical management. Practise change intervals were also examined (introduction of symptomatic breast clinic, Breast Check and Neoadjuvant therapy). Finally impact on patient outcomes was analysed.

Results:
Rates of TNBC steadily rose with 11.2 per annum (2001-2005), 24 per annum (2006-2010), and 32.8 per annum (2011-2015). In terms of clinical pathological features, there was a significant difference between histological subtypes diagnosed (p=0.005), with decreased lobular adenocarcinoma and increased apocrine carcinoma, and no change in ductal adenocarcinoma. Mastectomy rates decreased from 70% to 25% over the past 15 years with increased use of breast conserving surgery. Survival analysis showed a trend towards improved disease free survival, although not statistically significance (p=0.119). Breast cancer specific survival displayed significant improvement from 2011-2015 compared to 2001-2005 (Hazard Ratio = 0.30, 95% CI 0.15-0.59, p=0.001).

Conclusion:
The outcome of this study illustrates the importance of being up to date with the different treatment modalities that could increase rate of survival to combat the expansion of TNBC.
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, γH2AX, is used in the laboratory and clinic to measure the DNA damage response. The number of γH2AX foci and corrected total nuclear fluorescence (CTNF) signal was measured in three breast-derived cell lines which were untreated, treated with etoposide (10µM) or doxorubicin (0.2µg/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.
Abstract Title:

Author and Affiliations:
MATHEW, Cherian¹, McIntyre Caroline¹, DONNELLAN Eoin¹, JOHNSTON Alison¹, BUCHOLC Magda³, FLANAGAN Louise², SUGRUE Michael¹,²

1. Donegal Clinical Research Academy, Department of Surgery, Letterkenny University Hospital, Letterkenny.
2. EU INTERREG Emergency Surgery Outcome Advancement Project.
3. EU INTERREG Centre for Precision Medicine project, Intelligent Systems Research Centre, School of Computing, Engineering and Intelligent Systems, Ulster University.

Introduction:
Biliary disease is a leading cause for surgical emergency admissions globally and despite the association of common bile duct (CBD) stones with increased mortality, the natural history of CBD stones is not well documented.

Aim:
This study undertook a meta-analysis of the significance of CBD stones in cholecystectomy patients.

Methods:
An ethically approved, PROSPERO-registered (CRD42018102167) meta-analysis following the PRISMA guidelines was undertaken. The databases PubMed and Scopus were searched for relevant literature from the last thirty years. Articles were assessed using the Methodological Index for Non-Randomised Studies (MINORS). MINORS scores for included articles were > 10/16 (non-comparative studies) and > 15/24 (comparative studies). The primary outcome was the natural history of CBD stones.

Results:
This study identified 11215 articles. 42 were found to meet the inclusion criteria and 29 of these were included for analysis after applying the MINORS criteria. A total of 46588 cholecystectomies were reported, with CBD stones identified in 4955 patients (10.6%) (Range: 1.3%-20.9%). Post cholecystectomy, CBD stones passed spontaneously in 49.6% (mean) of patients (Range: 12.5% - 73%). Only four papers reported the clinical sequelae of CBD stones in cholecystectomy patients: the rate of pancreatitis, jaundice, cholangitis, and abdominal pain were 11.8%, 45.3%, 8.2% and 43.8% respectively.

Conclusion:
Remarkably, few papers report known outcomes of CBD stones in patients undergoing cholecystectomy. Complications are significant in 8-45% of patients. With decreasing cholangiography rates, this may result in increased long term biliary related mortality. Multinational risk registries are urgently required to identify the sequelae of CBD stones.
Abstract Title:
The characteristics and prognosis of patients with Critical Limb Ischaemia (CLI) who may benefit from autologous stem cell therapy.

Author and Affiliations:
McDermott, D., Mohamed, S (1,2), Howard, L (2), O'Brien, T (2, 3)
(1) Discipline of Surgery, Lambe Institute for Translational Research, NUI Galway,
(2) REMEDI Research Facility, Biomedical Science Building, NUI Galway,
(3) Department of Medicine, Galway University Hospital.

Introduction/Aim:
Critical Limb Ischemia (CLI) is the end-stage of peripheral vascular disease. Re-vascularisation is the best treatment. No-option CLI is associated with high morbidity and mortality. Here a database of CLI patients was analysed and the angiogenic potential of patients derived Mesenchymal Stem Cells (MSCs) was examined.

Methods:
A prospective database of 283 CLI patients was developed during pre-screening of patients. The database was updated to determine prognosis in terms of amputation rate and mortality. The angiogenic property of patient conditioned media was investigated using in vitro Matrigel assays. SPSS statistical software was used. Ethical approval was already in place.

Results:
82(29%) patients had no option for revascularisation. Mortality rate was 23.2%. 50(61%) of there had a major amputation.

- 156(55.1%) patients had revascularisation, most common being angioplasty (50.6%).
- 30(10.6%) patients were on best medical therapy and treated conservatively

There were more males (70.7%) screened. 50(17.7%) patients had a major amputation, 67(23.7%) patients had a minor amputation. Mortality rate was 15.5%.

Angiogenic properties of conditioned media were investigated. After 18hrs incubation Endothelial Growth Media (EGM) (positive control) grew an average of 24 tubules per well, patient sample CLI001 grew an average of one tubule and patient sample CLI009 grew an average of 12 tubules.

Conclusion:
Mortality rate and major amputation rate were higher in the "no-option" group.

The angiogenic properties of the conditioned media shows that there is a variation in the angiogenic potential of CLI patient's MSCs leading to the possibility of successful autologous MSC therapy in the future.
Abstract Title:

Retrospective analysis examining the effect of macrophage infiltration to the tumour microenvironment on the therapeutic response of advanced melanoma.

Author and Affiliations:

R. Tynan [1], L. Tremble [2], R. Werner [3], Dr C. Heffron [4].

[1] School of Medicine, NUIG
[2] Cork Cancer Research Centre, University College Cork
[3] Pathology Laboratory, University Hospital Cork
[4] Department of Pathology, University Hospital Cork

It has been well established that there is a complex interplay between the constantly evolving tumour microenvironment and macrophage polarization and their functional roles [1,2]. Very few studies have both examined macrophage infiltration and correlated density of markers with patient outcomes. This project aimed to have a more comprehensive understanding of the true role of macrophages and to further that, be able to draw conclusions about the clinical significance of macrophage density and phenotype in the microenvironment of advanced melanoma tumours.

This was a retrospective analysis of fixed paraffin embedded tissue (FFPE) tumour blocks of resected primary and / or metastatic tumours obtained from patients who presented with advanced melanoma between 2009 and 2017, who had their primary tumours resected in Cork University Hospital and who went on to receive:

A) BRAF inhibitors
B) Ipilimumab (or other immunotherapies)

250 cases were reviewed, 26 BRAF+ and 26 BRAF- cases were selected. Immuno-histochemical analysis staining for CD68, CCR2, CD115Arginase I, inducible nitric oxide synthase (iNOS) and CD163 were preformed and results were correlated to patient data to determine the effect on patient prognosis and response to treatment.

Approval from the Clinical Research Ethics Committee of Cork Teaching Hospitals was acquired, and the data was kept in accordance with the Data Protection Act. The results of the study will remain blinded from patient personal details and be used for academic research only.

Statistical analysis of data is ongoing, and results are being complied.

References:


Abstract Title:

A systematic review of the prognosis of patients with apparent treatment resistant hypertension (aTRH)

Author and Affiliations:

David O’Sullivan (4MB student), Hannah Durand, Andrew Murphy, Peter Hayes

The prognosis of apparent treatment resistant hypertension (aTRH) remains uncertain. An increasing number of longitudinal and prospective studies demonstrate that resistant hypertension is associated with increased risk of cardiovascular and renal complications and all-cause mortality, compared to hypertension that is more easily controlled (Pimenta 2012). However, individual studies are limited by, for example, lack of ABPM assessment or inadequate assessment of adherence. We therefore conducted the first ever systematic review of the prognosis of patients with resistant hypertension and registered it on the international PROSPERO database.

We completed a systematic search of databases identifying records related to the prognosis of patients with aTRH. English language records were screened in title, abstract and full text to identify relevant studies. 10% were screened in duplicate to enhance reliability. Eligible articles were also assessed for quality and risk of bias using established criteria.

We found 15 eligible studies of which six were conducted in the US and only two were based in primary care. 22,216 individual patients were followed for an average of 56 months. The average median follow-up period was 60 months (5 years)

Ten studies had no assessment of WCH and five no assessment of adherence. Quantitative meta-analysis of outcome measures (e.g., all cause mortality, composite cardiovascular outcomes) will be completed shortly.

These results will contribute to the expanding research on this common and important condition. Further study is needed to convey how optimal prevention of resistant hypertension and also diagnosing resistant hypertension in a timely manner will improve the prognosis of these patients in the future.
Abstract Title:

Travel medicine research in the new millennium: a bibliometric analysis of articles published in Travel Medicine and Infectious Disease, 2003-2018

Author and Affiliations:

Oh, KE1, Flaherty, G1,2.

1. School of Medicine, NUI Galway.
2. School of Medicine, International Medical University, Kuala Lumpur, Malaysia

Introduction:

Evidence-based travel medicine requires that research priorities reflect the wide knowledge base of this relatively new discipline. This bibliometric analysis aimed to map the research output of a leading travel medicine journal against a recognised syllabus.

Methods:

All eligible articles published in Travel Medicine and Infectious Disease (2017 impact factor 4.45) between 2003 and 2018 were mapped against the Body of Knowledge curriculum of the International Society of Travel Medicine, comprising 7 domains and 178 sub-domains. Where an individual article reflected more than one sub-domain, it was categorised to each sub-domain. A temporal analysis of publication trends was also performed.

Results:

Categorical mapping of 1,047 eligible articles belonging to 9 article categories yielded the following number of articles per domain: Epidemiology (7.9%, n=83); Immunology / Vaccinology (8.5%, n=89); Pre-travel assessment/consultation (39.1%, n=409); Diseases contracted during travel (45.5%, n=476); Other clinical conditions associated with travel (5.5%, n=58); Post-travel assessment (9.6%, n=100); and Administrative and general travel medicine issues (7.3%, n=76). A mapping exercise was performed at the sub-domain level. Three articles relating to global health and travel medicine research were uncategorisable.

Conclusions:

This bibliometric analysis of travel medicine research publications provides useful information about research output, demonstrating a significantly higher level of activity in pre-travel assessment and diseases contracted during travel. Sub-domain analysis provided further insights. Our study also highlights deficiencies in the travel medicine curriculum which should be addressed in future revisions of the Body of Knowledge.
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 Ryan²,³
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.
Abstract Title:

An exploratory study on the prevalence of human papillomavirus in patients with inflammatory bowel disease

Author and Affiliations:

Annie O'Regan, Laurence Egan, Áine Keogh

Background:
Defective cell mediated immunity has been linked to increased prevalence of human papillomavirus (HPV) infection, a risk factor for many cancers. Treatment related immunosuppression for inflammatory bowel disease (IBD) could therefore increase the risk of chronic hpv infection, potentially elevating the risk of anal dysplasia and cancer. This is especially relevant as higher incidence of cancer in IBD patients has been demonstrated. (1)

Aim:
To investigate the prevalence of anal HPV infection in IBD patients and evaluate its association with immunosuppressive medications.

Method:
Following ethical approval, this case control study recruited 66 IBD patients and matched controls undergoing clinically indicated colonoscopy in June and July 2018. Data was collected via questionnaire before a swab was taken from the anal verge of each participant. The Roche Cobas HPV test was employed for analysis of samples.

Results:
Of the IBD patients, 18 (27.3%) had ulcerative colitis and 15 (22.7%) had Crohn's disease. The median current age of IBD patients was 42 (26-72) and controls was 46 (21-74).

The prevalence of HPV infection in the cohort was 9.1%, with no significant association between the viral infection and diagnosis of ibd (p=1) or immune-modulator use (p=1). However all IBD patients positive for the virus were on a biological or immunosuppressive therapy.

Interestingly, of the women who had gotten pap smears, 9 (36%) had received an irregular result. No significant relationship between IBD diagnosis and irregular pap smear was found (p=0.688).

Conclusion:
While the results are consistent with the expected HPV prevalence of 0-32.8% (2), the restricted sample size would indicate further study is needed to exclude the possibility of a relationship between IBD and HPV infection.

References:

Eileen F. Dunne at al.
Abstract Title:

Characterising an Inflammatory Model of Osteoarthritis in Human Chondrocytes.

Author and Affiliations:

Power, R., Quinlan, L.

1. Discipline of Physiology, School of Medicine, NUI Galway
2. Funding source: CÚRAM Centre for medical devices, NUI Galway

Introduction:

Osteoarthritis (OA) is a chronic degenerative joint disorder, involving dysfunction of and damage to adult articular cartilage (AC), which may result in arthralgia, joint deformation, and limited mobility in patients. Although OA is already the leading cause of disability among adults in Ireland, its prevalence and severity are increasing due to an aging population. Chondrocytes in AC proliferate and secrete extracellular matrix (ECM) to maintain and sustain cartilage. They respond to outside stimuli & tissue damage, and are responsible for degenerative conditions such as OA.

Aim:

To investigate the role played by Purinergic receptors & TRPV4 ion channels in regulating intracellular calcium signalling (ICS), compare the responses of Chondrocytes treated/untreated with the inflammatory cytokine TNF-α and to elucidate the dynamics of ICS in the progressive inflammatory process occurring in OA.

Methods:

Calcium Imaging: Human chondrocytes were cultured in 2D culture and treated with TNF-α (10ng/ml) 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, with purinergic and TRPV4 receptors activated by the addition of various agonists (ATP (10µM) or 4-αPPD) and the responses recorded.

Results & Conclusion:

Human chondrocytes in culture respond to ATP and 4-αPPD by producing robust changes in intracellular calcium. Both synovial fibroblasts and chondrocytes are significant sources of paracrine substances (e.g. ATP) as well as cytokines and chemokines. In increasingly common pathophysiological settings in humans, there are progressive changes in the cell physiology of articular joints and resulting dysfunction. Our study was initiated to provide new insights concerning intracellular calcium signalling in human chondrocytes that were obtained from arthritis-free adult donors. We have shown that ATP activated purinergic receptors which provoke significant changes in calcium signalling in isolated chondrocytes.
Abstract Title:

Validation of a western scoring system on large Asian series of outcomes following elective laparoscopic cholecystectomy; a value driven outcome based analysis.

Authors:

QUEK, KLR¹, Quek KWS², Sharda B², Kumari S², Iyer SG², Kow WCA², Madhavan KK², Bonney GK²

Author Affiliations:

[1] School of Medicine, NUI Galway.
[2] Division of Hepatobiliary Surgery and Transplant, Department of Surgery, National University Hospital Singapore.

Background:

Laparoscopic cholecystectomy is one of the most commonly performed general surgical procedures worldwide. There are numerous pre-operative factors shown to predict difficulty and outcomes following surgery, and has direct implications on Value Driven Outcomes (VDO) in quality and cost of care for patients. We validated an international scoring system (conversion from laparoscopic to open cholecystectomy score) in predicting surgical outcomes in a large tertiary Asian hospital. Subsequently, using a VDO-based analysis of the results; we describe an algorithm of quality patient care.

Patients and Methods:

A retrospective study of a prospectively held database was undertaken. All patients with complete data who underwent elective cholecystectomy in the study time frame were included (n=619). Preoperative demographic and radiological variables were tabulated alongside post-operative length of stay and costs. Patients was assigned a CLOC score and divided into two groups based on length of stay.

Results:

The CLOC score was an independent predictor of length of stay (8.1 versus 9.3; p<0.0001). An AUC on an ROC curve of the CLOC predicting day surgery was 0.7. At CLOC≥8, the sensitivity and specificity of this prediction was 67% and 60% respectively. Using this cut off, we noted a significant difference in the cost of care.

Conclusion:

Using a score previously validated in a western population to predict conversion to open cholecystectomy, we describe its use in predicting day surgery outcomes. An interplay of logistic regression and VDO analysis has resulted in a management algorithm to streamline care in this common general surgical procedure.
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, C1,2, Reilly L3,4, McMahon E1, Doherty AM1,2.

[1] Department of Psychiatry, Galway University Hospital.
[2] School of Medicine, NUI Galway.
[3] Department of Palliative Care, Galway University Hospital.

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.
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 x 10^9/ml to 8.9 x 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.
Abstract Title:
A survey on patient's attitudes and perceptions of bio-banking for Breast Cancer Research in Ireland.

Author and Affiliations:
Tan, Jiao Jie Cherie (¹), I Balasubramanian, K Barry, R McLoughlin, C Malone, K Sweeney, MJ Kerin, AJ Lowery (²)

School of Medicine, National University of Ireland, Galway (¹),
Department of Surgery, Associate Professor, NUI Galway (²).

Introduction:
Significant advances in cancer research have been made possible by molecular investigation using well-preserved bio-specimens at structured and supported biobanks. Understanding patients' attitudes towards contributing biological samples and other information to biobanks is thus important. This study aimed to assess patient attitudes towards the same and examine how demographic, social, and health-related factors correlate with willingness to contribute.

Methods:
All patients who attended the Symptomatic Breast Unit (SBU) in University Hospital Galway from 24th May to 28th June 2018 were invited to complete a questionnaire. Only patients who could provide verbal and written consent were included in this study. Data was stored in an anonymized password protected database. Statistical analysis was completed using SPSS version 25.

Results:
589 patients participated. Most participants were females (97.8%), aged between 41 and 60 years (48.4%) and with an education level equivalent to secondary school or less (47.2%). Of these patients, 22.1% (130/589) and 22.4% (132/589) attended the SBU for family history and personal history of breast cancer respectively. Although only 17.3% of patients (102/589) had prior knowledge on biobanks, 76.2% (449/589) said they were willing to donate to one. Willingness to contribute was statistically associable to an education level of university or higher (p=0.043). No association was identified for age (p=0.407), gender (p=0.930), race (p=0.869), family history of breast cancer (p=0.937) or personal history of breast cancer (p=0.967).

Conclusion:
Limited understanding of the role of biobanks and their importance in advancing medical research persists. Although positive attitudes towards donation was observed, further education on bio-banking may be required for certain groups to ensure/encourage participation.
Abstract Title:
Role of Mitophagy Receptors in Regulating UPR signalling.

Author and Affiliations:
Wen Xi TANG1, Barua David1, Ananya Gupta2 and Sanjeev Gupta1
1. Discipline of Pathology, Lambe Institute for Translational Research, NUIG.
2. Discipline of Physiology, School of Medicine, NUIG.

Introduction:
ER homeostasis pathway, namely Unfolded Protein Response is cellular response to endoplasmic reticulum. Our preliminary results show a coordinated increase in expression of mitophagy receptors (NDP52, OPTN, TAX1BP1, NBR1, P62) during UPR. Further our preliminary results show that NDP52/OPTN/TAX1BP1 triple knockout (TKO) and NDP52/OPTN/TAX1BP1/NBR1/P62 Penta knockout (PKO) HeLa cells show altered UPR signalling and increased sensitivity to ER stress induced cell death.

Aim:
The main aim was to compare the activation of three UPR signalling arms in WT, TKO and PKO HeLa cells.

Methods:
WT, TKO and PKO HeLa cells were maintained in DMEM medium supplemented with 10% heat inactivated FBS and 100 U/ml penicillin and 100μg/ml streptomycin with 5% CO2 at 37°C. Tunicamycin (TM) was used at the indicated concentrations to induce ER stress in cultured cells. Total RNA was isolated using Trizol. Reverse transcription was carried out with 2μg RNA and oligo (dT)15 using ImProm-II™ Reverse Transcription System. GAPDH was used as reference genes to determine the relative expression level of target genes using ΔΔCt method.

Results:
Cells were untreated/treated with TM (1μg/ml) for indicated time and levels of UPR target genes were assessed by RT-qPCR. (n=3). *P < 0.05; two-tailed unpaired t-test. In response to ER stress, there is a significant increase in mRNA levels of genes in WT HeLa cells (12.28±9.55) than in TKO (6.49±2.61) and PKO HeLa cells (3.68±1.07).

Conclusion:
PERK signalling is required for optimal induction of mitophagy genes. UPR-induced positive feedback loop has emerged as an essential protective mechanism during ER stress.

References:
Abstract Title:

'How should she be managed?' Representations of patients and doctors in the discourse of case vignettes.

Author and Affiliations:

TEH, Rui Min Natalie¹  O'MALLEY-KEIGHRAN, Mary-Pat (Supervisor) ²

1. School of Medicine, NUI Galway.
2. School of Speech & Language Therapy (NUIG)

Introduction/Aim:

To date, few qualitative studies have explored the quality of the language in medical texts in representing the patient and doctors. This paper aims to explore this under-researched area in medical education. The research question addressed in this study: "How are patients and doctors represented in the language of medical texts/textbooks?"

Design and Methodology:

The data set was derived from purposive sampling from the recommended list of textbooks from NUIG, generating 60 cases to analyse. This is a qualitative study where Critical Discourse Analysis, Transitivity Analysis and Appraisal Analysis drawing on Systemic Functional Linguistics were used. Observation of linguistic features used allowed interpretation of any underlying ideologies or social agendas. Ethical approval was not applicable as the data set was obtained from readily available resources in the form of case vignettes.

Results:

The transitivity analysis shows that the most commonly occurring verbs used were Doing (E.g. presents with, examine) followed by Being verbs (E.g. is, have). The Appraisal Analysis indicates negative appreciation as the predominant form of patient evaluation. The representation of patients and doctors explored in this study revealed a general lack of patient-centeredness and presence of the doctor, and an inclination to cases as a disease to be managed medically.

Conclusion:

This paper reveals insight to the area of representations of patients and doctors which has been under-explored. It seeks to unveil underlying ideologies towards representations of the patient and doctor, with hopes of stimulating discussion for improvement for a more patient-centred medical care.
Abstract Title:

Non-invasive imaging of the carotid artery using co-registered photoacoustic and duplex ultrasound.

Author and Affiliations:

Ruey Ying Teo1*, Martin Leahy2, Faisal Sharif1,3,4, Haroon Zafar1,3,4

1. School of Medicine, Clinical Science Institute, NUI Galway.
2. Tissue Optics and Microcirculation Imaging Centre, School of Physics, NUI Galway.
3. Cardiovascular Research & Innovation Centre Ireland, NUI Galway.
4. Lambe Institute for Translational Research, NUI Galway.

The abrupt rupture of carotid artery stenosis is a leading cause of stroke. Duplex ultrasound (DUS) is commonly used for carotid artery screening and measures the degree of stenosis with high sensitivity. DUS does not provide any functional information on the plaque composition which plays a crucial role in plaque rupture. Photoacoustic (PA) imaging provides high-contrast spectroscopic based specificity of optical imaging with high resolution of US imaging which can be used for carotid artery imaging and to differentiate between different plaque components. In this study co-registered PA and DUS imaging was optimised and evaluated for clinical imaging of carotid artery. In vivo pre-clinical imaging was performed to see the viability and performance of combined PA and DUS for human carotid imaging. Co-registered structural and functional images of the carotid artery were obtained. The first-in-man clinical evaluation of co-registered PA and DUS imaging for carotid atherosclerosis and vulnerable plaque detection is in progress. The overall aim of this study is to clinically evaluate the co-registered PA and DUS imaging for structural and functional assessment of carotid atherosclerotic plaques. Co-registered PA and DUS imaging can be used to visualize both the stenosis and molecular tissue changes and also suitable for patient follow up. Multi-spectral PA imaging can be used to differentiate between different absorbing structures, which provides a more direct assessment of the plaque composition.
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).

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

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:
Abstract Title:
Assessing hemodynamic and mechanical functionality of a novel intra-left ventricular device in an ex-vivo model.

Author and Affiliations:
Zuhairi Zainol Abidin, Shahen Andonian, Haroon Zafar, Faisal Sharif.
Lambe Institute for Translational Research, NUI Galway

Background:
Heart failure (HF) is a complex syndrome with many aetiologies, a broad spectrum of clinical features, and various clinical subsets. An ejection fraction of <40% on echocardiography indicates impaired left ventricular systolic function or heart failure with reduced ejection fraction (HFrEF). It is hypothesised that it is feasible to develop an ex-vivo model mimicking the pathophysiological parameters of HFrEF and that the novel intra-left ventricular assist device will improve cardiac output from the diseased ventricle by increasing its force of contraction.

Aims:
The main aims of this study are to develop an ex-vivo model of heart failure with HFrEF and to assess the dimensions and mechanical functionality of an intra-left ventricular (LV) assist device in the ex-vivo model of intra-left ventricular device.

Methods & Results:
An ex-vivo left ventricular circulatory model mimicking the pathophysiological parameters of HFrEF was developed in collaboration with GMedTech at Galway-Mayo Institute of Technology (GMIT). Force of contraction generated by the device was recorded and be used as proof of concept. The results collected shows that the contraction force generated by this novel device was recorded at a greater value than force generated during systole in an animal's heart. These findings suggest that by implementing this device in a human heart, it would increase the force of contraction of a diastolic dysfunctional heart. Thus improving its ejection fraction.

Conclusion:
The functional model was developed and it verified our concept. The prototype is currently undergoing further development to refine it even further.
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

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: