ROYAL ACADEMY OF MEDICINE IN IRELAND

IRISH JOURNAL OF MEDICAL SCIENCE

Irish Thoracic Society

ITS Annual Scientific Meeting 2016
18th–19th November

Fitzpatrick Castle Hotel,
Killiney, Co. Dublin

Irish Journal of Medical Science
Volume 185 Supplement 9
DOI 10.1007/s11845-016-1497-4

Springer

The Irish Thoracic Society thanks the following companies for their generous support of the 2016 Annual Scientific Meeting:

The Irish Thoracic Society Guest Lecture and Oral and Poster Awards

Boehringer Ingelheim

The Irish Thoracic Society SpR Study Day and ITS Case Study Forum

AstraZeneca

The Irish Thoracic Society Guest Lectures

VERTEX
THE SCIENCE of POSSIBILITY

TEVA Ireland
Teva Pharmaceuticals Ireland

Irish Thoracic Society Delegate Bag

BOC
A Member of The Linde Group

Irish Thoracic Society Tea and Coffee Breaks

RespiCare

Irish Thoracic Society Meeting Programme

CHAMPIX®

Roche

Exhibitors at the Irish Thoracic Society Annual Scientific Meeting 2016

Pharmaceutical and Medical Device Suppliers

Actavis Ireland

Actelion Pharmaceuticals UK Ltd

Air Liquide Healthcare Ireland Ltd

A Menarini Pharmaceuticals Ireland

AstraZeneca

BOC Healthcare

Boehringer Ingelheim Ireland Ltd

Boston Scientific

Cardiac Services

Cook Medical

Direct Medical Ltd

GlaxoSmithKline (Ireland) Ltd

Home Healthcare Ltd

Meda Health Sales Ireland Ltd

Medicare Health & Living Ltd

Mundipharma Pharmaceuticals Ltd

Novartis Ireland Ltd

Orion Pharma

Pfizer Healthcare Ireland (Champix/Eliquis)

Radiometer Ireland Ltd

ResMed/PEI

RespiCare Ltd

Roche Products (Ireland) Limited

Rowex Pharmaceuticals Ltd

Sword Medical Ltd

Teva Pharmaceuticals Ireland

Vertex Pharmaceuticals (UK) Ltd

Patient Charities

The Alpha One Foundation

The Asthma Society of Ireland

COPD Support Ireland

Cystic Fibrosis Ireland

The Irish Lung Fibrosis Association

The Irish Sarcoidosis Support Network

The Irish Sleep Apnoea Trust

Disclosure Statement

The operational costs of the Irish Thoracic Society Annual Scientific Meeting 2016 are funded with the support of a number of commercial bodies through unrestricted educational grants. These are listed overleaf.

Welcome from the Local Organisers

It is our great pleasure to welcome you to Dublin, host to the 2016 Irish Thoracic Society Annual Scientific Meeting.

In honour of the meeting's return to Dublin we have put together a programme that reflects the excellent work in respiratory medicine and healthcare taking place throughout the island and promises 'state of the art' education on a range of topics.

This year has seen a record number of abstracts and case study submissions—well over 200 in total. This reflects the high standard of innovative work taking place in clinical and research centres throughout the island. We thank all those presenting their work over the course of the meeting as well as the abstract review committee and judges for their time and expertise in what is never an easy task.

Special features of this year's meeting include: a lecture on COPD by Professor Wisia Wedzicha, Imperial College London; a lecture on developments in Inflammation Research by Professor Luke O'Neill, Trinity College Dublin, a lecture on Adherence to Inhaled Therapy by Professor Richard Costello, Beaumont Hospital Dublin and an Update on Pulmonary Vasculitis by Professor Karina Keogh, Mayo Clinic, Rochester. A warm welcome to all our speakers who have travelled from both near and far to share their expertise and insights with us.

Welcome also to the many patient and professional organisations in attendance. Networking and sharing information on the wealth of activities taking place across the respiratory healthcare community has become an integral part of the meeting. A particular welcome to the Primary Care Respiratory Society Ireland (PCRSI) who will hold their inaugural meeting on Saturday 19th November.

Finally we would like to extend a particular welcome to the exhibitors and sponsors of this year's meeting. We are very grateful for their continued support.

Yours sincerely,

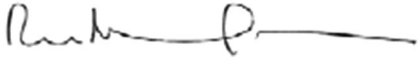
Dr Marcus Butler

Dr Ruairi Fahy

Professor David Healy

Dr Emer Kelly

Dr Eddie Moloney



Dr Ross Morgan

Local Organisers, ITS Annual Scientific Meeting 2016

President's Welcome

On behalf of the Irish Thoracic Society, I am delighted to welcome you to the ITS Annual Scientific Meeting 2016. I wish to thank the team in Dublin for their great work in organising what promises to be an excellent meeting.

I would like to take this opportunity to update you on the work of the Society over the past 12 months particularly in the areas of education, research, advocacy and public health.

Education

The ITS Spring Meeting 2016 took place in Kinsale in April. This meeting featured 'state of the art' lectures on Lung Transplantation, Cystic Fibrosis, COPD, Pulmonary Hypertension and Lung cancer delivered by international experts from both Ireland and abroad. The meeting was a great success, many thanks to Boehringer Ingelheim for their support.

Thanks to generous travel bursaries we have been able to support attendance at the major international respiratory conferences. The ITS A Menarini ATS Travel Bursary was awarded to Dr Laura Gleeson, St James's Hospital, Dublin and Dr Robert Smyth, Beaumont Hospital. There were two awards, based on (1) An evaluation of abstracts submitted to the ATS, awarded to Dr Gleeson and (2) Successful appointment to the role of Irish Thoracic Society Educational Officer, awarded to Dr Smyth. The ITS GSK ERS Travel Bursary was awarded to Dr Christine Campbell, St Vincent's University Hospital, Ms Brenda Deering, Beaumont Hospital and Dr Melissa McDonnell, Galway University Hospitals. The ITS GSK BTS Travel Bursary has also been launched with winners to be announced over the course of the meeting. Thanks to both A Menarini and GSK for their generous support of these bursaries.

In his role as ITS SpR Educational Officer, Dr Robert Smyth has been making great strides in developing initiatives to strengthen the links between the ITS and Respiratory SpRs, including the development of social media platforms—Twitter and Facebook and a journal review.

Dr Smyth was also instrumental in the organisation of the Inaugural ITS Respiratory Challenge, kindly supported by Astra Zeneca. The event successfully combined entertainment with a strong educational basis thanks to its lively format, and the skilful compering and indepth knowledge brought to proceedings by hosts Professor Muiris X FitzGerald and Professor JJ Gilmartin. This in turn led to the IT'S Inspired Team, comprising of Dr Robert Smyth, Dr Breda Cushen and Dr Mohammed Jamal Eldeen being crowned the European Respiratory Champions 2016 following a tough battle of knowledge and wits at the ERS Congress in London in September.

The Irish Thoracic Society ILD Registry has made considerable progress with data now being entered by a number of centres. It represents a significant breakthrough in the management of ILD in Ireland into the future by facilitating research and contributing to the quality of care of persons with interstitial lung disease. Thanks to Boehringer Ingelheim for their support in the development of the registry and to Roche Products (Ireland) Limited for their support of an ILD Nurse to assist in the care of these patients.

Research

Thanks to the support of GSK, the Irish Thoracic Society has once again been successful in securing joint funding through the MRCG HRB Joint Funding Scheme 2016. The successful grant is titled 'Toward host-directed therapies to overcome impairment in cigarette smokers during mycobacterial infection' by Professor Joe Keane, St James's Hospital, Dublin. This was the result of a highly competitive and rigorous grant review process.

Thanks to the kind support of Novartis, the Asthma Society of Ireland and the Irish Thoracic Society has been once again able to offer a research bursary to the value of €10,000.00 in 2016, the recipient of which we will be announcing over the course of the meeting. The 2015 Award was presented to Dr Patrick Mitchell for his project titled 'The role of IL-33 and its receptor and GLP-1 and its receptor on eosinophils in a mild allergic asthma cohort following a bronchial allergen challenge'.

Advocacy and Public Health

The ITS continues to play a central role in the work of the Irish Lung Health Alliance in raising awareness of lung disease amongst policy makers and the public. Following on from a series of very successful public health and screening initiatives in recent years the Alliance shifted in focus to a younger audience for its latest campaign—'Lovin' our Lungs' which took place in May 2016. The campaign took the form of a video competition and was promoted widely thanks to partnerships with Fóroige (the national youth development organisation) and RTE's Two Tube as well as the support of campaign ambassadors—star of 'Sing Street' Ferdia Walsh-Peelo and Olympian Dr Ronnie Delany. The winning entries can be viewed at http://www.lunghealth.ie.

The second ITS ATS Gathering took place in San Francisco in May. This was attended by a combination of Irish delegates and colleagues from the US and overseas. The event was a wonderful opportunity for old friends and colleagues to catch up as well as for new links to be forged between Irish SpRS and US research institutions, many of which were represented.

The success of all these initiatives is only possible thanks to the support and engagement of our members, partner organisations and our partners from the pharmaceutical and medical equipment sectors. This support is hugely appreciated and we look forward to continued collaboration in 2017 and beyond.

Have a great meeting!

Dr Jacqueline Rendall
President, the Irish Thoracic Society

Thursday 17th November

13.00–17.00 **Specialist Registrar (SpR) Training—WB Yeats Suite**
Kindly supported by Astra Zeneca

18.30–20.30 **ITS Case Study Forum—followed by dinner and prize for Best Case Presentations 2016—The Albert & Behan Suite**
Kindly supported by Astra Zeneca

Chairs E. Kelly, St Vincent's University Hospital, Dublin

A. Fabre, St Vincent's University Hospital, Dublin

S. O'Neill, Beaumont Hospital, Dublin

18.30–19.30 **Case Study Poster Review**

19.30–20.30 **Case Study Oral Presentations**

19.30 **1. Reviewed in the rapid access lung clinic**

V. Brennan[1], C. O'Gorman[2], D. Ryan[1], D.P. Breen[1], J. Bruzzi[3]
[1]Respiratory service, University College Hospital, Galway;
[2]Obstetrics & Gynaecology Service, Mayo General Hospital;
[3]Radiology Department, University College Hospital, Galway.

19.40 **2. An unusual cause of pulmonary nodularities**

C.B. Ni Ealaithe[1], L.J. Chawke[1], P. Sweeney[2], T.M. O'Connor[1]
[1]Department of Respiratory Medicine, Mercy University Hospital, Grenville Place, Cork City, Co. Cork;
[2]Department of Urology, Mercy University Hospital, Grenville Place, Cork City, Co. Cork.

19.50 **3. An unusual case of orthopnea**

E. Keelan[1], E. Judge[2], J. Kidney[2]
[1]Belfast City Hospital, Belfast;
[2]Mater Infirmorum Hospital, Belfast.

20.00 **4. Running Complications After Lung Transplantation**

O.A. Omar, L. Khorsheed, S. Cullivan, K.D. Brosnan, O.J. O'Connell, J.P. Egan
Transplant Department, Mater Misericordiae Hospital, Dublin.

20.10 **5. An interesting case of Haemoptysis in Pregnancy**

S. Loughrey, D. Kumar, T. Warke
Respiratory Department, Royal Victoria Hospital, Northern Ireland.

20.20 **6. The Unforgiven Disease**

S.G. Chong[1], L.E. Glesson[1,2], M. Herron[1], C. Varghese[1], E. Ryan[3], M. Kane[1], C. McDonald[1], N. Gleeson[4], A.M McLaughlin[1], K. Butler[3], P. Gavin[3] and J. Keane[1,2]
[1]Department of Respiratory Medicine, St James's Hospital, James's Street, Dublin 8, Ireland;
[2]Department of Clinical Medicine, Trinity College Dublin, St James's Hospital, James's Street, Dublin 8, Ireland;
[3]Department of Infectious Diseases, Our Lady Children's Hospital, Crumlin, Dublin 12, Ireland;
[4]Department of Gynaecology, St James's Hospital, James's Street, Dublin 8, Ireland.

20.30 **7. Waldeyer's Snor-Ring - an unusual mode of presentation**

Hisham Ibrahim, Dushyant Rangadas, John Kiely
Mallow General Hospital, Cork.

Friday 18th November

07.30–08.00 **Registration, tea and coffee—Prince Regent Suite**
Kindly supported by RespiCare

08.00–11.00 **Poster Review and Parallel Discussions**

08.00–09.30 **Poster Review—The Albert & Behan Suite**

09.30–11.00 **Parallel Poster Discussions**

1. Asthma—James Joyce Suite

Chairs P. Manning, Bons Secours Hospital, Dublin
D. Ryan, Beaumont Hospital, Dublin

2. COPD Clinical–WB Yeats Suite

Chairs C. Rooney, Mayo University Hospital, Mayo
R. Fahy, St James's Hospital, Dublin

3. Lung Cancer and Interventional Pulmonology—Patrick Kavanagh Suite

Chairs D. Healy, St Vincent's University Hospital, Dublin
V. Keatings, Letterkenny University Hospital, Letterkenny

4. Cystic Fibrosis and Bronchiectasis—Jonathan Swift Suite

Chairs C. Gunaratnam, Beaumont Hospital, Dublin
M. O'Mahony, Galway University Hospitals

11.00–11.30 **Tea and Coffee/Exhibition Viewing, Prince Regent Suite**
Kindly supported by RespiCare

11.30–13.00 **5. Oral Presentations I—The Albert & Behan Suite**

Chairs M. Butler, St Vincent's University Hospital, Dublin
B. Plant, Cork University Hospital, Cork

11.30 **5.1. The role of Glucagon Like Peptide-1 and its receptor in allergic asthma**
Patrick D, Mitchell, MD[1], Brittany M. Salter, BSc[1], John Paul Oliveria, BSc[1], Amani El-Gammal, MD[1], Damian Tworek, MD, PhD[1], Steve G. Smith, PhD[1], Roma Sehmi, PhD[1], Gail M. Gauvreau, PhD[1], Marcus Butler, MD[2], Paul M. O'Byrne, MB[1]
[1] Firestone Institute of Respiratory Health, Department of Medicine, Michael G DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada;
[2]Department of Medicine, University College Dublin, Ireland.

11.40 **5.2. The INCA™ (Inhaler Compliance Assessment™): Validation against Established Measures of Adherence**
C. N. Moran[1], F. Doyle[1], I. Sulaiman[2,3], K. Bennett[4], G. Greene[1], G. Molloy[5], R. B. Reilly[6,7,8], R. W. Costello[2,3], L. Mellon[1]
[1]Department of Psychology, Division of Population Sciences, Royal College of Surgeons in Ireland, Dublin, Ireland;
[2]Department of Respiratory Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland;
[3]Clinical Research Centre, Smurfit Building, Royal College of Surgeons in Ireland, Dublin, Ireland;
[4]Division of Population Sciences, Royal College of Surgeons in Ireland, Dublin, Ireland;
[5]School of Psychology, National University of Ireland Galway, Galway, Ireland;
[6]Trinity Centre for Bioengineering, Trinity College, The University of Dublin, Ireland;
[7]School of Engineering, Trinity College, The University of Dublin, Ireland;
[8]School of Medicine, Trinity College, The University of Dublin, Ireland.

11.50 **5.3. Evaluating the systemic effect of reduced levels of circulating alpha-1 antitrypsin (AAT) on circulating immune cells in Alpha-1 antitrypsin deficient patients**
Lacey N, McElvaney OJ, White MM, McElvaney NG, Reeves EP
Respiratory Research Division, Department of Medicine, Education and Research Centre, Smurfit building, Beaumont Hospital, Dublin 9, Ireland.

12.00 5.4. Toll-like receptor 3 (*TLR3*) L412F single nucleotide polymorphism as a causative factor in disease progression in idiopathic pulmonary fibrosis (IPF) during bacterial infection in TLR3-defective patients

Aoife N. McElroy[1], D.N. O' Dwyer[2,3], G. Cooke[2], L. Mawhinney[1], A. Tynan[1], C. O' Reilly[1], M. Doroudian[1], S. McKeon[1], M.P. Keane[2,3], P.G. Fallon[1], A.J. Simpson[4], A.B. Millar[5], E.E. McGrath[6], M.K. Whyte[6], N. Hirani[7], C.M. Hogaboam[8], M.E. Armstrong[1] and S.C. Donnelly[1,9]

12.10 5.5. Clinical to Pathological Stage Migration and Impact of Time from PET-CT to Surgical Resection in Non-Small Cell Lung Cancer

GJ Fitzmaurice, C O'Connell, R Weedle, W Ahmad, RJ Ryan, VK Young
Department of Cardiothoracic Surgery, St. James's Hospital, Dublin.

12.20 5.6. The Role of Macrophage Migration Inhibitory Factor in (MIF) Lung Cancer

Sinead McKeon[1], L. Mawhinney[1], M.E. Armstrong[1], H. Conroy[1], C. O'Reilly[1], A. Tynan[1], A. McElroy[1], M. Doroudian[1], C. Misslin[1], D. Fayne[1], D. Lloyd[1], J. Bernhagen[2], R. Bucala[3], S.C. Donnelly[1,4]
[1]Department of Medicine, Trinity Biomedical Sciences Institute, Trinity College Dublin, Dublin 2, Ireland;
[2]Institute for Stroke and Dementia Research, Ludwig-Maximilians-University of Munich, Munich, Germany;
[3]Department of Internal Medicine, Yale University School of Medicine, New Haven, USA;
[4]Department of Clinical Medicine, Trinity Centre for Health Sciences, Tallaght Hospital, Tallaght, Dublin 24, Ireland.

12.30 5.7. Exposure to inhalable dust, endotoxin and total volatile organic carbons (TVOCs) on dairy farms using manual and automated feeding systems

Cronin, Garvin[1], Basinas, Ioannis[2], Hogan, Victoria[3], Sigsgaard, Torben[4], James Hayes[5] and Coggins, Ann Marie[1]*
[1]School of Physics, National University of Ireland, Galway, Ireland;
[2]Centre for Human Exposure Science, Institute of Occupational medicine, Research Avenue North, Edinburgh EH14 4AP, UK;
[3]School of Health Sciences, National University of Ireland, Galway, Ireland;
[4]Department of Public Health, Section for Environment, Occupation and Health, Danish Ramazzini Center, Aarhus University, Bartholins Allé 2, bg 1260, 8000 Aarhus C, Denmark;
[5]Royal College of Surgeons Ireland Hospital Group, Cavan & Monaghan Hospitals, Ireland.

12.40 5.8. Multidimensional severity assessment in bronchiectasis—An analysis of 7 European cohorts

McDonnell MJ,[1,2,3] Aliberti S,[4] Goeminne PC, [5,6] Dimakou K,[7] Zucchetti SC,[4] Davidson J,[2] Ward C,[2] Laffey JG,[3,8] Finch S,[9] Pesci A,[10] Dupont LJ,[5] Fardon TC, [9] Skrbic D,[11] *Obradovic D,*[11] Cowman S,[12] Loebinger MR[12], Rutherford RM,[1] De Soyza A*,[2] Chalmers JD*,[9]
[1]Department of Respiratory Medicine, Galway University Hospitals, Galway, H91 YR71, Ireland;
[2]Institute of Cellular Medicine and Adult Bronchiectasis Service, Freeman Hospital, Newcastle University, Newcastle-upon-Tyne, NE, United Kingdom;
[3]Lung Biology Group, National University of Ireland, Galway, Ireland;
[4]Department of Pathophysiology and Transplantation, University of Milan, Cardio-thoracic unit and Cystic Fibrosis Adult Center, Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico, Milan, Italy;
[5]Department of Respiratory Medicine, University Hospital Gasthuisberg, Herestraat 49, B-3000, Leuven, Belgium;
[6]Department of Respiratory Medicine, AZ Nikolaas, Sint-Niklaas, Belgium;
[7]5th Department of Pulmonary Medicine, "Sotiria" Chest Diseases Hospital, Athens, Greece;
[8]Department of Anesthesia, Keenan Research Centre for Biomedical Science, St Michael's Hospital, University of Toronto, Toronto, Ontario M5B 1W8, Canada;
[9]Scottish Centre for Respiratory Research, University of Dundee, Ninewells Hospital and Medical School, Dundee, DD1 9SY, United Kingdom;
[10]Department of Health Science, University of Milan Bicocca, Clinica Pneumologica, AO San Gerardo, Monza, Italy;
[11]Institute for Pulmonary Diseases of Vojvodina Sremska Kamenica. Put doktora Goldmana 4; 21204 Sremska Kamenica, Serbia;
[12]Host Defence Unit, Royal Brompton Hospital and UK Imperial College, London, UK
*Denotes joint senior authorship

12.50 5.9. Bronchiectasis Rheumatoid overlap syndrome (BROS) is an independent risk factor for mortality in patients with bronchiectasis: A multicentre cohort study

McDonnell MJ,[1,2,3] De Soyza A[1,2], Goeminne PC[4,], Aliberti S[5], Lonni S[5], Davidson J[1], Dupont LJ[4], Fardon TC[6], Rutherford RM[3], Hill AT[7], Chalmers JD[6]
[1]Adult Bronchiectasis Service & Sir William Leech Centre for Lung Research, Freeman Hospital, Heaton, Newcastle, NE7 7DN, UK;
[2]Institute of Cellular Medicine, Newcastle University, NE2 4HH;
[3]Department of Respiratory Medicine, Galway University Hospitals, Newcastle Road, Galway, Ireland;
[4]University Hospital Gasthuisberg, Respiratory Medicine, Herestraat 49, B-3000 Leuven, Belgium;
[5]Department of Health Science, University of Milan Bicocca, Clinica Pneumologica, AO San Gerardo, Via Pergolesi 33, Monza, Italy;
[6]Tayside Respiratory Research Group, University of Dundee, Dundee, DD1 9SY, UK;
[7]Department of Respiratory Medicine Royal Infirmary of Edinburgh and the University of Edinburgh, 51 Little France Crescent, Old Dalkeith Road, Edinburgh, EH16 4SA, UK.

13.00–14.00 Lunch—PJ's Restaurant

Parallel Business Meetings/Forums

11.00–13.00 **Forum of ANAIL—Association of Irish Nurses in Respiratory Care—WB Yeats Suite**

13.00–15.00 **Forum of the IICMS Faculty of Respiratory—James Joyce Suite**

11.00–13.00 **Forum of Chartered Physiotherapists in Respiratory Care—Patrick Kavanagh Suite**

14.00–16.00 **COPD Outreach Meeting—Patrick Kavanagh Suite**

13.00–16.30 **6. Irish Thoracic Society Paediatric Forum—Sean O'Casey Suite**

Chair D. Mullane, Cork University Hospital

13.00–13.30 **Paediatric Forum Lunch**

13.30 **ITS Paediatric Forum Guest Lecture**
"How might we stop the allergic march?"
Professor Jonathan O'B Hourihane, Professor of Paediatrics and Child Health, University College Cork, Cork

14.15 **6.1. Oral Salt Supplementation in the first year of life of people with Cystic Fibrosis: A retrospective review of practice in University Hospital Limerick**
Lehane C[1], Daly D[1], C Lynch[1], N Power[1], Linnane B[1]
Paediatric CF Unit, Department of Paediatrics, University Hospital Limerick, Limerick.

14.25 **6.2. Use of group education for delivery of sublingual grass immunotherapy in children with asthma; a patient satisfaction and safety pilot study**
Butler D[1], McCarthy L[1], Mullane D[1], Ní Chróinín M[1]
Dept of Paediatrics, Cork University Hospital, Cork

14.35 **6.3. Children with Isolated Swallowing Difficulties- A review of presentation, treatment and outcomes**
James Trayer[1], Carol Gilmore[2], Sara Dallape[2], Des Cox[1]
[1]Paediatric Respiratory Department, OLCHC
[2]Speech and Language Department, OLCHC.

14.45 **6.4. The Role of Human Rhinovirus Infections In Young Children with Cystic Fibrosis**
J O'Rourke[1,2], D Waldron [3], S Coughlan[3], P Mc Nally[1,2,4], C De Gascun [3], D Cox[1,2]
[1]The National Children's Research Centre, OLCHC, Dublin 12;
[2]Respiratory Department, Our Lady's Children's Hospital Crumlin, Dublin 12;
[3] NVRL, University College Dublin, Belfield, Dublin 4;
[4]Department of Paediatrics, Royal College of Surgeons in Ireland.

15.00 **Tea and coffee**

15.15 **6.5. The association between smoking tobacco and parental monitoring**
K. Taylor, S. Keogan, L. Clancy
TobaccoFree Research Institute (TFRI), Dublin, Ireland.

15.25 **6.6. Asthma Friendly School Award—a new way of engaging schools, students and families in asthma management education**
Kenny, P., Dunne, M
Asthma Society of Ireland, 42-43, Amiens Street, Dublin 1.

15.35 **6.7. Managing Acute Bronchiolitis: Are we in line with current NICE Guidelines**
T McGrath, R Drew, S Kelleher
Department of General Paediatrics, Temple Street Children's University Hospital, Dublin

15.45 **6.8. Detection of Human Neutrophil Elastase (NE) by ProteaseTag active NE Immumoassay in Paediatric Cystic Fibrosis Bronchoalveolar Lavage (BAL) Samples**

Jenny O'Rourke [1,2], Lorraine Martin [3], Kelly Moffitt [3], Paul McNally [1,2,4]
[1]The National Children's Research Centre, OLCHC, Dublin 12;
[2]Respiratory Department, Our Lady's Children's Hospital Crumlin, Dublin 12;
[3] School of Pharmacy, Queens University, Belfast;
[4]Department of Paediatrics, Royal College of Surgeons in Ireland.

15.55 **6.9. Investigation of the Relationship Between low Vitamin A in People with Cystic Fibrosis, and the Presence or Degree of Liver Disease over time**

S Fingold, B Linnane, D Daly
Cystic Fibrosis Unit: University Hospital Limerick (UHL), Dooradoyle, Limerick.

16.05 **Prize-giving and close**

14.00–15.30 **7. Oral Presentations II—Albert & Behan Suite**

Chairs J. Rendall, Belfast City Hospital, Belfast
R. Morgan, Beaumont Hospital, Dublin

14.00 **7.1. Randomised Trial of Analgesia in VATs Surgery: Local Anaesthetic Delivery By Wound Infiltration Catheter Compared With Topical Trans-Dermal Patch Delivery**

N Abbas, DG Healy
St Vincent's University Hospital and the University College Dublin.

14.10 **7.2. Long term functional outcomes post critical care discharge**

N.Keohane[1], J.Dowds[1], Dr.Julie Broderick[2], Dr.Martin-Leoches[3]
[1]Physiotherapy Department St James's Hospital Dublin;
[2]Trinity College Dublin;
[3]St.James's Hospital Dublin.

14.20 **7.3. The influence of patient age on the incidence of acute cellular rejection in Lung Transplant recipients in Ireland**

Cullivan S, Omar. OA, Khorsheed L, Winward S, Lawlie I, Riddell P, McSharry D, Egan JJ, O'Connell OJ.
National Heart and Lung Transplant Unit, Mater Misericordiae University Hospital, Dublin.

14.30 **7.4. Severity of sleep disordered breathing independently predicts metabolic dysfunction in a large population of severely obese subjects: the ESADA study**

Sophie J Crinion[1], Silke Ryan[1], Ludger Grote[2], Jan Hedner[2], Walter McNicholas[1], Brian D Kent[3]
[1]St Vincent's University Hospital, Dublin, Ireland
[2]Sahlgrenska University Hospital, Gothenburg, Sweden
[3]Guy's & St Thomas' Hospitals, London, United Kingdom

14.40 **7.5. Smokers' alveolar macrophages demonstrate impaired glycolytic reprogramming in response to *Mycobacterium tuberculosis* infection**

Laura E Gleeson[1,2], Frederick J Sheedy[2], Joseph Keane[1,2]
[1]Department of Respiratory Medicine, St James's Hospital, Dublin 8;
[2]Department of Clinical Medicine, Trinity Translational Medicine Institute, TCD, Dublin 8.

14.50 **7.6. Trypsin-like protease activity predicts disease severity and patient mortality in adults with cystic fibrosis**

J.A. Reihill[1], K.L. Moffitt[1], A.M. Jones[3], J. S. Elborn[2] & S.L. Martin[1]
[1]School of Pharmacy;
[2]Centre for Experimental Medicine, Queen's University Belfast, N Ireland, UK;
[3]Manchester Adult Cystic Fibrosis Centre, Manchester, UK

15.00 **7.7. Ivacaftor does not produce a significant change in anti-Pseudomonas aeruginosa antibodies**

Collins A[1], Ronan NJ[2,3], McCarthy Y[2,3], Daly M[2,3], Shortt C[2,3], McCarthy M[2,3], Fleming C[2,3], Murphy DM[2,3], Plant BJ[2,3]
[1]Medical School, University College Cork, College Road, Cork;
[2]Cork CF Centre, Cork University Hospital, University College Cork;
[3]HRB Clinical Research Facility, University College Cork.

15.10 **7.8 The Role of Fibrocyte Derived Exosomes in the Development of Idiopathic Pulmonary Fibrosis**
J Harford[1], G Cooke[1,2], R Kane[1,2], MP Keane[2,3]
[1]UCD School of Medicine and Medical Sciences, University College Dublin, Belfield, Dublin 4, Ireland;
[2]UCD Conway Institute of Biomolecular and Biomedical Research, Belfield, Dublin 4, Ireland;
[3]Department of Respiratory Medicine, St. Vincent's University Hospital, Elm Park, Merrion Road, Dublin 4.

15.20 **7.9 Ivacaftor therapy reduces the inflammatory burden in patients with cystic fibrosis by indirectly modulating ADAM-17 activity**
White MM[1], Flannery R[2], Hawkins P[1], McElvaney NG[1], and Reeves EP[1]
[1]Respiratory Research Division, Dept of Medicine, Royal College of Surgeons in Ireland, Education and Research Centre, Beaumont Hospital, Dublin 9, Ireland;
[2]Colaiste Dhulaigh College of Further Education, Dublin 17, Ireland

15.30–16.00 **Tea and Coffee/Exhibition Viewing—Prince Regent Suite**
Kindly supported by RespiCare

16.00–17.30 **Irish Thoracic Society Guest Lectures - Albert & Behan Suite**

Chairs T. McDonnell, St Vincent's University Hospital, Dublin
G. McElvaney, RCSI, Beaumont Hospital, Dublin

16.00–16.45 **Metabolic reprogramming-a new frontier in inflammation research**

Professor Luke O'Neill PhD FRS, Inflammation Research Group, School of Biochemistry and Immunology Trinity Biomedical Sciences Institute, Trinity College Dublin 2

16.45–17.30 **Novel insights into mechanisms of COPD Exacerbations**

Professor Wisia Wedzicha, Professor of Respiratory Medicine, Imperial College London

Kindly supported by Boehringer Ingelheim Ireland

17.30–18.30 **Irish Thoracic Society AGM—WB Yeats Suite**

19.30–late **Irish Thoracic Society Drinks Reception—Library Bar**
ITS Gala Dinner—Albert & Behan Suite

Saturday 19th November

08.00–08.30 **Registration, tea and coffee—Prince Regent Suite**
Kindly supported by RespiCare

08.30–10.00 **Poster Review—Albert & Behan Suite**

10.00–11.00 **Parallel Poster discussions**

8. COPD II—Sean O'Casey Suite

Chairs S. Foley, University Hospital Waterford
R. O'Donnell, St James's Hospital, Dublin

9. COPD Basic Science – James Joyce Suite

Chairs E. Kelly, St Vincent's University Hospital, Dublin
M. Sheehy, Midland Regional Hospital, Mullingar

10. ILD and Vascular—Patrick Kavanagh Suite

Chairs E. Moloney, Tallaght Hospital, Dublin
K. O'Reilly, Mater Misericordiae University Hospital, Dublin

11. TB, Infections and Sleep—JM Synge Suite

Chairs AM McLaughlin, St James's Hospital, Dublin
L. Cormican, Connolly Hospital, Dublin

12. General Respiratory—Jonathon Swift Suite

Chairs A. O'Brien, University Hospital Limerick
M. Kelly, Altnagelvin Area Hospital, Derry

11.00–11.30 **Tea and Coffee/Exhibition Viewing—Prince Regent Suite**
Kindly supported by RespiCare

09.30–13.00 **Inaugural Primary Care Respiratory Society of Ireland (PCRSI) Meeting—WB Yeats Suite**

Chairs D. Forde, Chairman, PCRSI
D. Nolan, Secretary PCRSI

09.00–09.30 **Registration**

09.30–10.00 **Introduction to PCRSI, Chairman Dr Derek Forde**

10.00–11.00 **The Wheezy Infant, Dr Vinty Mc Govern, Respiratory Medicine, General Practice and Asthma Clinic RBHSE**

11.30–11.45 **Dr Dermot Nolan, Secretary, PCRSI Clinical Lead in Asthma**

11.45–12.45 **Running a COPD Clinic & Difficult Patients, Dr Kevin Gruffyd –Jones, Respiratory Lead RCGP Nice COPD Guidelines**

11.30–13.00 **ITS Guest Lectures—Albert & Behan Suite**

Chairs M. Henry, Cork University Hospital, Cork
S. Gaine, Mater Misericordiae University Hospital, Dublin

11.30–12.15 **Does adherence to therapy matter?**

Professor Richard Costello, Department of Medicine, RCSI, Beaumont Hospital, Dublin
Kindly supported by Teva

12.15–13.00 **Updates in Pulmonary Vasculitis**

Karina A Keogh, Assistant Professor of Medicine, Division of Pulmonary and Critical Care Medicine, Mayo Clinic, Rochester MN
Kindly supported by Vertex

13.00–13.15 **Prize giving and close**
Awards for Best Oral and Poster Presentations
Kindly supported by Boehringer Ingelheim
Presentation of ANAIL Award for Best Presentation by a Respiratory Nurse
Presentation of the Asthma Society Irish Thoracic Society Research Bursary 2016
Kindly supported by Novartis
Presentation of ITS GSK BTS Travel Bursaries
Kindly supported by GSK

13.15 **Lunch—PJ's Restaurant**

Ir J Med Sci (2016) 185 (Suppl 9):S439–S508
DOI 10.1007/s11845-016-1497-4

Irish Thoracic Society Poster Review and Discussion

Friday 18th November 2016

1. Asthma

Chairs P. Manning, Bons Secours Hospital, Dublin
D. Ryan, Beaumont Hospital, Dublin

1.1 A Retrospective Study of Pulmonary Screening Prior to Mannitol Challenge Testing

A. M. O'Connell, A. El Gammal, T. Quadri

Department of Respiratory and Sleep Medicine, Naas General Hospital, Naas, Co. Kildare

Introduction: The purpose of this research is to demonstrate, using empirical evidence collected from Naas General Hospital, that the Bronchodialtor Response test, is an accurate indicator as to whether the Mannitol Challenge test is necessary. Clearly if the Bronchodialtor Responses test is an effective screen or pre-test, significant resources can be saved as the more resource consuming Mannitol Challenge test will only be carried out where necessary.
Research method: Basic statistical analysis of test results
Sampling frame: 40 consecutive patients attending for Mannitol Challenge test, during January to July 2016. Sample size 100 %. Limitations: Due to the relatively small sample size the findings of the analysis should not be extrapolated on to the population. See Table 1.

	FVC Pre	FEV1 Pre	FEV1/FVC	FVC Post	FEV1 Post	FEV1/FVC Post	Mls	FVC % change	FEV1 % Change	MCT +/-
Pt. 1	100%	92%	76%	99%	99%	83%	130 ml	-1%	8%	Neg
Pt. 2	118%	112%	80%	115%	113%	82%	20 ml	-2%	1%	Neg
Pt. 3	118%	109%	74%	113%	108%	78%	0 ml	-4%	0%	Neg
Pt. 4	114%	106%	80%	109%	111%	88%	130 ml	-4%	4%	Neg
Pt. 5										Pos
Pt. 6	128%	124%	81%							Neg
Pt. 7	101%	96%	79%							Neg
Pt. 8	111%	88%	61%	120%	97%	63%	380 ml	8%	11%	Pos
Pt. 9	85%	77%	73%	97%	84%	79%	290 ml	10%	10%	Neg
Pt.10	131%	107%	70%							Neg
Pt. 11										Pos
Pt. 12	88%	88%	84%	86%	90%	88%	60 ml	-2%	2%	Neg
Pt. 13	103%	98%	82%	100%	100%	86%	60 ml	-4%	2%	Neg
Pt. 14	89%	84%	79%	89%	88%	84%	200 ml	0	5%	Pos
Pt. 15	119%	116%	83%							Neg
Pt. 16	107%	96%	78%	108%	100%	81%	160 ml	1%	4%	Neg
Pt. 17	139%	134%	81%	135%	133%	83%	-10	-3%	-1%	Neg
Pt. 18	94%	89%	81%	85%	83%	84%	-10	-10%	-6%	Neg
Pt. 19	99%	94%	82%	95%	94%	85%	-10	-3%	0	Pos
Pt. 20	119%	122%	89%							Neg
Pt.21	100%	101%	88%							Neg
Pt. 22	119%	119%	80%							Neg
Pt. 23	121%	111%	77%	120%	114%	80%	60 ml	0	-3%	Neg
Pt. 24	126%	132%	81%	121%	134%	87%	60 ml	-5	2%	Neg
Pt. 25	101%	89%	72%	115%	90%	64%	790 ml	14%	1%	Pos
Pt. 26	124%	109%	76%							Neg
Pt. 27	171%	146%	69%	166%	150%	73%	60 ml	-3%	3%	Neg
Pt. 28	139%	97%	59%	140%	105%	64%	230 ml	0%	9%	Borderline
Pt. 29	142%	137%	83%							Neg
Pt. 30	130%	103%	66%	131%	116%	74%	260 ml	1%	13%	Pos
Pt. 31	129%	123%	80%							Neg
Pt. 32	117%	118%	88%							Neg
Pt. 33	130%	119%	79%							Neg
Pt. 34	95%	92%	76%	92%	93%	79%	20 ml	-3%	1%	Neg
Pt. 35	125%	128%	84%							Neg
Pt. 36	130%	122%	78%							Neg
Pt. 37	108%	90%	68%	104%	88%	70%	-3	-4%	-2%	Neg
Pt. 38	132%	119%	77%							Neg
Pt. 39	133%	106%	66%	131%	106%	67%	0	-2%	0	Neg
Pt. 40	83%	49%	52%	78%	50%	57%	40 ml	-6%	3%	Neg

Findings: There is a strong correlation (100 %) between the results of the Bronchodialtor Response test result and the Mannitol Challenge test. Therefore 80 % of the MCTs were unnecessary.
Conclusion: Based on the findings contained herein the researcher posits that the Bronchodialtor Response test should be performed, as a matter of standard procedure. Thereafter, only those whose Bronchodialtor Response test delivers a borderline result should be subjected to the rigours of the Mannitol Challenge test.

1.2 Radiological Evidence of Emphysema in Patients with Asthma Attending an Asthma Clinic

A. Anwar[1], R. O'Lionaird[1], E. B. Hunt[1,3], B. Bowen[1], M. Kennedy[1], M. T. Henry[1], B. J. Plant[1,3], M. M. Maher[2], D. M. Murphy[1,3]

[1]The Dept of Respiratory Medicine, Cork University Hospital, Cork;
[2]The Dept of Radiology, Cork University Hospital, Cork;
[3]The Clinical Research Facility, University College Cork, Cork.

Background: Asthma-COPD overlap syndrome (ACOS) is increasingly recognised as a distinct clinical entity. As yet however there is no clear consensus as to what defines ACOS. While asthma is characterized by reversible airway obstruction, many asthmatics smoke and may therefore develop emphysema. In this study we aimed to determine the percentage of patients attending an asthma clinic with a definite diagnosis of asthma who had additional radiological features of emphysema on CT imaging.
Methods: We examined the last 100 patients attending a dedicated asthma clinic who had CT thorax performed and determined the number with emphysema on CT thorax.
Results: Out of 100 patients, 52 were non smokers, 39 were ex-smokers and 9 were active smokers. Five patients out of 100 were found to have radiological evidence of emphysema. One asthmatic with emphysema was an active smoker, 3 were ex-smokers but one patient was a non-smoker. Two asthmatics demonstrated reversibility on PFTs while three did not show any reversibility. Alpha1-antitrypsin antibodies were negative in all 5 with radiologically proven emphysema.
Conclusion: In our asthmatic cohort, almost 5 % had additional evidence of emphysema.

1.3 Audit Investigating the Safety Profile of Omalizumab at a Tertiary Level Hospital

B. Craven*, M. Gurney*, A. O'Regan

*Co-first authors.

Department of Respiratory Medicine, Galway University Hospital, Galway

Omalizumab is indicated for the treatment of a certain subgroup of atopic asthmatic individuals with symptoms that are refractory to other treatment modalities. Post marketing surveillance on 57,000 patients has revealed an anaphylaxis rate of around 0.2 % with 56 % of these reactions occurring in the first hour post administration.

44 patients were included in this audit after having received omalizumab in our institution between June 2007 and August 2015 for a total of 1,993 treatments. Original practice had been to monitor patients for 2 h following the administration of the medication.

Five patients had a documented or suspected reaction during the period of the audit with three of these occurring in first 30 min, one at 6 h and one after a month. Of these only one was felt to be anaphylaxis and in this case omalizumab was recommenced without issue after desensitisation with immunology.

As a result of this audit the policy in our institution has now changed whereby patients are still monitored for the same period of time following their first three doses but thereafter are monitored for 30 min saving large amounts of human resource hours. The policy will be reviewed at two years and re-audited at that time.

1.4 The Potential Role of Aspiration in the Asthmatic Airway Response

E. B. Hunt[1,4], A. Sullivan[2], C. Ward[3], S. Power[5], S. Lapthorne[1,2], J. Pearson[3], J. Eustace[4], B. J. Plant[1,4], M. M. Maher[5], J. MacSharry[2], D. M. Murphy[1,4]

[1]The Department of Respiratory Medicine, Cork University Hospital, Cork, Ireland; [2]APC Microbiome Institute, Schools of Medicine and Microbiology, University College Cork, Ireland; [3]Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne, UK; [4]The HRB Clinical Research Facility, University College Cork, Cork, Ireland; [5]The Department of Radiology, Cork University Hospital, Cork, Ireland

Asthma is generally well controlled with currently available treatment. Gastro-oesophageal reflux could act as a source of injury to the airway and in asthmatics act as a sustained source of airway irritation making clinical symptoms difficult to treat. We aimed to investigate this occurrence and its potential to cause airway injury in asthmatic patients.

78 asthmatic patients underwent bronchoscopic investigation and bronchoalveolar lavage (BAL), ACQ7, blood testing, FeNO and spirometry in order to clinically characterize their disease severity. Barium swallow with provocation was performed to assess for reflux/predisposition to aspiration, with BAL pepsin measured as a marker of aspiration.

Results demonstrated no association between barium study result and pepsin level; mean (sd) pepsin for positive barium study 3.4 (1.3) vs. 3.8 (1.4) for negative study. In a simultaneous multivariable linear regression model, detectable pepsin from the BAL was not associated with ACQ ($p = 0.99$). Similar results were found when the model was adjusted for smoking history, BMI, PPI use, eosinophil count and IgE. Similarly there was no significant association between positive barium swallow result and ACQ, GINA or FEV_1 on either univariate or multivariate analyses.

Our results demonstrate that the role of aspiration may be over stated in current clinical practice.

1.5 A Novel Approach to Inhaler Technique Checks: A Multicentre Pilot Study

P. Byrne[1], R. Anglin[1], E. Flood[2], O. Farrelly[2], M. Gilmartin[2], S. Morrin[3], G. Moore[3], G. Nolan[1]

[1]Pulmonary Laboratory, St Vincent's University Hospital; [2]Pulmonary Laboratory, Naas General Hospital, [3]Pulmonary Laboratory, Midland Regional Hospital

Higher compliance with inhaled medication leads to fewer exacerbations and hospital admissions [1]. A pilot study in 3 respiratory laboratories across Ireland was carried out to determine if Respiratory Physiologists could check and improve inhaler technique in a timely manner. Inhaler device technique was assessed using standardised checklists and relevant educational videos were shown to patients who demonstrated poor technique. All patients using inhalers regularly were targeted.

Seventy-seven patients (39 males) with an age range 17–79, using a total of 148 inhalers were assessed. Forty-eight patients (62 %) were attending a Respiratory Physician. 66 % were taking inhalers for over a year and 53 % had 2 or more inhaler device types, the majority (52 %) used an MDI device. 42 % had never had an inhaler technique check performed.

Of the 125 device technique checks performed 37 patients demonstrated poor technique in 47 (38 %) devices. There was a 72 % (34/47) improvement in device technique after the relevant short educational video was viewed. The time taken to complete these checks and show educational videos was on average 8 min. Similar results were obtained in an initial one centre pilot in 2015.

Respiratory physiologists can provide a quick and successful inhaler technique check during pulmonary function testing.

Reference:

1. Chrystyn H et al (2014) Impact of patients' satisfaction with their inhalers on treatment and health status in COPD. Respir Med 108:358–365.

1.6 An Audit of New Referrals to The Difficult Asthma Service

G. Doran, K. Honeyford, J. Gamble, L. G. Heaney, C. A. Butler

Respiratory Department, Belfast City Hospital

Difficult asthma is defined as persistent symptoms and/or frequent exacerbations despite treatment at step 4 or 5 of the BTS asthma guidelines [1, 2]. We evaluated new patients referred to the difficult asthma clinic between June 2014 and May 2015 with a view to creating a new standardised referral pathway.

96 new patients attended the clinic; 67.7 % were female. Age range was 18–82 years, with 47.9 % aged 40–59. Most patients (68.8 %) were referred by a respiratory physician for general management of their asthma; 17.7 % were specifically referred for consideration of omalizumab.

At the initial visit, 20.8 % were identified as having sub-optimal adherence, 32.3 % were identified as being undertreated and 6.3 % over-treated. Many patients underwent additional investigation; 13.5 % underwent cardio-pulmonary stress testing, 45.8 % of patients were evaluated in the joint ENT/respiratory clinic and 15.6 % were referred to clinical psychology.

At 1 year the majority of patients (32.3 %) had treatment escalation (13.5 % commenced on omalizumab) whilst 20.8 % had treatment decreased. 15.6 % await approval of an anti-IL5 agent. This audit suggests there may be scope for optimisation of treatment prior to escalation to novel expensive therapies.

References:

1. Macpherson I, Fielding S, Douglas JG (2014) Difficult asthma clinics: are they effective? Thorax 69:A96.
2. SIGN (2014) British Guideline on the management of asthma. Healthcare Improvement Scotland. October 2014.

1.7 A Potential Role for Fundoplication in the Management of Uncontrolled Asthma—The CUH Experience

M. Nwaezeigwe[1], E. B. Hunt[1,2], B. J. Plant[1,2], D. M. Murphy[1,2]

[1]The Dept of Respiratory Medicine, Cork University Hospital; [2]The HRB-funded Clinical Research Facility, UCC

An association between gastroesophageal reflux and asthma has been touted. Small pilot studies suggest a role for fundoplication in treating GOR-associated lung disease, most notably in post-transplant obliterative bronchiolitis but also in case series in asthma. These reports suggest that patients post fundoplication experienced improvement in asthma control. In contrast, larger studies examining the potential of PPI therapy have been inconclusive.

In this study we retrospectively assessed the impact of fundoplication on measures of asthma control in patients with asthma and co-existent GOR who had undergone fundoplication.

We identified 5 patients with a definite diagnosis of asthma (documented significant reversibility) who had undergone fundoplication. All were atopic. Mean BI was 27.1. One of the 5 was unable to produce accurate FEV1 pre- or post- fundoplication. The mean FEV1 pre procedure in the remaining 4 was 76 and 85 % predicted 1 year post procedure. The mean ACQ-7 in these 4 was 4.3 pre- and 2.7 post procedure. The mean number of exacerbations in all 5 subjects in the year pre fundoplication was 6.4, and 2.6/year in the year post.

Our data suggests that fundoplication may have a therapeutic role in a carefully subset of uncontrolled asthmatics with co-existent GOR.

1.8 Adherence to Inhaled Corticosteroid (ICS) and Long Acting Beta-Adrenoceptor Agonist (LABA) Therapy in Severe Asthma Clinical Trials: A Systematic Review

M. C. Mokoka[1], M. J. Mc Donnell[2], S. Cormican[1], F. Boland[3], F. Doyle[3], R. W. Costello[1]

[1]Clinical Research Centre, Smurfit Building Beaumont Hospital, RCSI, Dublin, Ireland; [2]Department of Respiratory Medicine, Galway University Hospital, Galway; [3]Department of Population Health Sciences, RCSI, Dublin, Ireland

Identifying and addressing sub-optimal adherence in clinical practice and clinical trials allows identification of patients with refractory asthma who may be eligible for add-on therapies. We hypothesised that adherence to inhaled corticosteroids (ICS) alone or in combination with LABA therapy (ICS/LABA) is under-assessed and under-reported in clinical trials of add-on drug treatment interventions in adolescent and adult patients with severe asthma.

A literature search of six databases was performed to identify randomised controlled trials (RCTs) of asthma drug treatment interventions conducted in severe adolescent and adult asthma patients taking ICS alone or ICS/LABA combined. Studies were included if data on the association between medication adherence and severe asthma exacerbations were presented.

5888 articles were identified and screened. 72 RCTs were included and underwent data analysis. Only 12 reported adherence to ICS or ICS/LABA therapy. Measures of adherence included self-report ($n = 4$) and objective methods ($n = 5$). Method of adherence assessment was not reported in $n = 3$. High levels of heterogeneity across studies with regard to adherence, exacerbation measurements and study design precluded formal meta-analysis. Although effect measures varied, good adherence was associated with fewer severe asthma exacerbations in high-quality studies.

Future studies should use standardised methodology to assess adherence and inhaler technique.

1.9 Asthma Society Adviceline—A New Direction

P. Kenny, M. Dunne

Asthma Society of Ireland, 42-43, Amiens Street, Dublin 1

A nurse-led adviceline for people seeking advice or support about asthma was established. In 2014, the service was reviewed and a new best-practice and quality assurance framework was developed.

From July 2015–June 2016 there have been 845 calls to the service

469 (55 %) of these were first time callers
656 (77 %) were from women

Main reason for call: parent Support (45 %), worsening asthma (20 %).

In April 2016 the Society received accreditation from the UK based Helplines Partnership, and was awarded a Certificate showing that the Adviceline met the criteria laid down to comply with this standard. We are one of only three Irish based advicelines holding this accreditation (the others are Irish Cancer Society and Women's Aid).

In July, the Asthma Society joined up with COPD Support Ireland and a new joint Adviceline was launched, offering support to patients with both Asthma and COPD. We are confident that this service supports the goals and the work of both the National Clinical Programme for Asthma and that of COPD and offers patients a reliable source of information to help understand and cope with their conditions. We will be closely watching the number of calls to this new service and will be reviewing it after 6 months.

1.10 IL-33 and its Receptor ST2 in Patients with Allergic Asthma Before and After Inhaled Allergen Challenge

D. Patrick, M. B. Mitchell, Brittany M. Salter PhD, John Paul Oliveria BSc, Amani El-Gammal MD, Damian Tworek MD, PhD, Steve G. Smith PhD, Roma Sehmi PhD, Gail M. Gauvreau PhD, Paul M. O'Byrne MB

Firestone Institute of Respiratory Health, Department of Medicine, Michael G DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada

Interleukin (IL)-33 is an established promoter of type-2 inflammation and is highly relevant in the pathophysiology of allergic asthma. The role of IL-33 in causing allergen-induced airway responses in asthmatics is currently unknown. This study presented evaluated the effects of allergen inhalation on IL-33 levels and the expression of its receptor (ST2) on eosinophils in 10 allergic asthmatic subjects, as well as the effects of in vitro IL-33 stimulation and blockage on human eosinophil activity.

Allergic asthmatic subjects had significantly higher levels of IL-33 in sputum and higher level of sST2 in plasma and sputum compared to healthy controls at baseline. Eosinophil ST2 expression was similar in both groups. After inhaled allergen challenge, there were no changes in IL-33 or sST2 in plasma or sputum. However, ST2 expression on peripheral blood and sputum eosinophils was significantly increased 24 h after challenge. Stimulation of human eosinophils with IL-33 increased intracellular expression of IL-5. This effect was attenuated by treatment with sST2 or anti-ST2 mAb or a combination of both.

We conclude that inhaled allergen increases ST2 expression on eosinophil. *In vitro* stimulation of eosinophils with IL-33 increased both ST2 expression and IL-5 production, suggesting the enhanced eosinophil expression of ST2 may be mediated by IL-33 stimulation.

There are no conflicts of interest amongst any named author in this study.

1.11 A Decade of Asthma Admissions in a Large Teaching Hospital Prior to Establishment of a Dedicated Asthma Clinic

P. Nadarajan[1], K. Sharma[1], L. Brown[1], M. W. Butler[1,2]

[1]Department of Respiratory Medicine, St Vincent's University Hospital, Dublin; [2]University College Dublin, Ireland

Asthma in Ireland has an estimated prevalence of 470,000, with more than 5,000 asthma admissions/50 deaths annually, and a sizeable economic burden[1]. In setting up a dedicated asthma clinic at our institution in early 2016, we assessed baseline indices of care for asthma patients.

Asthma admissions to St Vincent's University Hospital between 2005 to 2015 were studied. HIPE data was retrieved for all asthma-related admissions.

There were 383 admissions. The average length of stay (ALOS) was 4.75 days (range 1–53), compared to a contemporaneous national ALOS of 3.13 days. Mean age was 49.1 ± 20.4 yrs. 251 (65.5 %) were female (mean age 50.6 ± 21.1). Mean age of 132 males was 46.1 ± 18.7 years, who were significantly fewer than expected and younger than the female cohort, $p = 0.0001$ and $p = 0.03$ respectively. 375 (98 %) had presented to the emergency department. There were 3 asthma-related deaths (average age of 78.6 years). 11 patients were receiving anti-IgE therapy in 2015, which compares with 11 anti-IgE therapy asthma patients in a comparable UK registry [2].

There is a significant economic burden with severe asthma healthcare, and our asthma-related ALOS is suboptimal, with high use of expensive biologic therapies, justifying a dedicated asthma service.

References:

1. Asthma Society of Ireland. Facts and Figures on Asthma. Accessed online on 18/08/2016 at https://www.asthma.ie/get-help/resources/facts-figures-asthma.
2. O'Neill S, Sweeney J, Patterson CC, Menzies-Gow A, Niven R, Mansur AH, Bucknall C, Chaudhuri R, Thomson NC, Brightling CE, O'Neill C, Heaney LG (2015) British Thoracic Society Difficult Asthma Network. Thorax 70(4):376–8. doi: 10.1136/thoraxjnl-2013-204114. Epub 2014 Jun 10.

1.12 Xolair® Therapy: Can't Commit, Won't Commit?

P. Hallahan, O. Lee, L. McLeod, C. Sheridan, C. Buckley, L. Fox, S. Gaine, D. O'Callaghan

Respiratory Department, Mater Misericordiae University Hospital

In Mater Misericordiae University Hospital a dedicated nurse-led clinic was set up in 2008 for the management of patients on Xolair® therapy. Xolair® (Omalizamub), a monoclonal antibody binds to circulating IgE, preventing it from interacting with the IgE receptor thereby interrupting the allergic cascade. The excellent quality of life improvements that Xolair® therapy brings to patients lives, by achieving control of severe Asthma, is well documented [1, 2].

However, attending for therapy requires significant commitment by the patient. As numbers at this clinic are limited by budgetary constraints patients received pre treatment counselling and education on the commitment required. A comparative review of patients on Xolair® with those whose therapy was discontinued, demonstrated the barriers and obstacles that patients experienced in committing to Xolair®.

Of the patients who did not continue on Xolair®, over 33 % chose to discontinue their therapy despite achieving good asthma control and being fully aware of the commitment that was required. The results demonstrated that the barriers to continuing treatment included lack of flexibility at work, travel and social issues.

This poster will explore patient's perceptions of the benefits and barriers to therapy. Data was sourced from patient medical records, questionnaires and interviews.

References:

1. McKeage K (2013) Omalizamub: a review of its use in patients with severe persistent allergic asthma. Drugs 73(11):1197–1212.
2. Miller D, Tom G, Rasouliyan L, Chipps B (2009) Patient-reported outcomes among omalizumab and salmeterol/fluticasone combination therapy patients. J Asthma: Off J Assoc Care Asthma 46:179–185.

There are no conflicts of interest.

1.13 Seasonal Variation in Asthma Control in an Irish Population

S. J. Farrelly[1], E. B. Hunt[1,2], B. Bowen[1], J. Eustace[2], B. J. Plant[1,2], D. M. Murphy[1,2]

[1]The Dept of Respiratory Medicine, Cork University Hospital, Wilton, Cork; [2]The HRB-funded Clinical Research Facility, UCC, Cork

Anecdotal evidence suggests that asthma control is worse during winter months. The LIASON study reported the central reasons for poor asthma control as seasonal worsening and continued exposure to allergens/irritants/triggers (1). We aimed to assess for possible seasonal variance in asthma control in an Irish asthmatic population using the Asthma Control Questionnaire (ACQ).

A review of ACQ's performed over a three-year period of patients attending the Asthma Clinic in CUH from January 2013 to December 2015 yielded a population of 188 patients with 403 ACQ readings (monthly average = 34). Patients who were first time attenders, pregnant or whose diagnosis was uncertain were excluded. ANOVO testing was performed on the data to assess for possible significant differences in ACQ both by month and by season.

While a trend was observed in the data with improved control in the summer months compared to winter and spring, there was no statistically significant monthly or seasonal variance in asthma control (*P* value 0.15).

Our study therefore failed to demonstrate clinically significant seasonal related variance in asthma control using a well validated assessment tool in a cohort of Irish patients attending a dedicated asthma clinic.

Reference:

1. Fulvio Braido et al. Determinants and impact of suboptimal asthma control in Europe: The international cross-sectional and longitudinal assessment on asthma control (Liaison) study. Respiratory Research [Internet]. 2016 [cited 17 August 2016]; 17. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4894377/.

1.14 Improvement in Asthma Control in Patients on Omalizumab in Cork University Hospital

S. J. Farrelly[1], E. B. Hunt[1,2], B. Bowen[1], J. Eustace[2], B. J. Plant[1,2], D. M. Murphy[1,2]

[1]The Dept of Respiratory Medicine, Cork University Hospital, Wilton, Cork; [2]The HRB-funded Clinical Research Facility, UCC, Cork

Omalizumab is a monoclonal antibody directed against IgE licenced for use in severe asthma. It has been shown to be both therapeutically beneficial and cost effective (1, 2). There have been issues with respect to equity of access to this drug within Ireland. We report on the initial cohort of severe asthmatics recently commenced Omalizumab in CUH.

The study was an observational retrospective cohort study investigating asthma control, pre and post omalizumab therapy (ACQ, exacerbation frequency and inpatient hospitalisations 6 months prior and 4–6 months' post treatment).

6 of 12 patients had completed assessment for Omalizumab response. The response rate was 83 %. There was a reduced ACQ

score in the responders from a mean of 4.3 ± 0.9 to 2.56 ± 1.25. There were also decreases in the average number of admissions from 1 ± 0.3 to 0.2 Analysis of the exacerbation rate also showed a reduction, from 3.1 ± 0.95 to 1.6 ± 1.47.

While limited in power, the data does suggest that Omalizumab is beneficial in the treatment of selected, severe asthmatics. The response rate observed to date is reflective of both domestic and international values.

References:

1. Niven R, Saralaya D, Chaudhuri R, Masoli M, Clifton I, Mansur A et al. Impact of omalizumab on treatment of severe allergic asthma in UK clinical practice: a UK multicentre observational study (the APEX II study). BMJ Open [Internet]. 2016 [cited 17 August 2016]; 6(8): e011857. Available from: http://bmjopen.bmj.com/content/6/8/e011857.full?trendmd-shared=1.
2. Costello R, Long D, Gaine S, Donnell T, Gilmartin J, Lane S. Therapy with omalizumab for patients with severe allergic asthma improves asthma control and reduces overall healthcare costs. Irish Journal of Medical Science [Internet]. 2011 [cited 17 August 2016]; 180(3):637–641. Available from: 10.1007%2Fs11845-011-0716-2.

1.15 Profiling of Allergic Asthma Population at Connolly Hospital Blanchardstown (CHB) to Identify any Common Demographic Traits

S. Kenny[2], A. McGowan[1,2], A. O'Brien[1], L. Cormican[1]

[1]Respiratory & Sleep diagnostics department, Connolly Hospital, Dublin 15; [2]Department of Physics, DIT, Kevin St

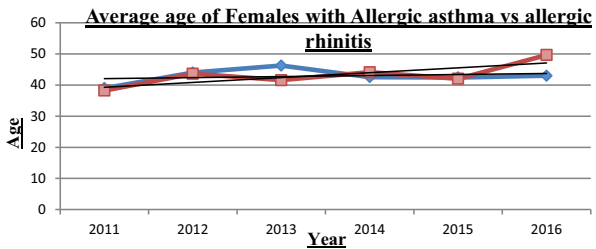
According to the World Health Organisation (WHO), asthma is on the increase worldwide and there has been a steady rise in the prevalence of people presenting with allergies.

This study was a retrospective analysis of the population of allergic asthmatics over a five year period attending Connolly Hospital Blanchardstown (CHB) to identify any common demographic traits within this population.

Data was collected from 518 patients all of which were referred for allergy tests. Comprehensive pulmonary function tests (PFTs) were performed and used to confirm asthma diagnosis and severity.

54 % had positive allergy tests whilst 46 % had negative allergy tests. 60 % were females and 40 % were males. 23 % of the patients tested positive for asthma, 15 % with allergic asthma and 8 % non-allergic. 38 % of the population had allergies but no asthma. We identified a high incidence of allergic asthma and allergic rhinitis in females aged between 40 to 50 years.

Predominant demographic traits for allergic asthma include caucasian females aged between 40 and 50 years. This may be due to hormonal changes that may result in a reduced clinical and immunological response. Perhaps priority allergy screening should take place for females in the 40–50 age bracket that present with wheeze.



Line graph of average age of females with allergic asthma (blue) and allergic rhinitis (red)

1.16 Profiling of Allergic Asthma Population at Connolly Hospital Blanchardstown (CHB) to Identify Suitable Candidates for Immunotherapy

S. Kenny[2], A. McGowan[1,2], A. O'Brien[1], L. Cormican[1]

[1]Respiratory & Sleep diagnostics department, Connolly Hospital, Dublin 15; [2]Department of Physics, DIT, Kevin St

Allergen specific immunotherapy is becoming an increasingly common form of treatment in those with allergic asthma.

This study was a retrospective analysis of the population of allergic asthmatics over a five year period attending Connolly Hospital Blanchardstown (CHB) to identify any common demographic traits within this population and classify suitability for immunotherapy.

Data was collected from 518 patients all of which were referred for allergy tests. Comprehensive pulmonary function tests (PFTs) were performed and used to confirm asthma diagnosis and severity.

The ideal candidates that may avail of sublingual immunotherapy are those that are monosensitized (i.e. allergic to one allergen only) and ideally have mild asthma. Dust mite and grass pollen were the most common allergens identified in this study. Of the total population, 64 % had mild asthma whilst 28 and 9 % had moderate and severe asthma, respectively. Of 171 patients allergic to grass pollen, 14 % were monosensitized and 75 % of this population had mild asthma. Of 223 patients allergic to dust mite, 24 % were monosensitized and 63 % had mild asthma.

Within this population, 75 % of those with grass pollen and 63 % of those with dust mite allergy monosensitizations could potentially avail of sublingual immunotherapy.

1.17 Objective Measurement of Peak Inspiratory Flow Rate in Pressurised Metered Dose Inhalers Using Acoustic Methods

T. E. Taylor[1,2], C. Egan[3], R. W. Costello[3], R. B. Reilly[1,2,4]

[1]Trinity Centre for Bioengineering, Trinity College, The University of Dublin, Dublin, Ireland; [2]School of Engineering, Trinity College, The University of Dublin, Dublin, Ireland; [3]Department of Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland; [4]School of Medicine, Trinity College, The University of Dublin, Dublin, Ireland

It has been reported that patients may inhale over the recommended peak inspiratory flow rate (PIFR) of 90 L/min (1). This can greatly reduce the clinical efficacy of treatment. There is a lack of objective methods to monitor PIFR in pMDIs.

A Clement Clarke *In-Check Flo-Tone*™ whistle device was attached to a placebo pMDI. An acoustic recording device called the Inhaler Compliance Assessment (INCA) device was attached to the back of the pMDI (Figure 1).

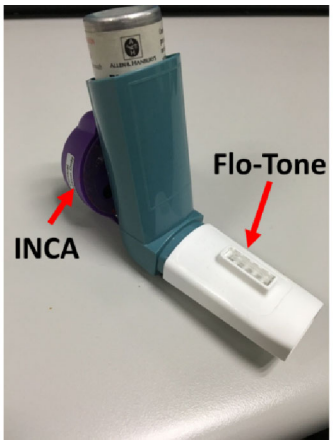


Figure 1. pMDI with Flo-Tone and INCA attached

The upper section (air inlet) of the inhaler was placed inside an airtight container which had a spirometer connected to measure PIFR. A total of 160 inhalation recordings were obtained from 10 healthy participants inhaling between 30–240 L/min. Audio signals were sampled at 48 kHz and then filtered between 500–600 Hz. A generalised least squares (GLS) regression model was employed to relate the root mean square (RMS) of the *Flo-Tone* inhalation audio signal to PIFR.

The GLS model presented a strong significant correlation between the RMS inhalation acoustic feature and PIFR ($R^2 = 0.84$, $p < 0.001$).

An add-on whistle device partnered with the INCA device may be used to objectively measure PIFR in pMDIs which may improve patient inhaler adherence.

Reference:

1. Broeders MEAC, Molema J, Hop WCJ, Vermue NA, and Folgering HTM. The course of inhalation profiles during an exacerbation of obstructive lung disease. *Respiratory Medicine*. 2004 1173–1179.

1.18 Remote Monitoring of Inhalation Flow Profile in the Ellipta™ Inhaler Using an Acoustic Recording Device

T. E. Taylor[1,2], H. Lacalle Muls[1,3], R. W. Costello[4], R. B. Reilly[1,2,5]

[1]Trinity Centre for Bioengineering, Trinity College, The University of Dublin, Dublin, Ireland; [2]School of Engineering, Trinity College, The University of Dublin, Dublin, Ireland; [3]Faculty of Medicine, Universitat de Barcelona, Barcelona, Spain; [4]Department of Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland; [5]School of Medicine, Trinity College, The University of Dublin, Dublin, Ireland

Drug delivery from dry powder inhalers (DPIs) is heavily dependent on the peak inspiratory flow rate (PIFR) and inspiratory capacity (IC) of inhalation (1–2). It has been reported that some patients cannot use their inhaler with correct inhalation technique (1–2). This study aimed to accurately monitor inhalation flow profile using acoustic methods.

An Ellipta™ inhaler was placed inside an airtight container with a spirometer connected to measure inhalation flow parameters. An acoustic recording device (Inhaler Compliance Assessment (INCA)) was also placed directly on the Ellipta™. Twenty healthy participants inhaled through the inhaler for 15 recordings at different flow rates (25 L/min to maximal flow rate). Inhalation audio and flow signals were recorded simultaneously. A power law regression model was computed relating acoustic envelope of the inhalation to its corresponding flow signal. This model was then tested on the remaining audio signals to estimate inhalation flow profile.

The average estimation error was observed to be 10.5 ± 1 % for estimating flow profile from audio signals. The PIFR estimation error was 10.7 ± 2 % and IC estimation was 8.3 ± 1.7 %.

This method only requires one inhalation to calibrate an accurate model that can be used to remotely monitor inhalation technique in the Ellipta™ using the INCA device.

References:

1. Al-Showair R A, Tarsin W Y, Assi K H, Pearson S B and Chrystyn H. Can all patients with COPD use the correct inhalation flow with all inhalers and does training help? *Respiratory Medicine* 2007 101 2395–401.
2. Broeders MEAC, Molema J, Hop WCJ, Vermue NA, and Folgering HTM. The course of inhalation profiles during an exacerbation of obstructive lung disease. *Respiratory Medicine*. 2004 1173–1179.

1.19 FeNO Use in Primary Care Management of Asthma

E. O'Hanlon[1], C. O'Neill[1], A. Noone[1], L. Hamilton[1], P. Heberger[1], N. Pearson[1], A. Travers[1], M. O'Neill[1], T. E. McManus[2]

[1]Omagh Health Centre, Omagh, Co. Tyrone, N. Ireland BT79 7BA; [2]Department of Respiratory Medicine, South West Acute Hospital, Enniskillen, Co. Fermanagh, N. Ireland BT74 6DN

Fractional exhaled nitric oxide (FeNO) has been proposed as a non-invasive marker of airway inflammation in asthma. FeNO levels are raised in people with uncontrolled asthma and can be lowered by effective treatment with corticosteroids.

This study was a pilot project utilising FeNO measurement as an asthma management tool in primary care. Asthma patients attending the practice nurse for annual review or as a result of being symptomatic were offered FeNO measurement.

From 125 patients tested, 39 had an elevated FeNO and were invited for follow up measurement. Where FeNO level was elevated patients were offered appropriate therapeutic intervention and patient education. Twenty-nine patients had a reduction in FeNO on re-testing. Mean age of patients was 36.0 years, range 9.5–78.9 years. The mean FeNO measurement before/after intervention and education was 90.3/46.2 ppb, with a mean reduction of 44 ppb, p-value of <0.001 [two tailed T test].

This study demonstrates that elevated FeNO levels can be reduced significantly with appropriate intervention, including patient education. Further research is required in order to understand the components contributing to the reduction in FeNO levels (behavioural v pharmacological).

Irish Thoracic Society Poster Review and Discussion

Friday 18th November 2016

2. COPD

Chairs C. Rooney, Mayo University Hospital, Mayo
R. Fahy, St James's Hospital, Dublin

2.1 Evaluating the Knowledge and Understanding of Patients About their COPD

A. Mulkerns, P. O'Toole, K. O'Sullivan, T. J. McDonnell

Respiratory Department, St. Michaels Hospital, Dun Laoghaire, Co. Dublin

Patient education is essential for successful management of COPD. Better disease awareness enables improved self-management skills, reduces frequency of exacerbations and prevents hospitalisations. This study aimed to evaluate the knowledge and understanding of COPD patients about their disease.

The Bristol COPD Knowledge Questionnaire (BCKQ) was used to assess patient's knowledge of COPD[1]. The Understanding COPD Questionnaire (UCOPDQ) was used to assess patient's understanding, self-efficacy and self-management skills[2]. Twenty male and 20 female patients with stable COPD (mean FEV_1 49 %) were assessed using both questionnaires at an outpatient respiratory clinic.

Only 57 % of questions were answered correctly on the BCKQ, demonstrating poor knowledge of COPD. Patients scored lowest on questions regarding inhaled steroids (36 %) and inhaled bronchodilators (40 %). They scored highest on questions about causes of COPD (71 %), exercise (71 %) and common symptoms (69 %). Using the UCOPDQ, 75 % of patients reported a good understanding COPD, 63 % felt confident in managing their symptoms but only 50 % were confident in their ability to access support for their condition.

This study shows that COPD patients have poor knowledge of their condition and lack confidence in their ability to manage it independently. Ongoing education of these patients is essential for successful self-management of COPD.

References:

1. White R, Walker P, Roberts S, Kalisky S, White P (2006) Bristol COPD Knowledge Questionnaire (BCKQ): testing what we teach patients about COPD. Chronic Respir Dis 3:123–131.
2. O' Neill B, Cosgrove D, MacMahon J, McCrun-Gardner E, Bradley JM (2012) Assessing education in pulmonary rehabilitation: the understanding COPD (UCOPD) Questionnaire. J Chronic Obstr Pulm Dis 9:166–174.

2.2 Does Combined Respiratory and Palliative Care Management Improve Care for COPD Patients?

A. Mulkerns[1], P. O'Toole[1], P. Gregan[2], T. J. McDonnell[1]

[1]Respiratory Department, St. Michaels Hospital, Dun Laoghaire, Co. Dublin and St. Vincent's University Hospital, Elm Park, Dublin 4; [2]Palliative Care Service, Blackrock Hospice, Blackrock, Co. Dublin

COPD produces breathlessness, which is associated with frequent emergency department (ED) attendances[1]. Palliative care aims to optimise quality of life by anticipating, preventing and treating suffering[2]. This study evaluated if the joint management of a patient with advanced COPD between a respiratory and a specialist palliative care service influenced ED presentations, breathlessness and quality of life.

Eleven patients with advanced COPD (mean FEV_1 22.6 % $\pm$ 5.2) were referred to the palliative care service when maximal therapy for COPD no longer provided symptom control. Treatment included input from the breathlessness intervention service, the day hospice and prescription of benzodiazepines and opioids as required. Patients also continued to be monitored and treated by the respiratory service.

The average number of ED presentations of the referred patients reduced significantly from 3.55 $\pm$ 1.64 in the six months prior to their referral to palliative care to 1.28 $\pm$ 1.19 in the six months after the referral ($p < 0.05$). There was also significant improvements in their quality of life scores, with their average mMRC improving from 3.56 $\pm$ 0.52 to 2.8 $\pm$ 0.6 ($p < 0.05$), and their average CAT reducing from 22.1 $\pm$ 3.21 to 18 $\pm$ 3.51 ($p < 0.05$).

This data suggests that joint management of patients with advanced COPD between respiratory and palliative care services improves patient care.

References:

1. Higginson IJ, Bausewein C, Reilly CC, Gao W, Gysels M, Dzingina M, McCrone P, Booth S, Jolley CJ, Moxham J (2014) An Integrated Palliative and Respiratory Care service for patients with advanced disease and refractory breathlessness: A randomised controlled trial. Lancet Respir Med 2:979–987.
2. Curtis JR (2008) Palliative and end-of-life care for patients with severe COPD. European Respir J 32:796–803.

2.3 Secondary Prevention of Osteoporosis in Chronic Obstructive Pulmonary Disease

A. Subramanian, A. O'Reilly, F. McGlynn, E. Moloney, S. Lane

Department of Respiratory Medicine, Peamount Hospital, Dublin

COPD patients are at high risk of complications including osteoporosis from steroid exposure. NICE guidelines recommend bone protection based on osteoporosis screening of patients under 65 years, and treatment without screening for patients over 65 years on long term oral corticosteroids as part of COPD management[1]. However there is mounting evidence that all forms of steroid exposure constitute osteoporosis risk[2].

We sought to determine whether COPD patients were adequately screened and treated for osteoporosis. A retrospective analysis was conducted on 52 patients attending Peamount Hospital, either in or out-patients with GOLD stages C and D throughout March 2016. We reviewed medical charts to stratify osteoporosis risks and medications including steroid exposure and bone protection.

All 52 patients (56 % male), with mean age of 70 were exposed to at least one form of steroid. Majority were on inhaled and intermittent high dose oral steroids owing to an average of 4 exacerbations a year with at least one hospitalization. Risk stratification and screening was performed appropriately in 58 % patients. Notably 94 % patients under 65 years were not screened with DEXA scan. Overall, prevention was commenced in 42 % patients according to risk stratification. Amongst those older than 65 years, 7 patients were screened unnecessarily while 42 % were not on bone protection.

Our results show that a significant proportion of COPD patients are inadequately screened and treated for osteoporosis. Based on these findings we plan to develop a local protocol in order to increase awareness of risk stratification and screening. We envisage this would improve adherence to NICE guidelines and prevent osteoporosis in this high risk patient group.

References:
1. Chronic obstructive pulmonary disease. National clinical guideline on management of chronic obstructive pulmonary disease in adults in primary and secondary care. Thorax. 2004;59(Suppl 1):1–232.
2. Loke YK, Cavallazzi R, Singh S. Risk of fractures with inhaled corticosteroids in COPD: systematic review and meta-analysis of randomised controlled trials and observational studies. Thorax. 2011;66(8):699–708.

2.4 Planning for the Future: Addressing the Information Gaps for People Living with COPD—Findings from a Collaborative Working Group

B. Korn[1], D. Peelo[2], D. Shanagher[3]

[1]Hospice Friendly Hospitals Programme, St. James's Hospital; [2]COPD Support Ireland; [3]Healthcare Programmes, Irish Hospice Foundation

COPD is widely recognised as a life limiting condition [1] that requires those people affected and their carers to make many health care related decisions along the trajectory. This project aimed to determine existing information gaps in relation to planning for the future for people living with COPD and to develop practical measures to fill this gap.

This collaborative project between 7 people with COPD, 3 family carers and the authors commenced in April 2016. Participatory workshops and a shared decision making process enabled meaningful engagement in consultation with the wider COPD support group network.

Through local COPD support group structures people expressed the need and openness for a dialogue about future care planning. The project enabled working group members to develop a shared understanding of advance care planning, identify information gaps and barriers to this topic being discussed and then led to the development of draft information booklet entitled '*Planning for the future with COPD*' to be launched by the end of 2016.

Dissemination of the booklet has the potential to inform many people affected by COPD. The process of engagement with patients and carers about this difficult topic has the potential to inform future patient-health carer collaboration.

Reference:
1. Health Service Executive (HSE) and Irish Hospice Foundation (IHF) (2008) Palliative care for all: implementing palliative care into disease management frameworks. IHF, Dublin.

2.5 Advance Care Planning Education in Pulmonary Rehabilitation—Who, How, Why Not? Results from a Nationwide Survey of Pulmonary Rehabilitation Programmes

B. Korn[1], M. Baily-Scanlan[2], L. H. Ribeiro[3], J. Broderick[3]

[1]Hospice Friendly Hospitals Programme, St. James's Hospital, Dublin; [2]Department of Respiratory Medicine, St. James's Hospital, Dublin; [3]Department of Physiotherapy, Trinity Centre for Health Science, Trinity College Dublin

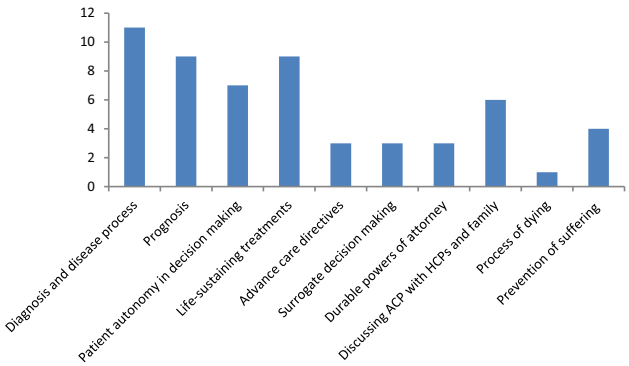
According to widely recognised international guidelines [1] advance care planning (ACP) forms a key aspect of patient education in pulmonary rehabilitation programmes (PRP). This study aimed to investigate the practice of ACP education within PRPs in Ireland.

All 27 PRPs in the Republic of Ireland were surveyed between May and September 2015; eliciting detailed qualitative and quantitative information about ACP education delivery. Data was analysed using SPSS statistical software and thematic content analysis.

Twenty-two (81.5 %) of PRPs took part in the survey; with 86.4 % (n = 19) of these being delivered in a hospital setting. Forty-five percent (n = 20) include ACP education of at least 20 min duration (n = 10) or as part of another session (n = 10). Advance care planning topics discussed differ across PRP sites (Figure 1). Sessions are either delivered by respiratory nurses, physiotherapists, physicians or palliative care physicians. Respondents identified enablers and barriers to ACP education as well as staff education and service delivery gaps.

The results demonstrate an overwhelmingly positive attitude towards ACP education. There is a need for ACP specific education for all staff involved in PRPs. Practical guidance on how to deliver this patient education component needs to be developed.

Figure 1: Number of PRPs and ACP topics incorporated in different sites



Reference:
1. Spruit MA, SJ Singh, Garvey C, ZuWallack R, Nici L, Rochester C et al (2013) Official ATS/ERS statement: key concepts and advances in pulmonary rehabilitation. Am J Respir Crit Care Med 188(8):e13–e64.

2.6 Evaluating Patient Perception of Quality of Care in COPD

P. Mac Hale, B. Cushen, R. W. Costello

Department of Respiratory Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin, Ireland

Increasingly COPD hospitalisations are deemed a marker of quality of patient care (QOC). We aimed to obtain qualitative feedback from COPD patients about the care they received in hospital.

Key COPD QOC themes were identified from the literature and used to develop a questionnaire. Dialysis patients, representing a high re-admission group with a structured care pathway under the renal service, and surgical patients, most likely to experience a "one-off" hospital admission, also completed the questionnaire.

Overall COPD care was perceived as good, mean rating 8/10. Compared to dialysis patients, COPD patients were significantly more likely to receive conflicting information from healthcare staff, $p = 0.04$, and a lower proportion (39 vs. 58 %) felt listened to by their medical team. Two-thirds reported a preference to being looked after by the same medical team on repeated admissions.

Despite all reporting long ED wait times, only surgical patients deemed this unacceptable, $p = 0.01$, and reported dissatisfaction with

the care received, p = 0.09. One-third of COPD patients reported confusion amongst GPs as to ongoing care plans following discharge.

Our study highlights areas where patient care is suboptimal notably in communication and continuity of care. Measures to address these shortcomings should be incorporated into any future COPD service improvement proposals.

2.7 Audit of Adherence to Acute and Chronic Medical Management Guidelines in COPD

E. Cleere, B. Cushen, A. Alsaid, P. MacHale, L. Tompkins, R. W. Costello

Department of Respiratory Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin, Ireland

Ireland has the highest rate of COPD admissions amongst OECD countries with 90-day readmission rates 10 % higher than the European average. Implementation of evidence-based treatment guidelines improve COPD outcomes including readmission rates.

We carried out a retrospective chart review of 95 patients hospitalised with an exacerbation of COPD to assess adherence to acute (national) and chronic (international) management guidelines.

The majority (88 %) of patients had Gold grade C or D disease, one-third received home oxygen. There was variation in prescribed maintenance therapy across all GOLD grades. Pre-hospitalisation, 70 % received combined ICS/LAMA/LABA, 10 % bronchodilator therapy and 5 % ICS monotherapy. Two-thirds were taking regular nebulised bronchodilators.

Inconsistencies in acute care management were also found. On arrival to hospital, over 50 % of patients received oxygen therapy despite baseline saturations >88 %. Despite the absence of pneumonia on radiography, 60 % were treated with dual antibiotic therapy. Sixty percent received intravenous steroids. Three-quarters were assessed by the physiotherapist. Over 90 % had arterial blood gas testing and received nebulised bronchodilators.

We have identified poor adherence to evidence-based treatment guidelines for COPD with variations in patient management. Given the significant healthcare utilisation associated with COPD in Ireland greater efforts are needed to ensure consistent, appropriate care for this vulnerable patient group.

2.8 Pilot Study to Assess Bronchodilator Response During an Acute Exacerbation of COPD Using a Vibrating Mesh Nebuliser Versus Jet Nebuliser for Bronchodilator Delivery

B. Cushen, A. Alsaid, A. Abdulkareem, R. W. Costello

Department of Respiratory Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin, Ireland

Recovery from COPD exacerbation is associated with increases in respirable lung volume. Accelerating these changes through improved bronchodilator delivery could hasten recovery.

This study compared changes in lung physiology post-bronchodilator delivery with a vibrating mesh nebuliser (Aerogen® Ultra) to those achieved with the standard small volume jet nebuliser.

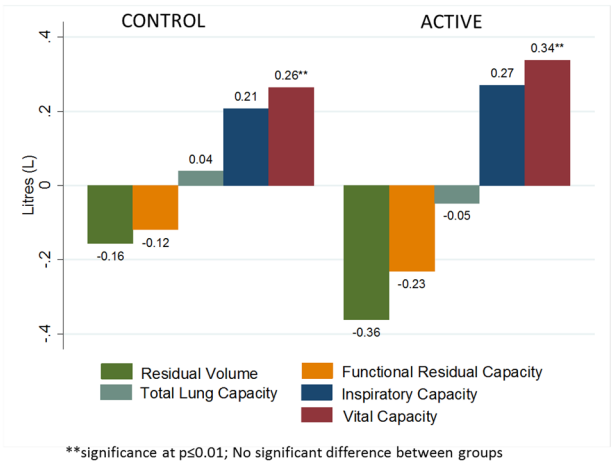
Patients with an exacerbation of COPD were randomised to receive combined salbutamol 2.5 mg/ipratropium bromide 0.5 mg via vibrating mesh (active group) or standard hospital jet nebuliser (control) on one occasion between day 2–7 of hospitalisation. Spirometry, body plethysmography and impulse oscillometry (IOS) were performed pre-bronchodilator and at 1 h post. Borg breathlessness score was measured.

Thirty-two patients have been recruited, 16 to each arm. Mean FEV_1 was 48 % predicted. Baseline demographics were comparable between groups. Greater absolute post-bronchodilator improvements in spirometry, lung volumes and IOS were seen in the active group, Figure 1. The increase in FVC was significant (active: mean(SEM) 0.41 (0.09) L vs Control: 0.19 (0.04) L, p = 0.05). Only the active group demonstrated a significant reduction in Borg Score, p = 0.03.

Bronchodilator administration by vibrating mesh nebuliser results in greater changes in respirable lung volume with concurrent reductions in dyspnoea compared to devices currently in use. Further studies will assess whether this translates into accelerated exacerbation recovery.

Figure 1.

Absolute difference in lung volume measurements by study group



Conflict of interest statement: Sponsored by Aerogen Ltd, Galway, Ireland

2.9 Evaluating the Quality of Inpatient COPD Care and its Impact on 90-Day Outcomes

B. Cushen, L. Tompkins, R. W. Costello

Department of Respiratory Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin, Ireland

Forty percent of patients hospitalised with COPD exacerbations re-attend within 90 days. Increasingly COPD readmissions are being considered as reflective of quality of patient care. A number of factors can impact on quality of care including distribution of care. Previous studies have found associations between multiple intra-hospital transfers and in-hospital adverse events.

A retrospective chart review of 99 patients hospitalised with a COPD exacerbation was carried out. We analysed for any relationship between distribution of patient care and 90-day re-attendance rates.

The mean age of the population was 72 years, mean baseline FEV_1 of 52 % predicted. One-quarter of patients were cared for on the Respiratory ward. One-third had ≥2 ward transfers during their admission. Fifty patients re-attended hospital or died within the follow-up period.

On multivariate analysis, adjusting for age, sex, co-morbidity, exacerbation severity and length of hospital stay, baseline FEV_1 (OR

0.07 (95 % CI 0.008–0.59)), number of prior hospitalisations (OR 2.67 (1.18–6.04)) and number of ward transfers (OR 3.9 (1.05–14.7)) were significant predictors of 90 day re-attendance or death, $p < 0.05$.

Our data shows that patients with multiple ward transfers have poorer outcomes. The exact reasons for this are not clear and need to be explored further in a larger population.

2.10 A Review of the Prevalence of Cardiovascular Morbidity

L. Cormican, B. Kerr

Respiratory Department, Connolly Hospital,Blanchardstown, Dublin 15

Cardiovascular disease is now a well-established, significant contributor to both morbidity and mortality in COPD. Our aim was to investigate the overall prevalence of cardiovascular disease (CVD) in subjects both hospitalized and followed in outpatients for patients suffering from chronic obstructive pulmonary disease.

Medical records from the COPD outreach programme and echocardiograms accessed from NIMIS radiology in Connolly Hospital, Blanchardstown from January 2013 to March 2016 were reviewed. A total of 211 patients with COPD were included (136 female and 75 male).

The overall prevalence of cardiovascular disease was 73.46 %. Heart disease was higher in males (82.66 %) in comparison to females (68.38 %). The three most prevalent CVDs were hypertension (57.35 %), ischaemic heart disease (30.33 %), and congestive cardiac failure (19.9 %). Arrhythmias were prevalent in 17.54 % while dyslipidaemia was present in 18.96 %. Echocardiography results were available for 66 patients. This revealed reduced systolic function in 40.5 % while HfpEF was evident in 59.56 % of patients documented with CCF. While a total of 6 patients were demonstrated to have cardiovascular disease on echocardiography that was not previously documented.

Cardiovascular disease is extremely common in patients with COPD. This coexistence highlights the crucial need for the development of strategies to screen for and reduce cardiovascular risks associated with COPD.

2.11 Analysis of the COPD Outreach Telephone Case Management Service in St Vincent's University Hospital

C. Wynne, A. Lanigan, E. Kelly

Respiratory Department, St Vincent's University Hospital (SVUH), Dublin

Chronic obstructive pulmonary disease (COPD) outreach reduces re-exacerbations, re-admissions and reduces length of stay. Our aim in this study was to analyse the telephone case management element of the COPD outreach service.

A retrospective study was carried out whereby we categorized all telephone calls received over a six month period. All calls are recorded on the COPD outreach service contact sheet which includes both reason and outcome of call.

Calls were categorised into worsening symptoms -leading to verbal advice, general practitioner (GP)/emergency department(ED)/clinic review, equipment query, appointment query, verbal advice—patient/relative, public health nurse (PHN)/allied health professional (AHP), GP/physician. All patients spoken to/discussed had been on the COPD Outreach programmes. 105 calls were received, the highest percentage being from patients with worsening symptoms at 42 %. 19 % of these were given advice re self-management, 15 % advised to attend their GP, 8 % to present to the ED. Equipment query calls amounted 19 %, appointment queries 5 %. General verbal advice amounted to 34 % of calls, made up from patients in 10 %, relatives in 9 %, PHN/AHP in 7 % and GP/Physicians in 8 %.

This suggests that this element of our service may reduce unnecessary GP/ED presentations and enhances our overall contribution to our COPD patients' care.

2.12 Air Travel in Patients on Long Term Oxygen Therapy: Flying Low Or Flying High?

Dr. Christina Campbell, Dr. Matthew W. Smyth, Lindsay Brown, Dr. Emer Kelly

Respiratory Department, St Vincent's University Hospital, Dublin

Ambulatory oxygen (O_2) is recommended treatment for hypoxaemia at rest or induced by exercise.

Commercial aircraft cabins are pressurized to altitudes of 6,000–8,000 feet, with an equivalent FiO_2 of 15 %. O_2 supplementation,for those on baseline ambulatory O_2,is paramount.

We gathered information on patients' experience travelling with supplementary oxygen and reasons patients on O_2 do not travel. Patients were identified using a home oxygen database. Data weregathered by postal questionnaire.

Between 2013–2015, 512 patients were entered on the database: 277 were excluded (269 had died, 34 had incomplete records). We sent 235 questionnaires and 50 responses were received (21% responserate). Of these: 11 (22 %) were returned as the patient had died, 20 (40 %) had not travelled by air,11(22%) had flown with O_2, 4 (8 %) no longer used O_2, 4 (8 %) forms incomplete. Of those who travelled with O_2: 54 % found it complicated to organise, 72 % found it complicated to access information, 81 % would fly again. Regarding those who had never flown with O_2: 35 % were unaware O_2 was available on commercial aircraft, 30 % had no wish to travel, 30 % had worries regarding their health.

Air travel is challenging, however those who do travel report a mainly positive experience. Increasing available information on options for travel should help patients.

2.13 COPD Outreach Clinic—Meeting the needs of patients outside our catchment area

C. Lynch, M. Togher, J. Hayes

COPD Outreach Service, Cavan General Hospital

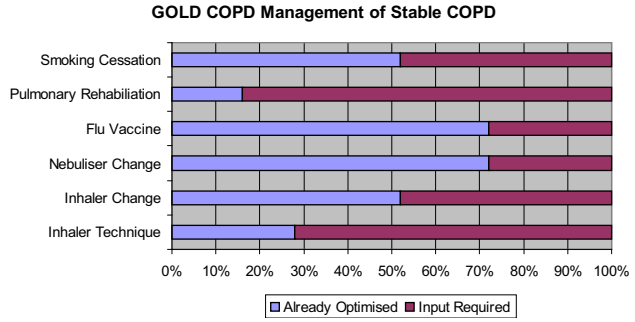
COPD outreach is running in Cavan General Hospital. This hospital serves a very large catchment area, encompassing west Cavan, north Monaghan and parts of Leitrim, Longford and Meath. A 25 mile catchment area from the hospital was agreed for Early Supported Discharges.

In 2015, 38 % or 215 patients coded by HIPE as COPD fell outside this area. To address this service gap, a 6 weeks COPD review clinic was established to review these patients. At ward review, clinic appointments were offered to patients who met our inclusion criteria, except for the catchment area.

A three month audit was conducted between March and May 2016 of this clinic.

33 patients were sent appointments with an attendance rate of 76 % (n = 25).

Prior to attending this clinic, only 56 % had a spirometric confirmed diagnosis of COPD, this number rose to 96 % following clinic review. Average FEV_1 was 62 %. Symptom score was high, with average CAT score of 15. A review of their care was conducted based on GOLD COPD standards of care.



In the absence of an outreach home visit service, this clinic is an effective means of ensuring patients receive a high standard of care, including spirometric confirmation of their COPD, appropriate grading and optimisation of their care.

Reference:

1. Global Strategy for the Diagnosis, Management and Prevention of COPD. Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2016. Available from: http://goldcopd.org/.

2.14 Investigation of Long-Term Oxygen Therapy Prescription and Determination of Cost of Provision Among Chronic Obstructive Disease Patients in Co. Donegal

D. O'Flynn, P. McLaughlin, V. Keatings

Letterkenny University Hospital, Letterkenny

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

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

123 patients met inclusion criteria. 36 (29 %) patients did not meet the BTS requirements for LTOT. 40 % of patients interviewed were using LTOT less than the minimum 15 h per day. Of 33 excluded deceased patients 10 of whose LTOT provision had not been discontinued.

Results suggest there are a considerable number of erroneous LTOT prescriptions. Many patients using LTOT are not using the recommended amount, reducing cost-benefit. Moreover there are deceased patients for whom LTOT continued to be provided. There is therefore scope to reduce cost and improve LTOT prescription and provision.

Reference:

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

2.15 Smoking Levels and Lung Function in an Irish Prison

G. Nolan[1], S. Morrin[2], J. Stephenson[3], L. Hayes[1], M. O'Connor[4], D. Peelo[5]

[1]St Vincent's University Hospital; [2]Naas General Hospital; [3]Mater Misericordiae University Hospital; [4]Department of Public Health, HSE East; [5]COPD Support Ireland

Chronic obstructive pulmonary disease (COPD) is the 4th leading cause of death in Ireland. 19.2 % of the general population are current smokers [1]. Irish prisons are exempt from the Public Health (Tobacco) Act 2004 that bans smoking in the workplace. In November 2015 COPD Support Ireland assessed smoking levels and lung function in an Irish Prison.

Three respiratory physiologists carried out spirometry testing according to the ATS/ERS 2005 [2] guidelines, on a group of prison staff and clients. Participants also completed a detailed questionnaire.

A total of 58 participants (47 females), mean age 38 years (range 19–65) were assessed. 63 % had never heard of COPD. 53 % were current smokers. Eight (15 %) had abnormal spirometry results, all showing an obstructive pattern, with a mean FEV1/FVC ratio of 62.6 and 73.9 % FEV1 % predicted.

Table 1. Comparison Normal versus Abnormal Spirometry Groups

Parameter	Normal (n=47)	Abnormal (n=8)
Gender (females)	77%	100%
*Age years (range)	38.5 ± 10 (19-65)	41.0 ± 7.5 (30-51)
*BMI (kg/m²)	26.6 ± 3.3	28.4 ± 3.3
Smokers	47%	88%
Highest Education level Primary school/ Secondary school	32% / 49%	63% / 25%

*results are mean ± SD

Awareness of the effects of smoking and COPD should be increased in Irish Prisons and efforts to quit and improve lung health actively supported.

References:

1. Department of Health, Health In Ireland Key Trends 2015 http://health.gov.ie/wp-content/uploads/2015/12/Health_in_Ireland_KeyTrends2015.pdf.
2. ATS-ERS Taskforce: Standardization of Spirometry. ERJ 2005;29:319–338.

2.16 The Journey the First 12 Years Belfast Community Respiratory Team

AnneMarie Marley, Jean Kavanagh, Joanne Quinn, Una Mc Caffery & Dr Vincent Mc Govern

Belfast Community Respiratory Team

The Belfast Community Team has an integrated Respiratory team working across acute and community care. It is in existence twelve

years and consists of a nurse consultant, respiratory nurse specialists, Respiratory specialist physiotherapists, Physiotherapy assistants, Occupational therapist Dieticians, GPs with special interests, Hospital consultants, Psychologist and Administration support.

A recent RQIA review 2016 described the team as an "exemplar service for N Ireland". There are 1,300 patients on our caseload, 324 have palliative care needs. Through the integrated care partnership we successfully bid for enhanced services and the team has established a focused case finding clinic to detect early disease.

A seven day service has been created to provide weekend reviews accommodating complex discharges from hospital and management of Palliative patients. A joint protocol with N Ireland ambulance service has been developed to reduce admission and bypass the Emergency Room. A comprehensive oxygen service has been established ensuring assessment and review of all patients. A Nurse lead Chronic Disease Management clinic has been established for review and education. We provide Pulmonary and Bronchiectasis Rehabilitation.

We are immensely proud of our achievements and the quality of life for all our patients remains paramount.

2.17 Does Pulmonary Rehabilitation Reduce Frailty in Patients with COPD?

K. O' Sullivan, A. Mulkerns, P. O' Toole, T. J. McDonnell

Respiratory Department, St. Michael's Hospital, Dun Laoghaire, Co. Dublin

Frailty describes a clinical syndrome characterised by multisystem decline leading to reduced functional ability. It is consistently associated with increased risk of falls, disability, hospitalisation and death[1]. In COPD, extra pulmonary manifestations include physical inactivity, muscle weakness, osteoporosis and fatigue, also frequently observed in frailty. The 4 m gait speed test (4MGS) measures physical performance, is indicative of frailty, and has been demonstrated to have excellent test–retest and inter-observer reliability in COPD. Pulmonary rehabilitation (PR) is known to be effective at improving symptom burden, physical function and health status. Consequently, PR targets many components of frailty.

This study aims to determine whether a course of PR results in a reduction in frailty by improving 4MGS scores.

The 4MGS was assessed in 10 participants (six male, four female) with COPD (mean FEV1 53 %), average age 61 (range 50–79) before and after a course of PR.

Results show an improvement on the 4MGS from 0.88 m s^{-1} before PR to 0.99 m s^{-1} after PR. A minimal clinically important difference of 0.08–0.11 m s^{-1} has been suggested for COPD patients using the 4MGS[2]. As expected, improvements in 6MWT, CAT and CRDQ were also observed.

This suggests positive effects of PR in reducing frailty in COPD patients.

References:

1. Kon SSC, Canavan JL, Nolan CM, Clark AL, Jones SE, Cullinan P, Polkey MI, Man WDC (2014) The 4-metre gait speed in COPD: responsiveness and minimal clinically important difference. Eur Respir J 43:1298–1305.
2. Kon SSC, Jones SE, Schofield SJ, Banya W, Dickson MJ, Canavan JL, Nolan CM, Haselden BM, Polkey MI, Cullinan P, Man WDC (2015) Gait speed and readmission following hospitalisation for acute exacerbations of COPD: a prospective study. 70:1131–1137.

2.18 The Patient Experience of COPD Outreach in Our Lady of Lourdes Hospital, Drogheda

M. O'Reilly, R. Reilly

COPD Outreach, Our Lady of Lourdes Hospital (OLOLH), Drogheda

COPD Outreach was established in OLOLH in 2013. Although we have reviewed the effect of this service on LOS, we have not determined the patient's perspective. The aim of this study was to establish the patient's experience of the service in OLOLH.

An anonymous questionnaire was posted to all patients enrolled in a COPD Outreach programme during January to June 2016 inclusive. The questionnaire was modified from one used in a similar study[1]. 60 questionnaires were distributed.

The team were described as helpful, friendly, supportive and understanding. 75 % of patients reported feeling extremely safe being treated at home by the COPD Outreach team, with the remainder reporting feeling very safe or safe. All patients were either completely or very satisfied with the care they received. Patients most frequently reported that they were more confident, happier, able to cope better and had less hospital admissions as a result of COPD Outreach. All patients reported that they would recommend the service to family and friends.

The results show that patient's deem COPD Outreach in OLOLH, Drogheda a safe and effective treatment.

Reference:

1. Lanigan A, Wynne C, Kelly E (2014) COPD outreach—the patient perspective. Ir J Med Sci 183(11):501.

2.19 Increasing COPD Awareness—A Three Year Effort

Meghan Reddy[1], G. Nolan[2], M. O'Connor[3], D. Peelo[4], S. McCormack[5]

[1]University of California, Berkeley; [2]St. Vincent's University Hospital; [3]Department of Public Health, HSE-East; [4]COPD Support Ireland; [5]Irish Thoracic Society

Chronic obstructive pulmonary disease (COPD) is the 4th leading cause of mortality in Ireland[1]. It is the disease which causes most emergency hospital admissions of adults in Ireland[2]. To combat low awareness of COPD and improve health outcomes, COPD Support Ireland has offered a week of spirometry testing to coincide with World COPD Day in 2013, 2014, and 2015[3]. For World COPD Day 2015, a mobile clinic providing COPD information and free spirometry testing took place at fifteen locations around Ireland. Participants (n = 497) completed a questionnaire about awareness and health metrics. Over one-third (n = 187, 37.6 %) had abnormal spirometry and were referred to their GP. There is a marked increase in the percentage of abnormal results in comparison to 2014 (18.0 %) and 2013 (18.1 %). Of those with abnormal spirometry in 2015, 54.0 % were already attending their GP for symptoms compared with 32 % in 2014 and 31.7 % in 2013. Increased COPD awareness was found among participants in each consecutive year, with awareness levels rising from 47.7 % in

2013 to 59.0 % in 2014 and 66.4 % in 2015. This can be attributed at least in part to initiatives such as those of COPD Support Ireland.

References:
1. Department of Health. Health in Ireland Key Trends 2015.
2. National Respiratory (COPD) Framework (2008) Irish Thoracic Society, Health Service Executive, Irish College of General Practitioners.
3. Irish Thoracic Society (2009) Call for Increased Awareness of COPD on World COPD Day.

2.20 Is Smoking Cessation Sufficient in Current COPD Efforts?

Meghan Reddy[1], G. Nolan[2], M. O'Connor[3], H. Cooper[3], D. Peelo[4]

[1]University of California, Berkeley; [2]St. Vincent's University Hospital; [3]Department of Public Health, HSE-East; [4]COPD Support Ireland

Chronic obstructive pulmonary disease (COPD) is the 4th leading cause of mortality in Ireland[1]. For World COPD Day 2015, as in previous years, a mobile clinic provided COPD information and free spirometry testing at locations (15) around Ireland with the aim of increasing public awareness of COPD and improving health outcomes. These locations vary each year so can show trends rather than being directly comparable. As in previous years participants ($n = 497$) completed a questionnaire which included classifying themselves as current, ex-, or non-smokers (Table 1).

Table 1 Smoking history and Spirometry Results (Abnormal) 2013 – 2015

	2013 (n=352)	**2014 (n=335)**	**2015 (n=493)**
Median age group	55-64yrs	55-64yrs	65-74yrs
Male %	52.8%	40.1%	49.0%
Smoking: current	25.9%	20.8%	18.9%
ex	44.3%	45.2%	48.2%
never	29.8%	34.0%	32.9%
Abnormal Spirometry	17.9% (n=63)	18.2% (n=61)	32.3% (n=156)
Smoking: current	30.1%	26.3%	17.9%
ex	55.6%	54.0%	59.0%
never	14.3%	19.7%	23.0%

Smoking cessation is the single most effective intervention for patients with or likely to develop COPD who are smokers[2,3]. Despite these groups having a demonstrated interest in their respiratory health, although almost half (48.2 %) have successfully quit, 18.9 % continue to smoke. For those with abnormal spirometry, smoking history—current or ex—is a risk factor for 76.9 % highlighting yet again the need for both prevention and supported smoking cessation efforts plus the value of an smoking history in identifying earlier those at risk of COPD so that they can benefit from other evidence based interventions.

References:
1. Department of Health, Health in Ireland Key Trends 2015.
2. National Respiratory (COPD) Framework (2008) Irish Thoracic Society, Health Service Executive, Irish College of General Practitioners.
3. Wilson, Julie (2005) An evaluation of nursing interventions for smoking cessation in patients with chronic obstructive pulmonary disease. University of Ulster.

2.21 Chronic Obstructive Pulmonary Disease (COPD) Care Pathway

R Reilly

COPD Outreach, Our Lady of Lourdes Hospital, Drogheda, Co Louth

The National COPD Acute Management Bundle was incorporated into the COPD Care Pathway and launched in AMAU and the Emergency Department in February 2015. Eleven 1 h education sessions were provided. The purpose of this study was to review whether use of the pathway achieved the national treatment guidelines.

A retrospective audit was conducted on fifty charts of patients admitted with a COPD exacerbation.

The results indicate that the pathway was used in 40 % of the COPD patients. In total:

- 19 patients received the initial salbutamol/atrovent nebule—4 received the nebule within 30 min.
- 19 patients received oral prednisolone/IV hydrocortisone—9 received the corticosteroid within 2 h.
- 15 patients had an ABG performed—4 had this performed within 30 min.
- 13 patients received an antibiotic–2 had an oral antibiotic.
- 7 out of 19 suitable patients were referred to the COPD Outreach Team.

In conclusion, introduction of the Chronic Obstructive Pulmonary Disease (COPD) Care Pathway and 11 h of education has not achieved the standard of care required for COPD patients. Identification of specific staff members who could take responsibility of the pathway implementation should be considered.

Irish Thoracic Society Poster Review and Discussion

Friday 18th November 2016

3. Lung Cancer and Interventional Pulmonology

Chairs D. Healy, St Vincent's University Hospital, Dublin
V. Keatings, Letterkenny University Hospital, Letterkenny

3.1 Value of an Electronic Pulmonary Nodule Registry

A. Sahadevan, F. Ali, J. Faul, L. Cormican

Connolly Respiratory Department, Connolly Hospital, Dublin

Trial results of low-dose lung cancer screening trials have led to increased pulmonary nodule surveillance imaging in Ireland. When an outpatient did not attend (DNA) for a scheduled nodule surveillance CT, a cancellation sheet is generated and sent to the requesting physician. It is the requesting physician's responsibility to follow-through on cancellation sheets. This proves a medicolegal conundrum as it might not always be obvious to the requesting physician when a patient does DNA. In 2015, Connolly Respiratory Department piloted an electronic nodule registry to monitor pulmonary nodule surveillance. One of the registry's aims was to see if current safety mechanisms within NIMIS were able to highlight all DNAs. 189 different surveillance schedules were monitored in a 1-year interval (2015–2016). Median age of patient was 65 years (range 25–91). Total surveillance CTs monitored through the registry was 202 (128 scans from July 2015 to Dec 2015). 14 DNAs where a follow-up thoracic CT was not rescheduled or accounted for was highlighted in that period. None of these DNAs were identified with cancellation sheets. Note number of DNAs which were successfully highlighted with cancellation sheets were not documented. We have demonstrated there can be a discordance between NIMIS and intra-departmental monitoring.

3.2 Adherence to the British Thoracic Society Guidelines for Management of Lung Nodules: A Single Centre Audit in an Irish Tertiary Hospital

E. O'Neill[1], B. S. Kelly[2], M. P. Keane[1], J. D. Dodd[2], M. W. Butler[1]

[1]Respiratory Medicine: Medical Professorial Unit, St Vincents University Hospital, Elm Park Dublin 4; [2]Department of Radiology, St Vincents University Hospital, Elm Park, Dublin 4

Objective: To study the adherence to the June 2015 BTS lung nodule guidelines, and explore reasons for non-adherence.
Methods: A retrospective, single centre audit of lung nodule multidisciplinary team meetings was carried out in a tertiary referral centre. Two years of medical, radiological and nursing MDT records were reviewed and compared against BTS Guidelines in terms of diagnosis, investigation, treatment and follow up.
Results: Between March 2014 and March 2016, 105 patients were reviewed at MDT. Of these 60 (57 %) were managed in accordance with the guidelines. Of the remaining 45 (43 %) patients 23 (51 %) had their follow up CT scan at a date significantly later than recommended (mean 8.17 months range 1–48) with 78 % of delayed scans due to scheduling and resource limitation. 6 (13 %) had scans earlier than recommended (mean 5.8 range 5–6 months). 5 patients had PET scans that were not indicated and one patient did not have a PET scan that was indicated. 2 patients had CT guided biopsies that were not indicated; all patients in whom a biopsy was indicated underwent the procedure. Of the 11 patients who should have been discharged from MDT without follow-up 9 (81 %) are recalled for additional imaging.
Conclusion: This study shows a 60 % adherence with the BTS guidelines. Potential improvements could be made by better resource management and less defensive imaging practices.

3.3 Major Lung Resections for Non-Small Cell Lung Cancer in the Elderly—Age is a Barrier

R. C. Weedle, C. O'Connell, G. J. Fitzmaurice, W. Ahmad, R. J. Ryan, V. K. Young

Department of Cardiothoracic Surgery, St. James's Hospital, Dublin

An increasing number of patients presenting with lung cancer are of an advanced age. Older patients, with associated pre-morbid conditions, represent a higher likelihood of peri-operative complications. Our aim was to assess whether age is a barrier to successful outcomes following major lung resections.

We conducted a retrospective review of a prospectively collected dataset on all patients who underwent anatomical resection for non-small cell lung cancer in our unit between January 2010 and October 2015. Electronic patient records were reviewed for data regarding patient demographics, pre-operative clinical stage, surgical procedure, final pathological stage, and outcomes (30-day and 90-day mortality). For the purpose of this study, we defined a very elderly patient as 75 years of age or older, an elderly patient as 65 to 74 years, and young patients as 64 years old or younger.

	Patients ≥ 75 years			Patients 65 – 74 years			Patients ≤ 64 years		
Mortality		**30-day**	**90-day**		**30-day**	**90-day**		**30-day**	**90-day**
	n =	**%**	**%**	**n =**	**%**	**%**	**n =**	**%**	**%**
Lobectomy / Bilobectomy	141	6.4	2.8	311	4.2	4.2	298	2.35	1.3
Sleeve lobectomy / bilobectomy	10	0	0	26	7.7	3.8	32	3.1	0
Pneumonectomy / Sleeve pneumonectomy	10	20	0	42	11.9	4.8	52	3.8	1.9

In our series, 18 % of patients are >75 years with a further 42 % of patients aged 65–74 years. There is a definite increase in operative mortality with age both at 30 and 90 days. Mortality for lobectomy >75 years is two to three times that of under 64's. Although numbers are small, mortality for pneumonectomy in patients >75 is particularly high. Despite this we feel that patients should not be denied curative lung resection on the basis of age alone but every effort should be made to avoid pneumonectomy.

3.4 An Audit of NCCP Lung Cancer Referral Forms to the South East Cancer Center

J. Kumar, S. Foley, M. Rogan

Dept of Respiratory Medicine, University Hospital Waterford

Rapid Access Clinics for patients with a suspected diagnosis of lung cancer were launched nationally in 2012. A standardized referral form was introduced together with guidelines that provide a referral pathway for GPs and hospital doctors.

We retrospectively audited 100 referrals (57 males and 43 females) made between November 2015 and April 2016 to assess the quality and accuracy of the information provided as per guidelines.

The majority of the patients were referred by GPs (88 %) with 12 % referred from hospital doctors. 43 % were ex- smokers while 37 % were current smokers. 12 % were non smokers and no information was given for 8 % of patients. CXRs were not performed in 13 % of patients prior to referral. CXR was normal in 11 % and abnormal in 76 %. Hemoptysis was present in 24 %. No information regarding hemoptysis was given for 38 % of referrals. Only 34 % of patients were informed about a possible diagnosis of lung cancer at time of referral.

Significant numbers of rapid access lung cancer referral forms are incomplete at the time of referral. A revised referral form should be introduced and an education campaign for referees should be undertaken to streamline the service for users and provides alike.

3.5 New TNM Lung Cancer Staging (8th Edition) a Step Beyond Current Imaging Accuracy?

M. Murphy, C. Barry, A. Fabre, D. Healy

Department of Cardiothoracic Surgery, St Vincent's University Hospital, Dublin

The IASLC is due to publish proposals for the revision of TNM stage groupings in the forthcoming 8th edition. Further sub grouping of T-stage is proposed based on ever smaller size ranges(1). It is proposed to move from 4 to 6 T-groups between 0 and 7 cm, some based on only 1 cm size differences. This population database may be used to guide neoadjuvant therapies. We wanted to determine if contemporary clinical staging based on radiology would accurately predict the new proposed T staging.

We performed a retrospective analysis of 150 primary lung cancer cases that proceeded to surgical resection. We assessed size on the diagnostic CT scan and compared this to pathological size. We also looked at time to surgery to assess if this had an impact.

The radiological size was only accurate to an average of 0.57 cm. This had implications on staging. Looking at T staging based on size alone, CT accurately staged 66 % of patients using the 7th edition IASLC. Following assessment under the proposed 8th edition changes only 54.6 % of patients were correctly staged. There was no correlation between time to surgery and a larger tumour size.

We conclude that although the TNM system is crucial in lung cancer management, these proposals will reduce the ability of clinical measurements to accurately predict T stage. This may have implications as neoadjuvant therapies evolve.

Reference:

1) Goldstraw P et al (2016) The IASLC Lung Cancer Staging Project: Proposals for Revision of the TNM Stage Groupings in the Forthcoming (Eighth) Edition of the TNM Classification for Lung Cancer. J Thor Onc.

3.6 An Analysis of Lung Cancer in a Larger Cohort of Younger Patients Age <55

M. N. Kaderi, M. T. Henry, D. Murphy, B. Plant, S. Guiry, M. P. Kennedy

Department of Respiratory Medicine, Cork University Hospital, Cork, Ireland

The tumor types, risk factors and stage at presentation of lung cancer has previously not been studied in Ireland. This study evaluates patterns and trends of lung cancer incidence, risk factors and outcomes for patients diagnosed with lung cancer of age 55 and below.

A retrospective chart analysis was performed of all patients presenting to CUH with lung cancer between 2010–2015. Patients age <55 were selected for analysis.

There were 154 cases of lung cancer diagnosed in those age ≤55 from 1307 cases (12 %). 14 % were less than age 45 and 3 % were less than age 35 (Table 1). Approximately 14 % were never smokers. There was a preponderance of Non-small cell non-squamous cancers (64 %) (Table 2). 64 % were non small cell non squamous cell lung cancer. Approximately 25 % patients underwent surgical resection.

In conclusion approximately 12 % of patients presenting to our institution with lung cancer are age <55. There is a predominance of females and non-squamous NSCLC. Approximately 25 % undergo surgical resection. Further analysis is being performed on staging and risk factors.

Lung Cancer Age	Numbers
<34	4 (3%)
35-44	18 (11%)
45-55	132 (86%)
Total	154

Table 1

Tissue Type	Numbers
Squamous cell	19 (12%)
NSCLC non squamous	95 (62%)
Small cell	23 (15%)
Carcinoid	17 (11%)
Total	154

Table 2

3.7 Good Things Come in Small Packages: An Aerosolized Delivery System for Small Molecule Inhibitors of Macrophage Migration Inhibitory Factor

M. Doroudian[1], C. O'Reilly[1], K. Crosbie-Staunton[2], R. MacLoughlin[3], A. Prina-Mello[2], Y. Volkov[2], S. C. Donnelly[1,4]

[1]Department of Clinical Medicine, School of Medicine, Trinity Biomedical Sciences Institute, Trinity College Dublin, Pearse Street, Dublin 2, Ireland; [2]Centre for Research on Adaptive Nanostructures and Nanodevices, Trinity College Dublin, Ireland; [3]Aerogen, Galway Business Park, Dangan, Galway, Ireland; [4]Department of Clinical Medicine, Trinity Centre for Health Sciences, Tallaght Hospital, Tallaght, Dublin 24, Ireland

Macrophage Migration Inhibitory Factor (MIF) is a well defined pro-inflammatory mediator which plays a key role in innate immunity. Experimental evidence has shown that there is a direct correlation between MIF expression and the severity of many respiratory diseases including cystic fibrosis, asthma, acute respiratory distress syndrome (ARDS) and lung cancer. With this in mind, modulating MIF's biological activity with small molecules represents an interesting therapeutic strategy for respiratory disease [1]. We have recently reported a novel small molecule, SCD-19, which has shown promising in vivo results in experimental forms of lung cancer [2]. Here, we report our attempts to improve local delivery of MIF

therapeutics directly to the lung through the development of an aerosolized delivery system utilizing state of the art nanospheres [3].

Our novel MIF inhibitor, SCD-19, was encapsulated into PLGA (polylactic-co-glycolic acid) nanospheres using single emulsion technique. Biocompatibility and toxicity of the nanospheres was evaluated with high content analysis and LDH assay. Also, a detailed in vitro study was conducted to assess the effects of the drug on MIF related functional activity.

Drug-loaded nanospheres showed no significant toxicity on A549 and RAW 263 cell lines and demonstrated a high degree of biocompatibility. The nanospheres significantly inhibited intra-cellular tautomerase activity of MIF (35.5 % inhibition $\pm$ 0.014, $^{***}p < 0.001$) while LPS-induced TNF-α expression was also significantly attenuated in the presence of the particles (53 % reduction $\pm$ 0.027, $^{***}p * 0.001$).

References:

1. O'Reilly C, Doroudian M, Mawhinney L, Donnelly SC (2016) Targeting MIF in cancer: therapeutic strategies, current developments, and future opportunities. Med Res Rev 36:440–60.
2. Mawhinney L, Armstrong ME, O' Reilly C, Bucala R, Leng L, Fingerle-Rowson G, Fayne D, Keane MP, Tynan A, Maher L, Cooke G, Lloyd D, Conroy H, Donnelly SC (2014) Macrophage migration inhibitory factor (MIF) enzymatic activity and lung cancer. Mol Med 20:729–735.
3. Verma NK, Crosbie-Staunton K, Satti A, Gallagher S, Ryan KB, Doody T, McAtamney C, MacLoughlin R, Galvin P, Burke CS, Volkov Y, Gun'ko YK (2013) Magnetic core–shell nanoparticles for drug delivery by nebulization. J Nanobiotechnol 23:11-1.

3.8 Is Bronchoscopy Required in Patients with CT Scan Negtive for Lung Cancer in the Investigation of Hemoptysis?

P. Arooj, E. Bredin, M. T. Henry, D. Murphy, B. Plant, S. Guiry, K. A. Khan, M. P. Kennedy

Department of Respiratory Medicine, Cork University Hospital

Background: After completing a retrospective analysis of all cases referred to National Rapid Access Lung Clinic (RALC) with haemoptysis in 2011–2012, a prospective study was carried out on all patients referred to RALC with haemoptysis from 2013 to Jan 2016. The objective of both studies was to identify the requirement for bronchoscopy in patients with a negative CT scan for cancer.

After local ethical approval, a chart review was performed on all patients presented with haemoptysis to the RALC at Cork University hospital in 2011–2012 and a prospective analysis was performed on all patients presenting between 2013-Jan 2016.

In total 337 patients presenting to our RALC with haemoptysis were studied (155 retrospective and 182 prospective). The cause of haemoptysis was infection (49 %) and cancer (17 %). Persistent haemoptysis (>2 weeks) was more frequent in lung cancer patients in both studies ($p < .05$). CT scan was accurate in identifying lung cancer in all patients with no false negative scan for lung cancer. The combination of bronchoscopy plus EBUS-TBNA was 80 % sensitive for lung cancer in RALC patients with haemoptysis. Patients presenting with haemoptysis through our RALC clinic appeared to have more squamous cell histology (42 %) and more advanced stage.

Approximately a quarter of patients presented to RALC had haemoptysis. Approximately one-sixth of those had lung cancer and more than half of this population has persistent haemoptysis. In a patient with haemoptysis with a CT negative for cancer, bronchoscopy may be a futile additional test.

3.9 A 3-Year Audit of EGFR Mutation Testing in a National Referral Laboratory

R. Smyth[1], R. Cummins[2], T. O'Grady[2], B. Doyle[2], K. Sheehan[2], M. Leader[2], M. Redmond[2], B. Hennessy[3], R. Morgan[1], E. Kay[2]

[1]Department of Respiratory Medicine, Beaumont Hospital, Dublin; [2]Department of Pathology, Beaumont Hospital/Royal College of Surgeons in Ireland, Dublin; [3]Department of Medical Oncology, Beaumont Hospital, Dublin

Testing for mEGFR has become standard in advanced-stage non-squamous NSCLC. In 2013 the International Association for the Study of Lung Cancer released guidelines on molecular testing in these patients [1].

We reviewed mutation rates, turnaround time (TATs) and sample adequacy rates for the period 2013–2015.

754 results were available, 51 % were male with a mean age of 67.2 years. Beaumont Hospital was the largest referral hospital for testing (23.7 %). The most common sample received was a CT guided core biopsy (15.4 %) with 58 % of samples obtained from the primary site. While mutation rates remained relatively stable, between 6–11 % over the 3 years, insufficiency rates increased annually from 9.2 % in 2013 to 19.9 % of tested samples in 2015. Pleural fluid was the most likely sample to be insufficient for testing (OR 2.87 $p = 0.03$). Mean turnaround time (TAT) to report was 10 calendar days, well within the 14-day limit.

TATs are well within the guidelines, rising insufficiency rates are broadly concordant with other published studies [2] and a particular cause for concern, as increased tissue requirements for more extensive molecular testing are likely in the future.

References:

1. Lindeman NI, Cagle PT, Beasley MB et al (2013) Molecular testing guideline for selection of lung cancer patients for EGFR and ALK tyrosine kinase inhibitors: guideline from the College of American Pathologists, International Association for the Study of Lung Cancer, and Association for Molecular Pathology. J Thorac Oncol 8(7):823–59.
2. Hlinkova K, Babal P, Berzinec P et al (2013) Evaluation of 2-year with EGFR mutation analysis of small diagnostic samples. Diagn Mol pathol 22:70–75.

3.10 An Audit on Safety and Adequacy of CT Fluoroscopy Guided Lung Biopsy in 2015 in a Tertiary Referral Centre

AMNCH, Tallaght, Dublin, Ireland

A. Natarajan[1], C. Varghese[1], J. O'Callaghan[2], S. J. Lane[1], P. Govender[1]

Department of Respiratory Medicine, Adelaide and Meath Hospital, Dublin, Ireland

Introduction: Percutaneous transthoracic CT-guided needle biopsy of lung lesions is a well-established and safe technique for diagnosing both central and peripheral lung nodules.

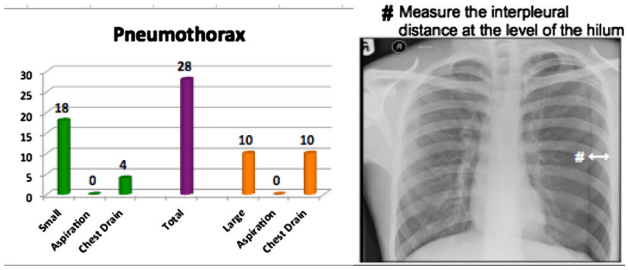
Methods: We retrospectively reviewed the radiology of ninety-two (92) Ct Guided Percutaneous Lung Biopsies performed over a period of 1 year between January and December 2015. We then looked at the discharge summary of all the patients who developed pneumothorax post biopsy. We utilized data from HIPE for the patient details, and also sought information from finance department for financial analysis.

Results: A total of 92 CT fluoroscopy guided lung biopsies were performed during the year 2015. 18–20 gauge needle coaxial technique was adapted in performing the procedure.
The patients were in the age group 40–85, except for one patient who was 20 years of age. There were 56 females and only 36 males in the group.

All the patients had pre-procedure bloods and 100 % documentation target achieved.

Out of 92 patients, 28 had pneumothorax, which accounts for 30.43 % incidence. 40 % of these patients had radiological evidence of Chronic Obstructive airway disease (Emphysema). Of the 28 patients with pneumothorax 20 (71 %) were females and 10 (29 %) were males, approximating 1:2 male to female ratio. The lesions were predominantly central 21 (75 %) followed by peripheral 7 (25) in 28 patients who developed pneumothorax.

14 (15 %) patients had chest drain inserted, of those 10 required chest drain immediately during procedure due to expanding pneumothorax and in 4 patients chest drain was inserted when the interpleural distance was 1–2 cm which is not in accordance with BTS guidelines on the management of pneumothorax as outlined in the 2003 BTS guideline for radiologically guided lung biopsy.



3 (3.2 %) patients had minimal pulmonary haemorrhage and 1 patient had minimal hemoptysis, which settled in less than 24 h.

Diagnostic accuracy rate achieved is 91.20 %

No death (0 %) was reported in this cohort of patients

BTS Standards for Radiologically guided Lung Biopsy

Category	BTS Standards	Acheived
Preprocedure Bloods and Documentation	100%	100%
Pneumothorax	<20.3%	30.43%
Pneumothorax requiring chest drain	<2.1%	15.21%
Haemorrhage/Haemoptysis	<5.3%	3.2%
Diagnostic accuracy	>90%	91.20%
Death	<0.15%	0%

Conclusion: The audit demonstrates that the targets set by BTS were achieved with the exception of higher incidence of pneumothorax and proportion of patients requiring chest drain.

3.11 Feasibility of End Tidal CO2 Monitoring for Patients Undergoing Conscious Sedation for Bronchoscopy: A Pilot Study

B. Craven, T. Cahill, B. Rutherford, A. O'Regan

Respiratory Department, Galway University Hospital, Galway

After receiving procedural sedation and analgesia for bronchoscopy, patients are traditionally monitored with a cardiac monitor, pulse oximeter and non-invasive blood pressure monitor.

Recent consensus guidelines from the ASA recommend end tidal CO_2 monitoring for all patients undergoing moderate to deep sedation. The rationale for this recommendation is that changes in the capnographic waveform and value of end tidal CO_2 will precede the onset of hypoxaemia in patients with respiratory depression or apnoea, particularly if they have been pre-oxygenated first.

A vitals monitor which can administer oxygen whilst simultaneously monitoring end tidal CO_2 and capnography through a nasal cannula was obtained from the department of biophysics. This was initially trialled on a healthy volunteer and a monitoring protocol devised. All patients during two consecutive months on two separate bronchoscopy lists in our institution were then monitored with the new system. Measurements of vitals along with end tidal CO_2 were monitored regularly during procedures. Episodes of respiratory depression or apnoea noted clinically were also recorded.

This study highlights the potential to measure end tidal CO_2 during procedural sedation for bronchoscopy. However the quality of the readout varied somewhat in patients who experienced prolonged coughing as this system is not a closed system as is the case for intubated patients.

3.12 Endobronchial Ultrasound Guided Transbronchial Needle Aspiration (EBUS-TBNA) as an Effective, Minimally Invasive Technique in the Investigation of Lymphoma

D. J. McCracken, T. E. McManus, A. Shamboul

Department of Respiratory Medicine, South West Acute Hospital, Enniskillen

EBUS-TBNA has become first line in the investigation of mediastinal lesions suspicious for malignancy in keeping with NICE guidelines [1], however its role in diagnosing lymphoma remains controversial [2].

Complete follow up data has been collected for all 235 patients undergoing EBUS in the South West Acute Hospital since the service's inception in 2012. Retrospective analysis has been performed to assess the sensitivity and negative predictive value of diagnosing lymphoma using the technique. Sub-group analysis was then performed to compare standard fine needle aspiration with aspiration using the ProCore needle.

Eleven patients underwent EBUS-TBNA for either suspected lymphoma or with subsequently confirmed lymphoma. Overall sensitivity was 67 % (4/11) and negative predictive value was 71 % (5/7), though both false negative results occurred in the standard fine needle aspiration group. Four patients (36 %) avoided further invasive investigations such as mediastinoscopy and two of those had a positive diagnosis of lymphoma with sufficient tissue to allow subtyping and commencement of treatment.

Despite small numbers, this retrospective analysis suggests that EBUS has an adequate sensitivity and negative predictive value suggesting effectiveness in diagnosing lymphoma. It reduces the requirement for further investigations and provides patients a safer procedure in their local hospital with reduced morbidity and mortality.

References:

1. National Institute for Health and Care Excellence. Endobronchial ultrasound-guided transbronchial needle aspiration for mediastinal masses. NICE interventional procedure guidance [IPF254]. February 2008.
2. Navani N, Janes SM (2013) Endobronchial ultrasound-guided transbronchial needle aspiration for lymphoma: the final frontier. Am J Respir Crit Care Med 188(10):1183–1185.

3.13 From Scan to Plan—A Study of Follow-Up of Four Significant Findings on CT Thorax in an Acute Medical Assessment Unit

G. Lambe, C. Mulrooney, P. Kerr, M. El Shafi, D. G. Byrne

Acute Medical Assessment Unit (AMAU), St. James's Hospital, Dublin 6, Ireland

CT thorax is a common investigation in the AMAU setting. Many patients have significant findings requiring further investigation. With a fast turnover of patients and staff, there is a high potential for patients to become lost to follow-up. The aim of our study is to determine the prevalence of significant findings on CT thorax and the rate of radiological and clinical follow-up according to several relevant variables.

A retrospective, cross-sectional analysis was conducted of all CT Thorax and High Resolution CT Thorax scans performed in the AMAU from January to June 2015. A note was made of all patients with a "significant finding"—defined as:

1. Pulmonary nodule.
2. Pulmonary mass.
3. Enlarged mediastinal or hilar lymph node.
4. Thyroid lesion.

The rate of radiological and clinical follow up was recorded.

There were 813 patients admitted during the study period. 72 patients underwent a CT Thorax. 27 had a significant finding. 59.25 % of these had a follow-up scan but only 29.6 % of these were booked by the admitting team. Outpatient follow up was booked for 59.25 % of patients and 100 % of these attended their appointment.

Proportion of patients who have follow up CT scan when	
• Explicit follow up recommended in radiology report	6/9 (66.7%)
• Finding mentioned in summary of radiology report	8/12 (66.7%)
• Finding mentioned in main body of radiology report	2/6 (33.3%)
• Finding is mentioned in discharge summary	9/12 (75%)
• Management plan is mentioned in discharge summary	11/13 (84.6%)
Proportion of patients who have OPD follow up when	
• Explicit follow up recommended in radiology report	6/9 (66.7%)
• Finding mentioned in summary of radiology report	7/12 (58.3%)
• Finding mentioned in main body of radiology report	3/6 (50%)
• Finding is mentioned in discharge summary	8/12 (66.7%)
• Management plan is mentioned in discharge summary	9/13 (69.2%)

Table 1 The proportion of patients with a significant finding on CT Thorax having a follow up CT scan or OPD appointment according to several relevant variables.

In light of growing patient care discontinuity and a 22 % rise in demand for inpatient CT imaging from 2010 to 2014 [1], better systems are needed for follow-up of significant findings. In the meantime, clinicians need to be ever more vigilant, particularly at the point of discharge.

Reference:

1. Cournane S, Conway R, Creagh D et al (2016) Radiology imaging delays as independent predictors of length of hospital stay for emergency medical admissions. Clin Radiol 71:912–8.

3.14 The Diagnostic Yield of Conventional Transbronchial Needle Aspiration (cTBNA) in a Tertiary Referral Centre

L. J. Chawke, C. B. Ni Ealaithe, D. R. Curran, T. M. O'Connor

Department of Respiratory Medicine, Mercy University Hospital, Grenville Place, Cork

Conventional transbronchial needle aspiration (cTBNA) facilitates the investigation of mediastinal lymphadenopathy for thoracic malignancy, tuberculosis and sarcoidosis. Endobronchial ultrasound TBNA (EBUS TBNA) is superior to cTBNA in the diagnostic evaluation of mediastinal lymphadenopathy. We analysed the diagnostic yield of cTBNA in a tertiary centre where EBUS TBNA is not employed.

cTBNAs performed over 3 years (July 2013–July 2016) were analysed. The subcarinal (station 7) node was sampled. Cytological reports were evaluated as to the diagnostic yield of sampled nodes. Rapid onset evaluation (ROSE) was not available.

82 cTBNAs were performed. 41 (50 %) were male and 41(50 %) were female. Average age was 61.59 years. 50 (60.97 %) were performed for suspected thoracic malignancy, 15 (18.29) for suspected TB, and 17 for suspected pulmonary sarcoidosis. The overall diagnostic yield (adequate positive/negative) was 58.3 % (48/82). For suspected thoracic malignancy, the diagnostic yield was 66 % (33), TB 66.6 % (10), and sarcoidosis 29 % (5).

The diagnostic accuracy for thoracic malignancy and TB is comparable to published studies [1], however, less comparable in respect to sarcoidosis. The authors invite debate as to whether cTBNA has a role in the era of EBUS-TBNA and whether all respiratory physicians should now be performing EBUS-TBNA with or without ROSE.

References:

1. Fuso L, Varone F, Smargiassi A, Magnini D, Colella S, Di Marco Berardino A, Marra R, Mulè A, Rindi G, Inchingolo R (2015) Usefulness of Conventional Transbronchial Needle Aspiration for Sampling of Mediastinal Lymph Nodes in Lung Cancer. J Bronchol Interv Pulmonol 22(4):294–9.
2. Gupta D, Dadhwal DS, Agarwal R, Gupta N, Bal A, Aggarwal AN (2014) Endobronchial ultrasound-guided transbronchial needle aspiration vs conventional transbronchial needle aspiration in the diagnosis of sarcoidosis. Chest 146(3):547–56.

3.15 A Qualitative Analysis of Consent Within a Thoracic Surgery Department

M. Murphy, D. Healy

Department of Thoracic Surgery, St Vincent's University Hospital, Dublin

Informed consent is a key cornerstone of medical ethics. In today's increasingly litigious society, appropriately consenting patients for surgical procedures is more important than ever. The Royal College of Surgeons guidelines on consent state that surgeons should 'Ensure that consent is obtained either by the person who is providing the treatment or by someone who is actively involved in the provision of treatment. The person obtaining consent should have clear knowledge of the procedure and the potential risks and complications' [1]. In our experience, in many busy surgical services the role of consent is often left up to the interns.

We performed a retrospective audit of 50 consents performed within our thoracic surgery department. Our primary endpoint was whether patients were consented by intern, registrar or consultant. Secondary endpoint was the quality of the consent. Whether the

patient was consented for the procedure that was ultimately performed, mortality, chest drain and air leak.

Our results revealed 32 % of patients were consented by consultant, 32 % consented by Registrar and 36 % consented by interns. The quality of the consent corresponded to the seniority of the person performing the consent with consultants more likely to consent for mortality, chest drain and persistent air leak where applicable.

Reference:

1. Royal College of Surgeons. Guidelines on consent 3.5.1. https://www.rcseng.ac.uk/surgeons/surgical-standards/professionalism-surgery/gsp/domain-3/3.5.1-consent.

3.16 An Audit of Bronchoscopy Services and Patient Satisfaction Survey at St. Luke's Hospital

N. Marathe, B. Canavan, H. Haneefa, P. Kavanagh

Respiratory Medicine, St. Luke's Hospital, Kilkenny

Bronchoscopy, initiated at St. Luke's General Hospital in April 2014. We conducted an audit to analyze performance of Bronchoscopy, in comparison to British Thoracic Society (BTS) guidelines.

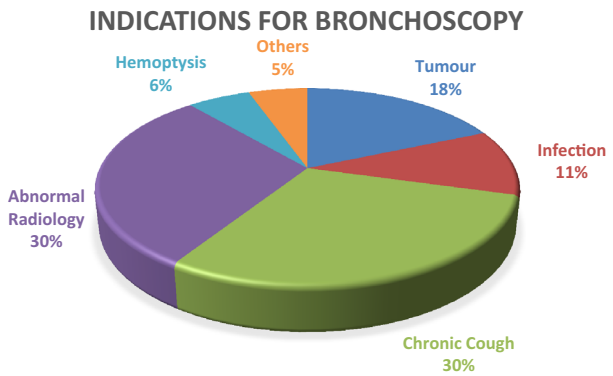
287 procedures were performed over a period of 2 years (April 2014–2016), 68 % conducted as day cases. 98 % of Bronchoscopies were for diagnostic purpose, abnormal radiology (30 %) and suspected malignancy (18 %). Endobronchial biopsies showed a positivity rate of 87 %. Mean rate of sedatives were Midazolam 3.50 mg and fentanyl 42.07 µg. Average time for procedure being 15 ± 1 min, with overall rate of complication 0.92 %.

Response to patient feedback survey, over 6-month period was 60 %. All patients reported skills of Professional involved, waiting time for the procedure, as good/excellent. Response to information provided about the procedure was verbal 14 %, written 26 % and both 60 %. Utilization of Endoscopy checklist was 100 %.

Audit reveals Bronchoscopy services at St. Luke's Hospital complies with set standards of BTS guidelines. Area of improvement from patient feedback survey identified, providing written information and consent form in advance, to replace current practice of taking consent on procedural day. Procedures on day case basis using minimal dose of sedation with low complications suggests it to be a relatively safe procedure. Services offered have reduced referrals to Tertiary Care, saving on time & expenses, providing a cost effective, efficient new service.

References:

1. British Thoracic Society Bronchoscopy Guidelines Committee. British Thoracic Society guidelines on diagnostic flexible bronchoscopy, Thorax 56 (2001) i1–i21.
2. Patient Satisfaction with Bronchoscopy, Noah Lechtzin, Haya R. Rubin, Peter White, Jr., Mollie Jenckes, and Gregory B. Diette, American Journal of Respiratory Critical Care Medicine Vol 166. pp 1326–1331, 2002.



3.17 The Care and Management of Chest Drains—A Quality Improvement Project

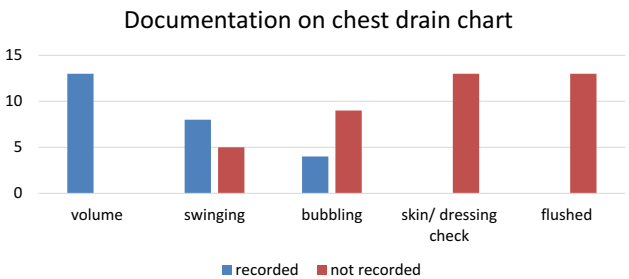
T. Scullion, P. Agnew

Department of Medicine, Belfast City Hospital, Belfast

This study looked at the management of chest drains after insertion. We experienced problems with drains falling out or becoming blocked. Based on this anecdotal evidence we reviewed our management after drain insertion to see if improvements could be made to practice.

This was a retrospective audit of all patients with chest drains in the hospital, over a three month period from February to April 2016 (13 patients). The clinical notes were reviewed, and comparisons made to key recommendations by the British Thoracic Society (BTS).[1] We also looked at any complications that developed.

Chest drains used varied from 12–28 F and mean duration was 9 days (median 5 days). We found that we complied 100 % with some recommendations e.g. the volume was recorded on a daily basis (see graph). However, in only 61 % was it recorded if the drain was swinging, and 31 % if the drain was bubbling. 0 % of drains were flushed regularly. 23 % blocked and 15 % fell out spontaneously.



This showed we are not fully compliant with BTS guidelines. Although this does not prove causation, improving our practice, e.g. better education for staff, a new documentation chart to emphasise key points, may help limit the number of complications.

Irish Thoracic Society Poster Review and Discussion

Friday 18th November 2016

4. Cystic Fibrosis and Bronchiectasis

Chairs C. Gunaratnam, Beaumont Hospital, Dublin; M. O'Mahony, Galway University Hospitals

4.1 The Prevalence of Obesity in Irish Adults with Cystic Fibrosis: A Registry Study

A. Dudina, S. Carter, K. Elkholy, G. Fletcher, C. G. Gallagher, E. F. McKone

National Referral Center for Adult Cystic Fibrosis, St Vincent's University Hospital, Dublin

Subjects with cystic fibrosis (CF) are often malnourished and require high calorie diets. This diet may lead to an increase in overweight and obese CF subjects which can itself impair lung function (1).

We examined the relationship between body mass index (BMI) and lung function in CF adult subjects using the CF Registry of Ireland.

Data were available for 548 adults. Four BMI groups were adopted (kg/m^2): underweight—less than 18.5; normal weight between 18.5 and 24.9; overweight—25–29.9; obese—30 and above. The prevalence of increased BMI (BMI $\geq$25 kg/m^2) was 13.8 %; of these, 63 were overweight and 13 obese. We examined the association between BMI and predicted FEV_1 % in each BMI group, followed by adjustment for age and gender. The differences were statistically significant ($p < 0.000$). Predicted FEV1 % was lowest in the underweight group. Surprisingly, the highest lung function was in the overweight group. There was a statistical trend for lower lung function in the obese CF group.

Conclusion: Overweight but not obese CF subjects have the best lung function. The trend towards reduced lung function in the obese subjects requires larger numbers for verification.

Reference:

1. Salome CM KG, Berend N. Physiology of obesity and effects on lung function. J Appl Physiol. 2010;108:206–11.

4.2 The CF ABLE Score—Prospective Study. Predicting Mortality and Timing for Transplant Referral in Cystic Fibrosis Patients

D. Nash, C. McCarthy, N. S. Sabin, E. Alqetan, C. Gunaratnam, N. G. McElvaney

Respiratory Department, Beaumont Hospital, Dublin

Predicting patient mortality and need for transplant in CF is a complex matter. The CF-ABLE score is a simplified tool for predicting outcomes based on the number of respiratory exacerbations in the last three months, FEV1, BMI and age. These are weighted to give a score from 0 to 7.

The score was initially developed using a cohort of 49 patients from 2004 to 2010 and subsequently validated using a database of 370 CF patients on the national registry. This study reports on the evaluation of the score on a prospective cohort of 87 patients from a single centre between 2011 and to 2015.

The scores for patients who died or required transplant were compared to stable patients using the Mann–Whitney test resulting in p-values of 0.002 and 0.0019 respectively.

The study shows a high CF ABLE score predicts mortality or transplant requirement within a 4 years period.

Reference:

1. McCarthy C, Dimitrov BD, Meurling IJ, Gunaratnam C, McElvaney NG (2013) The CF-ABLE score: a novel clinical prediction rule for prognosis in patients with cystic fibrosis. Chest 143(5):1358–64.

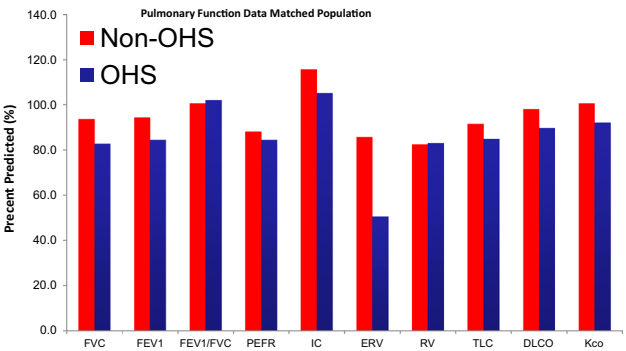
4.3 Differences in Physiology Between Obese Patients with Hypoventilation Syndrome and Those Without

D. Gumani, T. Dahab, T. S. Hynes, S. Saleem, A. O'Brien, B. Casserly

Respiratory Medicine Department, University Hospital Limerick, Dooradoyle Co. Limerick

Obesity hypoventilation syndrome (OHS) is characterized by obesity with daytime chronic hypercapnia (PaCO2 $\geq$45 mmHg/6 kPa) in the absence of other known causes of hypercapnia. We aimed to evaluate the physiological differences in cohort's lung function that may further delineate these two distinct populations.

319 stable obese patients referred for bariatric surgery at Rhode Island Memorial Hospital were retrospectively reviewed. Initial arterial blood gases separated 40 patients with a pCO2 >45, leaving 279 with normal pCO2. Baseline demographics demonstrated a slightly older OHS group (55.9 vs 50.3 years) with comparable average weights (63.0 vs 64.7 kg) and both groups had a female predominance. A significantly higher majority was seen in the normal CO2 group (non-OHS) (88.11 vs 68.0 %)[1,2].



Results demonstrated that BMI was significantly greater in OHS (55.9 $\pm$ 9.4 vs 49.1 $\pm$ 7.7 kg/m^2 $p < 0.001$). Cohorts PFTs showed the OHS group had a significantly lower FVC predicted, FEV1 predicted and PEFR at (80.52 vs 93.25 %) (81.93 vs 94.17 %) and (83.13 vs 89.86) respectfully. The OHS group demonstrated a significantly larger ERV predicated at (98.62 vs 83.01 %) but a significantly lower TLC at (84.81 vs 92.85) %. The groups diffusion capacity parameters showed that the OHS group had significantly lower DLCO predicated at (89.78 vs 97.92 %)[2].

There is a critical change that occurs in a sub-populations lung function that leads to increasing respiratory inefficiency and CO2 retention.

References:

1. Piper AJ, Grunstein RR (2011) Obesity hypoventilation syndrome. Am J Respir Crit Care Med 183(3):292–298.

2. Krishnan P, Todd DC, Soth M (2006) Altered respiratory physiology in obesity. Can Respir J 13(4):203–210.

4.4 How Does CPET Compare to Yearly Lung Function Following in Adult Cystic Fibrosis Patients?

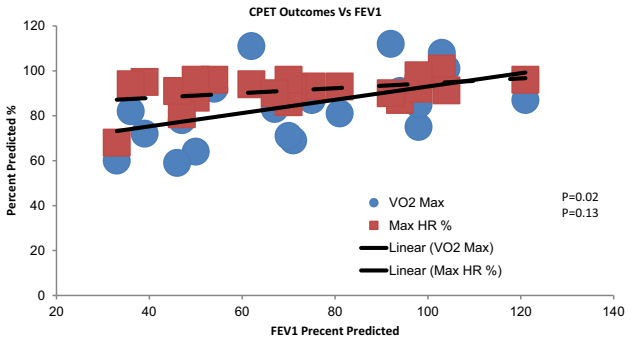
D. Gumani, T. Dahab, T. Hynes, P. Harnett, B. Casserly, A. O'Brien

Respiratory Medicine Department, University Hospital Limerick, Dooradoyle Co. Limerick

There are approximately 70,000 sufferers worldwide and affects approximately 1 in every 3500 child born yearly. Our goal was to evaluate the use of Cardiopulmonary Exercise Testing (CPET) in the evaluation of the respiratory status cystic fibrosis patients compared to pulmonary function testing.

Retrospectively, CPET data obtained from a small sample of the cystic fibrosis patients (n = 10) at University Hospital Limerick, we investigated whether the percent predicated VO2 Max (%VO2 M) and Max heart rate (%HRM) correlated with the respiratory parameters (FEV1, FVC) taken from the same regular scheduled evaluation period.

Compared to standard PFTs during adult CF patient's yearly reviews demonstrated a weak but significant correlation between FEV1 and VO2 Max[(1,2)]. VO2 Max and FVC showed a positive trending correlation that was not significant. No correlation or even relative trends were noted when comparing Max HR with either FVC of FEV1.



Our data demonstrates that VO Max does correlate; albeit weakly, with the gold standard FEV1 and FVC. The extent of this correlation may be underestimated to the small sample population of this study. However as CPET data gives the clinician a better understanding of patient's functional status, further work needs to be done to delineate CPET role in longitudinal follow up of the CF population.

References:

1. Pastré et al (2014) Determinants of exercise capacity in cystic fibrosis patients with mild-to-moderate lung disease. BMC Pulm Med 14:74.
2. Balady GJ et al (2010) Clinician's guide to CPET in adults: a scienctific statement from the American Heart Association. Circulation 122(2).

4.5 GI Surgery in an Adult Cystic Fibrosis Population: A Belfast Perspective

E. Wright, J. Dougan, A. Armstrong, J. C. Rendall

Regional Adult Cystic Fibrosis Centre, Belfast City Hospital (BCH), Belfast Health and Social Care Trust

Gastrointestinal (GI) complications of cystic fibrosis (CF) requiring surgical intervention are becoming more frequent in adults with CF, as the population continues to age. This study aimed to identify the frequency and indications for GI surgical procedures undertaken in an adult CF population.

Nine patients who underwent GI surgery were retrospectively identified from the Regional Adult CF Centre, BCH between 2004 and 2016. Medical management, indications for surgery and pathological diagnoses were reviewed.

Mean age at time of operation was 29.7 (16–60) years. The most common procedures were laparotomy with appendectomy (4) or right hemicolectomy (3). Indications included acute abdominal pain, Distal Intestinal Obstructive Syndrome and possible malignancy visualised at colonoscopy. Two patients had surgical interventions in childhood. Two patients underwent further laparotomies for adhesions and 1 required percutaneous drainage of a collection. Pathological samples revealed luminal distension, inflammation and ulceration with crypts plugged with mucin. No malignancy was seen. All patients received input from the CF multi-disciplinary team. There was no deterioration in lung function in the year following intervention.

With ever increasing life expectancy of CF patients, general surgeons will receive more referrals and increased awareness of GI complications is vital to ensure patients receive optimal care.

4.6 The Role of Rac2 in Increased Primary Granule Degranulation in Neutrophils of Individuals with Cystic Fibrosis

F. S. Gargoum, S. A. Landers, M. M. White, N. Browne, P. Hawkins, E. P. Reeves, N. G. McElvaney

Respiratory Research Division, Department of Medicine, Royal College of Surgeons of Ireland, Education and Research Centre, Beaumont Hospital, Dublin 9

Cystic fibrosis (CF) is one of the commonest heritable diseases in the world. A hallmark of CF is persistent and mainly neutrophil directed inflammation [1]. Our laboratory has previously shown that CF neutrophils release greater levels of primary granules and the serine protease neutrophil elastase (NE) compared to healthy control cells (HC). The cause of increased primary granule release is poorly understood. Rac2 is a Rho GTPase and has been implicated in selectively regulating neutrophil primary granule release [2]. Our aim is to investigate if increased primary granule degranulation is caused by increased rac2 activation in CF.

Ethical approval was granted by the Beaumont Hospital Ethics Committee. Circulating neutrophils were isolated from CF and HC (n = 5) and degranulation assays were performed using tumor necrosis factor α/n-formylmethionine-leucyl-phenylalanine (TNFα/fMLP) stimulation for up to 5 min at 37 °C. Active rac was purified from HC and CF cell extracts using a GTP bound active rac pull down assay. The level of active and total rac2 was quantified by immunoblotting. Statistical comparisons were performed by Student's *t*-test.

We have demonstrated that CF neutrophils (n = 4) have increased extracellular myeloperoxidase (MPO)—a marker of primary granule release compared to HC neutrophils post TNFα/fMLP activation as determined by immunoblotting (p = 0.035). Extracellular NE activity was measured by fluorescence resonance energy transfer substrate (FRET) analysis and CF neutrophils (n = 4) released increased NE at 5 and 10 min post TNFα/fMLP stimulation compared to HC (p = 0.034 and 0.039 respectively). Cathepsin G levels were also

elevated in the CF extracellular supernatants (n = 3) compared with HC (p = 0.02) as determined by FRET analysis. CF neutrophils have increased rac2 activation both at rest and post TNFα/fMLP activation (p = 0.03 and p = 0.004 respectively). The difference observed in resting neutrophils likely represents cellular mechanisms in vivo.

These findings provide an important insight into pathways controlling neutrophil exocytosis, and further work is being carried out to investigate whether this defect is inflammatory or intrinsic in origin.

References:

1. Hayes E, Pohl K, McElvaney NG, Reeves EP (2011) The cystic fibrosis neutrophil: a specialised yet potentially defective cell. Arch Immunol Ther Exp 59:97–112.
2. Abdel-Latif D, Steward M, Macdonald DL, Francis GA, Dinauer MA, Lacy P (2004) Rac2 is critical for neutrophil primary granule exocytosis. Blood 104(3):832–9.

4.7 Co-Colonisation of The Cystic Fibrosis Airways with *A. fumigatus* and *P. aeruginosa* is Associated with Health Outcomes Similar to that of Patients Persistently Colonised with *P. aeruginosa*: an Irish Registry Analysis

E. Reece[1], J. Renwick[1], R. Segurado[2], S. McClean[3], P. Greally[4]

[1]Department of Clinical Microbiology, Trinity College Dublin, Trinity Centre for Health Science, Tallaght hospital, Dublin 24, Ireland, [2]CSTAR, School of Public Health, Physiotherapy and Population Science, Woodview House, University College Dublin, Belfield, Dublin 4, Ireland, [3]Centre of Microbial Host Interactions, Institute of Technology Tallaght, Dublin 24, Ireland, [4]Department of Respiratory Medicine, the National Children's Hospital, Tallaght hospital, Dublin 24, Ireland

A. fumigatus and *P. aeruginosa* are the most common fungal and bacterial pathogens isolated from the cystic fibrosis (CF) airway, respectively. Our aim was to determine the effect of different colonisation profiles of these two pathogens on the clinical status of patients with CF.

A retrospective analysis of data from the Cystic Fibrosis Registry of Ireland was performed to determine the effect of intermittent and persistent colonisation with *A. fumigatus* or *P. aeruginosa* or co-colonisation with both microorganisms on clinical outcome measures (FEV_1, number of hospitalisations, respiratory exacerbations and antimicrobials prescribed, and complications of CF, including CFRD and ABPA) in patients with CF.

The prevalence of *A. fumigatus* and *P. aeruginosa* colonisation was 11 % (5 % persistent, 6 % intermittent) and 31 % (19 % persistent, 12 % intermittent) in the Irish CF population, respectively (Fig 1). Co-colonisation with both pathogens was associated with a 13.8 % reduction in FEV_1 (p = 0.011), higher levels of exacerbations (p = 0.042), hospitalisations (p = 0.023) and antimicrobial prescribing (p = 0.014) compared to non-colonised patients and these clinical outcomes were comparable to those of patients persistently colonised with *P. aeruginosa*. Intermittent and persistent *A. fumigatus* colonisation was not associated with poorer clinical outcomes.

CF patients co-colonised with *A. fumigatus* and *P. aeruginosa* had similarly poor clinical outcomes to those persistently colonised with *P. aeruginosa*, emphasising the clinical significance of co-colonisation with these microorganisms.

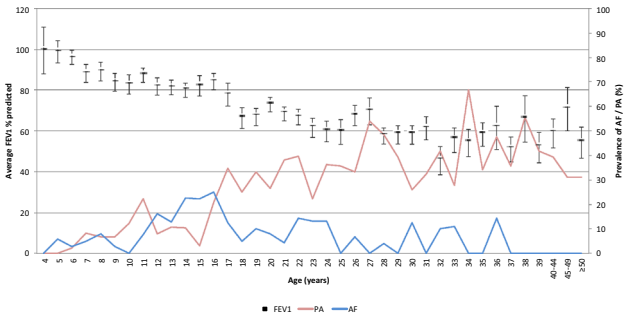


Figure 1. Average FEV_1 percent predicted, *P. aeruginosa* prevalence and *A. fumigatus* prevalence in patients by age

Average FEV_1 % predicted (black square), prevalence of *P. aeruginosa* colonisation (red line) and *A. fumigatus* colonisation (blue line) for patients by age. Error bars represent standard error of the mean.

4.8 Reduced Abundance of HVCN1 on Neutrophils in Cystic Fibrosis Impacts on Phagosomal pH and Degranulation

N. Browne, M. M. White, M. Milner, C. Foley, K. Pohl, F. Gargoum, P. Hawkins, E. P. Reeves, N. G McElvaney

Respiratory Research, RCSI, Beaumont Hospital

Cystic fibrosis (CF) is an inherited genetic condition resulting in a higher frequency of airway infections causing irreversible damage and eventual respiratory failure. Hydrogen voltage-gated channel 1 (HVCN1) is a transmembrane proton channel that regulates pH changes across the cell membrane. In neutrophils HVCN1 plays a central role in the sustained activity of the NADPH oxidase and is essential to the control of primary granule degranulation. Inhibition or absence of HVCN1 leads to accumulation of protons in the cytosol creating an acidic environment and simultaneously creating alkaline conditions within the phagosome. As CF neutrophils demonstrate increased primary granule degranulation we hypothesised that CF cells may have altered HVCN1 abundance. The aim of this work was to investigate whether HVCN1 was reduced on the CF neutrophil membrane resulting in altered phagosomal pH and degranulation.

Ethical approval was obtained from Beaumont Hospital for patients with CF homozygous for the *ΔF508* (n = 30) mutation or heterozygous for the *G551D* mutation receiving ivacaftor therapy (n = 10). Neutrophil phagosomes were isolated post phagocytosis of IgG opsonised latex particles, and subsequent sucrose gradient ultracentrifugation. Western blot and FACs analysis for HVCN1 was performed on isolated neutrophils. Altered phagosomal pH was assessed post phagocytosis of *Candida albicans* labelled with pH sensitive SNARF1 and following HVCN1 inhibition with $ZnCl_2$. Statistical analysis was performed using GraphPad Prism 5.

The abundance of HVCN1 was significantly reduced in whole cell lysates and on the plasma membrane of CF *ΔF508* neutrophils compared to healthy control (HC) (n = 8, $p < 0.05$), non CF bronchiectasis (n = 4, $p < 0.05$) and *G551D* patients receiving ivacaftor (n = 4, $p < 0.001$). The pH of CF phagosomes demonstrated a

higher pH (7.8) compared to HC (pH 7.55) ($n = 3$, $p < 0.001$). The CF *ΔF508* phagosomes had significantly higher primary granule degranulation compared to HC and G551D patients receiving ivacaftor. The inhibition of HVCN1 with $ZnCl_2$ in HC cells increased the abundance of phagosomal degranulation of the primary granule marker MPO compared to untreated cells ($n = 4$, $p < 0.07$).

In conclusion reduced abundance of HVCN1 in CF neutrophils increases primary degranulation and increases phagosomal pH potentially impairing bacterial killing in CF.

4.9 Medical Outcomes Post Transition of Clinical Care from a Paediatric Cystic Fibrosis Care Model to an Adult Cystic Fibrosis Care Model—An Irish Perspective

K. P. Thornton[1], N. J. Ronan[2,3], C. Shortt[2], M. McCarthy[2], C. Fleming[2], M. Daly[2], C. Hickey[2], C. Howlett[2], E. T. Flanagan[2,3], J. A. Eustace[3], D. M. Murphy[1,2], B. J. Plant[1,2]

[1]Medical School, University College Cork, Cork; [2]Cork Adult CF Centre, Cystic Fibrosis Centre, Respiratory Department, Cork University Hospital, University College Cork, Cork; [3]HRB Clinical Research Facility, University College Cork, Cork

As life-expectancy increases in CF it is paralleled by an increasing number of patients transitioning from a paediatric care-model to an adult care-model. In chronic illnesses' the transition process is often complicated by concerns about the potential implications. Our study investigated the change in clinical status in the year pre and post transition.

Data was collected retrospectively for the year pre-transition and the first year post-transition for the last 28 patients who transitioned.

There was no significant difference in decline in FEV_1 ($p = 0.66$) or FVC % ($p = 0.248$) in the year pre-transition compared to post. There was a significant decrease in the total number of exacerbations (PO and IV antibiotics) in the year post- transition ($p = 0.015A$ significant increase in use of home IV antibiotics was noted after transition ($p = 0.006$) with a parallel non-significant reduction in number of inpatient days (mean −2.35 days, $p = 0.211$).

In a cohort of patients with CF transition is not associated with a clinical decline; however, it is associated with a change in antibiotic practice—with a reduction in oral antibiotic usage and a change in location of IV antibiotic delivery.

4.10 Evaluation of the Neutrophil Elastase Inhibitory Capacity of Alpha-1 Antitrypsin and Two Novel Antiprotease Compounds in Airway Secretions from Cystic Fibrosis and Non-CF Bronchiectasis Patients

O. J. McElvaney, E. McGee, G. M. Lavelle, E. P. Reeves, N. G. McElvaney

Respiratory Research Division, RCSI Smurfit Building, Beaumont Hospital, Dublin 9

Neutrophil elastase (NE) is a key component of the airway inflammatory response observed at times of acute infection. Its effect is modulated by antiproteases such as alpha-1 antitrypsin (AAT). In patients with cystic fibrosis (CF) and non-CF bronchiectasis (NCFB), the excessive NE burden overwhelms this normal protective mechanism.

In this study we examine the effect of "Antiserp", and "Elastiguard", two synthetic NE inhibitors, on NE levels in CF and NCFB airway samples ex vivo, and compare their antiprotease effect to that of AAT.

Sputum samples were collected from CF ($n = 3$) and NCFB ($n = 4$) adults. Bronchoalveolar lavage fluid (BALF) was also collected from adult CF ($n = 7$) and NCFB ($n = 5$) patients. NE levels were measured using an NE-specific fluorescence resonance energy transfer (FRET) substrate, Abz-APEEIMRRQ-EDDnp. Samples were treated with a range of concentrations (0-10 μM) of "Antiserp", "Elastiguard" and AAT, and IC50 values were calculated.

NE and IL-8 levels were significantly increased in CF compared to NCFB secretions ($P = 0.05$ and $P = 0.03$ respectively). "Antiserp" and "Elastiguard" possessed comparable anti-NE activity in sputum ($P = 0.4413$) and BALF ($P = 0.09$). AAT had superior inhibitory capacity compared to "Elastiguard" in sputum ($P = 0.03$). In BALF, "Antiserp" and "Elastiguard" were not significantly different ($P = 0.09$), but AAT was superior to both ($P = 0.02$, $P = 0.001$ respectively).

These results suggest a therapeutic role for AAT and "Antiserp" as anti-inflammatories in the airways of patients with CF and NCFB.

4.11 Occurrence and Characterisation of *pseuomonas aeruginosa* in Frequently Contacted Water Sources

S. Caskey[1], J. E. Moore[2], J. Stirling[2], J. C. Rendall[1]

[1]Regional Adult CF Centre, Belfast City Hospital; [2] Northern Ireland Public Health Laboratory

Chronic *P. aeruginosa* infection is associated with increased morbidity in CF patients. Acquisition may occur via transmission from colonised individuals or contact with contaminated water. Current understanding of risk factors for acquisition is limited.

This study aimed to examine a large sample of environmental waters from diverse sources [$n = 7904$ from Jacuzzis, hydrants, swimming pools, hot tubs, plunge pools, natural mineral water (NMW), taps, ice machines, water coolers, and showers]. Samples were processed from 2008 until 2016. In parallel, 44 *P. aeruginosa* isolates obtained from health service estates waters underwent susceptibility testing against 8 anti-pseudomonal antibiotics.

Hot tubs [51/243 (21 %)] and Jacuzzis [432/5811 (7 %)] were the most likely environments from which *P. aeruginosa* was isolated, along with 24 of 1234 (2 %) samples from dockside watering hydrants and 2 of 67 (3 %) bottled NMW samples. Antimicrobial susceptibility studies on health estates water isolates demonstrated pan-sensitivity and lack of mucoidy.

CF patients are frequently counselled to make lifestyle changes, minimising exposure to *P. aeruginosa*. These results have important implications, highlighting the ubiquitous nature of *P. aeruginosa*, suggesting imposed lifestyle changes may have less impact on acquisition than previously believed. Further work is needed to identify those at highest risk of acquisition.

Acknowledgments: SC was funded by the CF Trust Fellowship Programme.

4.12 In-vitro Activity of Seven Hospital Biocides Against *Mycobacterium abscessus*

S. Caskey[1], J. E. Moore[2], J. C. Rendall[1]

[1]Regional Adult CF Centre, Belfast City Hospital; [2]Northern Ireland Public Health Laboratory

Mycobacterium abscessus pulmonary infection in patients with cystic fibrosis (CF) is associated with significant morbidity. There is a paucity of data describing the activity of hospital biocides against this organism. *M. abscessus* isolates ($n = 13$) were recovered from CF and non CF specimens. Seven biocides (Steri-7™, Difficile-S™, Hydrex™, Cutan™, Stellisept™, Rely$^+$On™ PeraSafe™, Distaclor™) were assayed for their activity against *M. abscessus*. Fresh cultures were exposed to biocide as per manufacturer's instruction and immediately plated following completion of the contact period. The mean concentration of organism plated was 9.82×10^6 [1.63×10^5–1.12×10^8] colony forming units (CFU). The remaining solution was enriched in Mueller–Hinton broth (37°C/1 week) and plated.
All isolates survived the contact period in Steri-7™, Hydrex™, Stellisept™ and Rely$^+$On™ PeraSafe™. One organism was killed by Difficile-S ™ and 1 by Distaclor™, representing a 5 log kill. Two isolates were killed by Cutan™. Following enrichment, Hydrex™ (11/13 killed), Steri-7™ (10/13), Stellisept™ (9/13), showed greatest biocidal activity, whereas only 1/13 cultures were killed by Distaclor™ and Difficile-S™. All isolates survived in Rely$^+$On™ PeraSafe™.

These data indicate *M. abscessus* may persist after exposure to common hospital biocides. Further work is needed to define unequivocal biocide contact treatments.

Acknowledgments: SC is a CF Trust funded Clinical Fellow.

4.13 Identifying Predictors of Disease Severity and Frequent Exacerabtion in Cystic Fibrosis

S. C. Carter, K. B. Hisert, G. Cooke, B. Grogan, P. K. Singh, C. G. Gallagher, E. F. McKone

Cystic Fibrosis Unit, St Vincent's University Hospital, Dublin 4

This observational cohort study looked at a sample of patients attending the cystic fibrosis unit in St Vincent's Hospital. 36 patients were recruited over a 5 months period.

Patients were included if deemed clinically well at clinic visit and excluded if they had taken a course of antibiotics in the preceding 4 weeks. Baseline characteristics of the study population are outlined in Table 1.

Using logistic regression the relationship between clinical and laboratory variables and two outcomes: disease severity and history of frequent exacerbations was studied. Statistically significant predictors of lung disease severity (classified by FEV_1 % predicted) were CRP at baseline and serum IgE. FEV_1 % predicted was associated with frequent exacerbations (more than 2 exacerbations in preceding year).

Ongoing follow up is underway with the aim of phenotyping exacerbations based on bacterial, viral and immunological factors using cluster analysis. The association between characteristics in the well state outlined above will be studied to determine their effect on subsequent exacerbations phenotypes.

Table 1

Variable	Mean	Standard Deviation
Female	41 %	
Age years	33	9
FEV1% predicted	65.3 %	25
Weight kg	65	14
PA chronic colonisation	53 %	
MRSA	8 %	
MSSA	36%	
NTM	3%	
Cepacia Complex	5%	
Timely flu vaccine	28%	

4.14 The Impact of Inhaled Antibiotics on the Prevalence of *Pseudomonas aeruginosa* (PA) Airway Colonisation in Cystic Fibrosis (CF) Lung Transplant Recipients

A. Costa-Pozza[1], S. Winward[1], J. Kleinerova[1], I. Lawrie[1], K. C. Redmond[1], D. Eaton[1], D. Healy[1], L. Nolke[1], H. Javadpour[1], D McSharry[1], O. J. O'Connell[1], J. J. Egan[1]

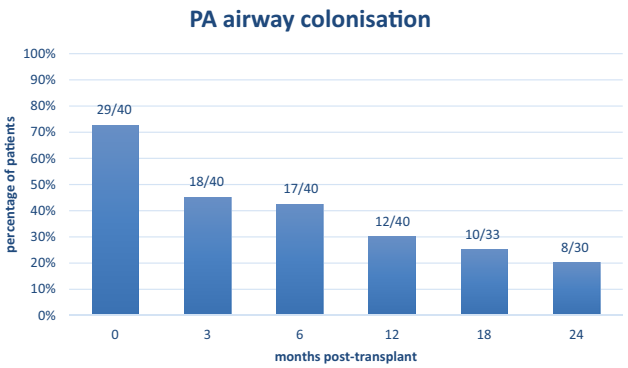
National Lung Transplant Centre, Mater Misericordiae University Hospital, Dublin

PA is the predominant pathogen causing post-operative infection in 60.3 % of CF lung transplant recipients [1]. PA airway colonisation is an independent risk factor for the development of bronchiolitis obliterans syndrome after lung transplantation [2].

We aimed to assess the impact of inhaled antibiotics on the prevalence of PA airway colonisation in CF lung transplant recipients. We performed a retrospective cohort study of CF patients undergoing pulmonary transplantation in the Mater Hospital from 2005 to date. We excluded subjects with incomplete data and those with no PA pre-operatively. Pre-transplant sputum, post-transplant sputum and bronchoalveolar lavage samples were evaluated. Demographics, usage of inhaled antibiotics, and the frequency and date of pulmonary exacerbations were recorded.

40 patients met inclusion and exclusion criteria. 35 patients received nebulised Colistin, 2 received nebulised Tobramycin, 2 were on both alternatively and 1 did not receive any inhaled antibiotic. 20 patients had $\geq$1 pulmonary exacerbations requiring admission. The median number of exacerbations requiring admissions for those on nebulised Colistin was 0, and those not on Colistin, the median was 1.

Inhaled antibiotics did not significantly impact on the incidence of PA colonisation, but inhaled Colistin trended towards reducing the number of pulmonary exacerbations requiring admission ($P = 0.057$).



References:

1. Bonvillain RW, Valentine VG, Lombard G, LaPlace S, Dhillon G, Wang G. Post-operative infections in cystic fibrosis and non-cystic fibrosis patients after lung transplantation. J Heart Lung Transplant. 2007;26(9):890–7.
2. Vos R, Vanaudenaerde BM, Geudens N, Dupont LJ, Van Raemdonck DE, Verleden GM. Pseudomonal airway colonisation: risk factor for bronchiolitis obliterans syndrome after lung transplantation? Eur Respir J. 2008;31(5):1037–45.

4.15 Bronchiectasis: The Usual Suspects?

G. Loye, S. Moan

Department of Respiratory Medicine, Daisy Hill Hospital, Southern Health and Social Care Trust

Bronchiectasis is the abnormal dilatation of the bronchi leading to excess production of sputum. This irreversible bronchial wall damage severely impairs the clearance of secretions, resulting in colonisation and persistent or recurrent infection.

Sputum cultures can help target antibiotic therapy according to their sensitivities. British Thoracic Society guidelines suggest all patients with bronchiectasis should have respiratory tract specimens sent. The aim of this audit is to assess whether all patients had sputum cultures performed and to identify commonly isolated pathogens.

A random cohort of twenty patients with a known diagnosis of bronchiectasis in Daisy Hill Hospital, Newry was selected based on a recent clinic review. All microbiology results since 2011 were reviewed to assess if samples were obtained and any pathogens isolated.

From the data collected, six patients had no sputum on record. Of the fourteen patients that did provide sputum, only nine isolated pathogens. The most commonly isolated was Haemophilus influenzae, which is in keeping with previous data. Five patients were culture negative.

This small audit suggests that patterns of sputum colonisation in bronchiectatic patients in Daisy Hill Hospital have not significantly changed in recent times.

References:

1. British Thoracic Society Bronchiectasis (non-CF) Guideline Group (2010) Guideline for Non-CF Bronchiectasis. Thorax 65(Suppl 1).
2. Pasteur MC, Helliwell SM, Houghton SJ et al (2000) An investigation into causative factors in patients with bronchiectasis. Am J Respir Crit Care Med 162:1277e84.

4.16 An Audit of Patients Attending a Specialist Non-CF Bronchiectasis Clinic

N. J. Ronan[1,2], M. Daly[1,2], P. Arooj[1,2], F. Flanagan[1,2], J. A. Eustace[2], M. P. Kennedy[1,2], B. J. Plant[1,2]

[1]Respiratory Department, Cork University Hospital, Wilton, Cork; [2]HRB Clinical Research Facility, University College Cork

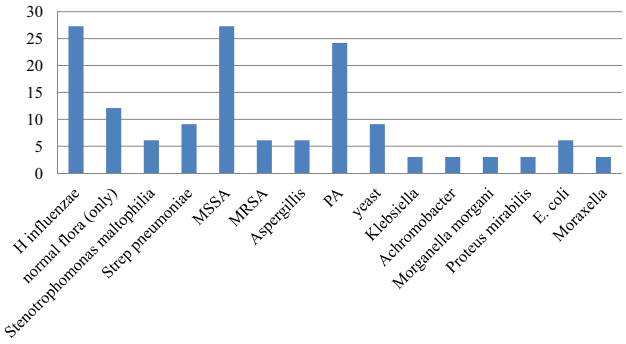
Patients with non-CF bronchiectasis represent a more heterogeneous group than CF, with less well defined management guidelines. With the development of BTS guidelines/quality standards and establishment of the EMBARC registry there has been significant progress in standardization of care.

We compared current practice in our specialised non-CF bronchiectasis clinic to the BTS guidelines.

100 % of patients had a diagnosis of bronchiectasis confirmed by chest CT and were appropriately investigated for ABPA, immunoglobulin deficiency and CF. 56 % of patients had sputum microbiology samples sent at least once a year. Figure 1 summarises the sputum microbiology. 100 % of patients with chronic Pseudomonas aeruginosa were offered nebulised antibiotics. 20 % of patients had at least one pulmonary exacerbations requiring IV antibiotics in a one year period. In 75 % of cases a sputum bacterial culture was sent at the start of the exacerbation before starting intravenous antibiotics.

Current practice in our specialised clinic in most areas is in keeping with BTS quality standards highlighting the importance of managing this patient cohort in specialised clinics. Sputum microbiology sampling was suboptimal, due to patients not returning sputum sample. The establishment of iABC represents an opportunity to enhance inhaled antibiotic availability to this cohort.

Figure 1 Sputum microbiology (% with each organism)



5. Irish Thoracic Society Oral Sesson I

Friday 18th November 2016

Chairs M. Butler, St Vincent's University Hospital, Dublin
B. Plant, Cork University Hospital, Cork

5.1 The Role of Glucagon Like Peptide-1 and its Receptor in Allergic Asthma

Patrick D. Mitchell, MD,[1] Brittany M. Salter, BSc,[1] John Paul Oliveria, BSc,[1] Amani El-Gammal, MD,[1] Damian Tworek, MD, PhD,[1] Steve G. Smith, PhD,[1] Roma Sehmi, PhD,[1] Gail M. Gauvreau, PhD[1], Marcus Butler, MD,[2] Paul M. O'Byrne, MB[1]

[1]Firestone Institute of Respiratory Health, Department of Medicine, Michael G DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada; [2]Department of Medicine, University College Dublin, Ireland

Glucagon like peptide-1 (GLP-1) and its receptor are part of the incretin family of hormones the regulate glucose metabolism. GLP-1 also has immune modulatory roles that may make it relevant in asthma. This study aimed to investigate the expression of the GLP-1 receptor (GLP-1R) on eosinophils and neutrophils in normal and asthmatic subjects and evaluate effects of a GLP-1 analog on eosinophil function.

Blood samples were taken from 10 normal and 10 allergic asthmatic subjects. GLP-1R expression was measured on eosinophils and neutrophils. Subsequently, the asthmatic subjects underwent allergen and diluent inhalation challenges and GLP-1R expression was measured. Purified eosinophils, collected from mild asthmatic subjects, were stimulated with LPS and a GLP-1 analog to evaluate eosinophil cell activation markers CD11b and CD69 and cytokine (IL-4, IL-5, IL-8 and IL-13) production.

GLP-1R is expressed on human eosinophils and neutrophils. Eosinophil, but not neutrophil, expression of GLP-1R is significantly higher in normal controls compared to allergic asthmatics. The expression of GLP-1R did not change on either eosinophils or neutrophils following allergen challenge. A GLP-1 analog significantly decreased the expression of eosinophil surface activation markers following LPS stimulation and decreased eosinophil production of cytokines IL-4, IL-8 and IL-13, but not IL-5.

GLP-1R is expressed on human eosinophils and neutrophils. A GLP-1 analog attenuates LPS-stimulated eosinophil activation.

None of the named authors have a conflict of interest with this study.

5.2 The INCA™ (Inhaler Compliance Assessment™): Validation Against Established Measures of Adherence

C. N. Moran[1], F. Doyle[1], I. Sulaiman[2,3], K. Bennett[4], G. Greene[1], G. Molloy[5], R. B. Reilly [6,7,8], R. W. Costello[2,3], L. Mellon[1]

[1]Department of Psychology, Division of Population Sciences, Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Department of Respiratory Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland; [3]Clinical Research Centre, Smurfit Building, Royal College of Surgeons in Ireland, Dublin, Ireland; [4]Division of Population Sciences, Royal College of Surgeons in Ireland, Dublin, Ireland; [5]School of Psychology, National University of Ireland Galway, Galway, Ireland; [6]Trinity Centre for Bioengineering, Trinity College, The University of Dublin, Ireland; [7]School of Engineering, Trinity College, The University of Dublin, Ireland; [8]School of Medicine, Trinity College, The University of Dublin, Ireland

Suboptimal adherence is common in Chronic Obstructive Pulmonary Disease (COPD). The Inhaler Compliance Assessment™ (INCA™) is a novel audio-recording device objectively measuring timing and proficiency of inhaler use. This study aimed to validate INCA™ against established adherence measures, and explore discriminant and predictive validity for clinical outcomes.

Prospective observational study; 184 COPD patients used an INCA™-enabled salmeterol/fluticasone inhaler for one-month post-discharge. Data collected at recruitment (in hospital) and follow-up (by phone). Area under the curve metric calculated for INCA™ Attempted and Actual adherence. Correlations conducted with dose-counter, self-report and prescription refill for concurrent validity. Discriminant validity for known-groups (independent t-tests) and predictive validity for health status and quality-of-life (regressions) investigated.

Actual adherence rate was 23 %. Actual and Attempted adherence significantly correlated with Doses Used rate; Attempted adherence weakly associated with prescription refill. Good INCA™ adherence discriminated better cognitive and lung functioning. Attempted adherence predicted health status, but not quality-of-life.

Actual adherence, incorporating timing and technique, was poor. INCA™ did not strongly correlate with self-report or prescription refill; but was significantly associated with dose-counter adherence. The discriminant and predictive validity of INCA™ suggests the utility of INCA™ as a screening tool, identifying poor adherers and those at risk of adverse outcomes.

5.3 Evaluating the Systemic Effect of Reduced Levels of Circulating Alpha-1 Antitrypsin (AAT) on Circulating Immune Cells in Alpha-1 Antitrypsin Deficient Patients

N. Lacey, O. J. McElvaney, M. M. White, N. G. McElvaney, E. P. Reeves

Respiratory Research Division, Department of Medicine, Education and Research Centre, Smurfit building, Beaumont Hospital, Dublin 9, Ireland

Alpha-1 antitrypsin deficiency (AATD) results in early onset emphysema due to degradation of lung connective tissue by neutrophil derived proteases. A protease anti-protease imbalance as a result of reduced levels of AAT reaching the lung has been well studied but the systemic effect of reduced circulating AAT remains to be defined. Recently, coming to the fore is the involvement of platelets in inflammation and their role in enhanced trafficking and migration of neutrophils. In this study we set out to explore the possible role of platelet induced inflammation in AATD and to determine the effect of augmentation therapy on all parameters evaluated.

Whole blood was obtained from patients with AATD, homozygous and heterozygous for the Z-allele (ZZ, n = 30. MZ, n = 15), ZZ patients on AAT augmentation therapy (n = 6) and healthy MM phenotype subjects (n = 12). Circulating and membrane bound neutrophil proteases and markers of platelet activation were quantified by FRET and ELISA respectively. Neutrophil membrane PSGL-1 and AAT in platelets was determined by Western blot and Flow cytometry analysis. Statistical significance was determined by ANOVA or student t-test.

AAT was associated in lower levels with ZZ platelets compared to MM samples ($p = 0.035$). Significantly increased NE activity was

detected on platelets ($p = 0.03$) and neutrophils ($p < 0.05$) of ZZ-AATD patients compared to MZ and healthy control cells. In ZZ patients platelet activation markers investigated; sP-Selectin, RANTES/CCL5 and GPV were increased ($p < 0.05$) with levels normalised in patients who received weekly AAT augmentation therapy. The platelet-neutrophil interaction ligand PSGL-1was found to be increased on ZZ neutrophils.

These results indicate that lower than normal levels of circulating AAT can affect platelet and neutrophil activation state in AATD. Membrane bound proteolytically active NE may trigger neutrophil-platelet activation and may mediate vascular inflammation in individuals with AATD and increase neutrophil recruitment to the lungs. AAT augmentation therapy provides a homeostatic mechanism that maintains circulating immune cells in a resting state.

5.4 Toll-Like Receptor 3 (*TLR3*) L412F Single Nucleotide Polymorphism as a Causative Factor in Disease Progression in Idiopathic Pulmonary Fibrosis (IPF) During Bacterial Infection in TLR3-defective patients

Aoife N. McElroy[1], D. N. O' Dwyer[2,3], G. Cooke[2], L. Mawhinney[1], A. Tynan[1], C. O'Reilly[1], M. Doroudian[1], S. McKeon[1], M. P. Keane[2,3], P. G. Fallon[1], A. J. Simpson[4], A. B. Millar[5], E. E. McGrath[6], M. K. Whyte[6], N. Hirani[7], C. M. Hogaboam[8], M. E. Armstrong[1], S. C. Donnelly[1,9]

[1]School of Medicine, Trinity Biomedical Sciences Institute, Trinity College, Dublin 2, Ireland; [2]School of Medicine and Medical Science, College of Life Sciences, UCD Conway Institute of Biomolecular and Biomedical Research, University College Dublin, Belfield, Dublin 4, Ireland; [3]National Pulmonary Fibrosis Referral Centre at St Vincent's University Hospital, Elm Park, Dublin 4, Ireland; [4]Institute of Cellular Medicine, Medical School, Newcastle University, Newcastle upon Tyne, UK; [5]Lung Research Group, Department of Clinical Science at North Bristol, University of Bristol Paul O'Gorman Lifeline Centre, Southmead Hospital, Westbury-on-Trym, UK; [6]Department of Infection and Immunity, Academic Unit of Respiratory Medicine, University of Sheffield, Sheffield, UK; [7]MRC Centre for Inflammation Research, Queen's Medical Research Institute, University of Edinburgh, Edinburgh, UK; [8]Department of Pathology, University of Michigan Medical School, Ann Arbor, MI, USA; [9]Department of Clinical Medicine, Trinity Centre for Health Sciences, Tallaght Hospital, Tallaght, Dublin 24, Ireland

In this study, we investigated the role of the single nucleotide polymorphism, Toll-like receptor 3 Leu412Phe (*TLR3* L412F; rs3775291), as a causative factor in disease progression in idiopathic pulmonary fibrosis (IPF). Furthermore, we investigated the impact of *TLR3* L412F in bacterial infection in IPF. We established that *TLR3* L412F was associated with a significantly greater risk of mortality and an accelerated rate of decline in FVC in IPF patients (1). Additionally, we demonstrated that activation of TLR3 in 412F-heterozygous primary human lung fibroblasts from IPF patients resulted in reduced IFN-β and TLR3 expression, and dysregulated fibroproliferation, respectively, compared with TLR3 wild-type IPF patients. In this study, we additionally investigated the role of *TLR3* L412F in disease pathogenesis in IPF in the context of bacterial infection. Specifically, we established the responses of primary human lung fibroblasts from IPF patients to a panel of bacterial TLR agonists. Here, we demonstrate that 412F-heterozygous IPF fibroblasts have attenuated responses to the bacterial TLR agonists, LPS and flagellin. These findings may have implications for increased bacterial load in IPF patients during infection and accelerated disease progression during exacerbations, and provides additional support for TLR3 L412F as a candidate prognostic marker in the treatment of IPF.

Reference:

1. Armstrong ME, O' Dwyer DN et al. (2013). The *TLR3* L412F polymorphism accelerates disease progression and promotes an aggressive clinical phenotype in idiopathic pulmonary fibrosis. *American Journal of Respiratory and Critical Care Medicine (Blue Journal)*; 188(12):1442–50. [Patent: WO 2014049588 A1].

5.5 Clinical to Pathological Stage Migration and Impact Of Time from PET-CT to Surgical Resection in Non-Small Cell Lung Cancer

G. J. Fitzmaurice, C. O'Connell, R. Weedle, W. Ahmad, R. J. Ryan, V. K. Young

Department of Cardiothoracic Surgery, St. James's Hospital, Dublin

The use of PET-CT has become the standard of care in the pre-operative staging of lung cancer. While there is a lack of clear guidance on the maximum time interval between PET-CT and surgical resection, there is evidence that a significant number of patients have nodal migration on final pathological review. The aim of this study was to investigate if there was an identifiable time point after which patients were more likely to have nodal upstaging at surgical resection.

We conducted a retrospective review of a prospectively collected dataset of 1,042 patients who underwent surgical resection for thoracic malignancies in our unit between January 2010 and October 2015. Clinical records were reviewed for data regarding patient demographics, pre-operative clinical stage, surgical procedure, and final pathological stage.

970 underwent resection for non-small cell lung cancer. Pre-clinical staging data was available for 939 patients. Pathological upstaging occurred in 12.8 % ($n = 120$). The median interval from PET-CT to surgery was 62 days. 190 patients had surgery within 30 days of PET staging; of these 9.5 % had nodal migration. 395 patients had surgery within 31-60 days of PET staging; 14.4 % had nodal migration. 220 patients had surgical resection between 61 and 90 days of PET staging; 14.6 % had nodal migration. 132 patients had surgical resection >90 days after PET staging; 9.1 % had nodal migration.

Our results suggest that an interval of >30 days between PET and surgery leads to an approximately one and a half fold increase in unexpected nodal disease. Delays longer than this may represent nodal progression in approximately 5 % of patients. The apparent lower rate of nodal progression in patients with an interval of >90 days may represent the fact that these patients were perceived at reduced risk for progression such as lepidic pattern tumours or small T1 tumours. Overall, our results would support repeating PETs that are >30 days old.

5.6 The Role of Macrophage Migration Inhibitory Factor in (MIF) Lung Cancer

Sinead McKeon[1], L. Mawhinney[1], M. E. Armstrong[1], H. Conroy[1], C. O'Reilly[1], A. Tynan[1], A. McElroy[1], M. Doroudian[1], C. Misslin[1], D. Fayne[1], D. Lloyd[1], J. Bernhagen[2], R. Bucala[3], S. C. Donnelly[1,4]

[1]Department of Medicine, Trinity Biomedical Sciences Institute, Trinity College Dublin, Dublin 2, Ireland; [2]Institute for Stroke and Dementia Research, Ludwig-Maximilians-University of Munich,

Munich, Germany; [3]Department of Internal Medicine, Yale University School of Medicine, New Haven, USA; [4]Department of Clinical Medicine, Trinity Centre for Health Sciences, Tallaght Hospital, Tallaght, Dublin 24, Ireland

Lung cancer is the leading cause of cancer deaths worldwide. Small cell lung cancer (SCLC) accounts for approximately 15 % of all lung cancer cases and is the most aggressive lung cancer subtype. While SCLC is responsive to chemotherapy, more than 95 % of these patients eventually die from the cancer. Therefore, novel therapeutic targets for SCLC are urgently required.

Macrophage migration inhibitory factor (MIF) is a pro-inflammatory cytokine that has been implicated in the pathogenesis of many inflammatory diseases. We show that human SCLC cells secrete significant levels of MIF (2000 pg/ml $\pm$ 88.2). MIF knock-out mice exhibit significantly reduced tumour growth (62 % reduction, $^{**}p < 0.01$) compared to wild-type mice at day 28. Mice treated with an MIF inhibitor (SCD-19) 7 days post tumour implantation showed significantly reduced tumour growth (81 % reduction in tumour, $^{***}p < 0.001$).

In addition, we present a novel finding that human lung cancer has the ability to counteract the host's local defences for the cancers survival advantage. Specifically, TLR3 activation and consequent IFN-β production is significantly reduced when co-cultured with supernatants derived from human lung cancer. This manifests as a down regulation of the IRF-3 pathway which is shown by a significant reduction in RANTES (90 % reduction, $^{*}p < 0.05$) and IFN-β expression (10-fold reduction).

In conclusion, we demonstrate the importance of MIF in lung cancer and highlight the therapeutic potential of targeting MIF in cancer.

5.7 Exposure to Inhalable Dust, Endotoxin and Total Volatile Organic Carbons (TVOCs) on Dairy Farms Using Manual and Automated Feeding Systems

Cronin, Garvin[1], Basinas, Ioannis[2], Hogan, Victoria[3], Sigsgaard, Torben[4], James Hayes[5], Coggins, Ann Marie[1]*

[1]School of Physics, National University of Ireland, Galway, Ireland; [2]Centre for Human Exposure Science, Institute of Occupational medicine, Research Avenue North, Edinburgh EH14 4AP, UK; [3]School of Health Sciences, National University of Ireland, Galway, Ireland; [4]Department of Public Health, Section for Environment, Occupation and Health, Danish Ramazzini Center, Aarhus University, Bartholins Allé 2, bg 1260, 8000 Aarhus C, Denmark; [5]Royal College of Surgeons Ireland Hospital Group, Cavan & Monaghan Hospitals, Ireland

The objective of this study was to measure the exposure of Irish dairy farmers to inhalable dust, endotoxin and total volatile organic compounds (TVOCs) and to explore whether levels of exposure to these agents depend on the applied feeding system in the farms.

Personal exposure measurements were collected on dairy farms using manual, loft or semi-automated feeding systems. Exposure concentrations had a geometric mean (GSD) of 1.5 mg m^{-3} (1.8) for inhalable dust and 128 EU m^{-3} (2.5) for endotoxin. Stationary measurements of VOC and CO_2 concentrations inside the dairy parlours had a geometric mean of 180 ppb (1.9) and 589 ppb (1.3) respectively.

More than 50 % of the exposure measurements for endotoxin, and organic dust exceeded recommended health based occupational exposure limits. Semi-automatic feeding was associated with lower levels ($\beta = -1.04$, $P = 0.04$) of dust exposure compared to manual feeding. Handling and spreading of hay or straw was by far the strongest determinant for both inhalable dust and endotoxin exposure ($\beta = 0.55$, $P = 0.004$; $\beta = 0.72$, $P = 0.02$, respectively). The use of cow teat disinfectants was a strong predictors of TVOC concentrations within parlours.

Study results demonstrate that dairy farm workers could be exposed to high and variable levels of inhalable dust and endotoxin and may be at risk of respiratory disease.

5.8 Multidimensional Severity Assessment in Bronchiectasis—An Analysis of 7 European Cohorts

M. J. McDonnell[1,2,3], S. Aliberti[4], P. C. Goeminne[5,6], K. Dimakou[7], S. C. Zucchetti[4], J. Davidson[2], C. Ward[2], J. G. Laffey[3,8], S. Finch[9], A. Pesci[10], L. J. Dupont[5], T. C. Fardon[9], D. Skrbic[11], D. Obradovic[11], S. Cowman[12], M.R. Loebinger[12], R. M. Rutherford[1], A. De Soyza[2,*], J.D. Chalmers[9,*]

[1]Department of Respiratory Medicine, Galway University Hospitals, Galway, H91 YR71, Ireland; [2]Institute of Cellular Medicine and Adult Bronchiectasis Service, Freeman Hospital, Newcastle University, Newcastle-upon-Tyne, NE, United Kingdom; [3]Lung Biology Group, National University of Ireland, Galway, Ireland; [4]Department of Pathophysiology and Transplantation, University of Milan, Cardio-thoracic unit and Cystic Fibrosis Adult Center, Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico, Milan, Italy; [5]Department of Respiratory Medicine, University Hospital Gasthuisberg, Herestraat 49, B-3000, Leuven, Belgium; [6]Department of Respiratory Medicine, AZ Nikolaas, Sint-Niklaas, Belgium; [7]5th Department of Pulmonary Medicine, "Sotiria" Chest Diseases Hospital, Athens, Greece; [8]Department of Anesthesia, Keenan Research Centre for Biomedical Science, St Michael's Hospital, University of Toronto, Toronto, Ontario M5B 1W8, Canada; [9]Scottish Centre for Respiratory Research, University of Dundee, Ninewells Hospital and Medical School, Dundee, DD1 9SY, United Kingdom; [10]Department of Health Science, University of Milan Bicocca, Clinica Pneumologica, AO San Gerardo, Monza, Italy; [11]Institute for Pulmonary Diseases of Vojvodina Sremska Kamenica. Put doktora Goldmana 4; 21204 Sremska Kamenica, Serbia; [12]Host Defence Unit, Royal Brompton Hospital and UK Imperial College, London, UK

*Denotes joint senior authorship.

5.9 Bronchiectasis Rheumatoid Overlap Syndrome (BROS) is an Independent Risk Factor for Mortality in Patients with Bronchiectasis: A Multicentre Cohort Study

M. J. McDonnell[1,2,3], A. De Soyza[1,2], P. C. Goeminne[4], S. Aliberti[5], S. Lonni[5], J. Davidson[1], L. J. Dupont[4], T. C. Fardon[6], R. M. Rutherford[3], A. T. Hill[7], J. D. Chalmers[6]

[1]Adult Bronchiectasis Service & Sir William Leech Centre for Lung Research, Freeman Hospital, Heaton, Newcastle, NE7 7DN, UK; [2]Institute of Cellular Medicine, Newcastle University, NE2 4HH; [3]Department of Respiratory Medicine, Galway University Hospitals, Newcastle Road, Galway, Ireland; [4]University Hospital Gasthuisberg, Respiratory Medicine, Herestraat 49, B-3000 Leuven, Belgium; [5]Department of Health Science, University of Milan Bicocca, Clinica Pneumologica, AO San Gerardo, Via Pergolesi 33, Monza, Italy; [6]Tayside Respiratory Research Group, University of Dundee, Dundee, DD1 9SY, UK; [7]Department of Respiratory Medicine Royal

Infirmary of Edinburgh and the University of Edinburgh, 51 Little France Crescent, Old Dalkeith Road, Edinburgh, EH16 4SA, UK

We studied if bronchiectasis (BR) and rheumatoid arthritis (RA) when manifest as an overlap syndrome (BROS) were associated with worse outcomes than other BR aetiologies when applying the Bronchiectasis Severity Index (BSI).

We interrogated the Bronchiectasis Severity Index (BSI) databases of 1716 patients across 6 European centres. Patients with BR were categorised into BROS, idiopathic bronchiectasis, Bronchiectasis-COPD overlap syndrome (BCOS) and "other" aetiologies. Mortality rates, hospitalisation and exacerbation frequency were recorded.

We identified 147 patients with BROS (8.5 % of cohort). There was a statistically significant relationship between BROS and mortality; however, BROS was not associated with higher rates of exacerbations or bronchiectasis-related hospitalisations. Mortality over a mean of 48 months was statistically higher in BROS (18 %) and BCOS (28.5 %) compared with all other aetiologies. The BSI scores were statistically but not clinically significantly higher in those with BROS when compared to idiopathic BR (BSI mean 7.7 vs. 7.1 respectively, $p < 0.05$). BCOS had significantly higher BSI scores (mean 10.4), *Pseudomonas* chronic infection rates (24 %) and prior hospitalisation rates (58 %).

Both BROS and BCOS are associated with excess mortality; the mechanisms for this may be complex but both subgroups may benefit from additional study to understand the drivers for excess mortality.

6. Irish Thoracic Society Paediatric Forum

Friday 18th November 2016

Chair D. Mullane, Cork University Hospital

6.1 Oral Salt Supplementation in the First Year of Life of People with Cystic Fibrosis: A Retrospective Review of Practice in University Hospital Limerick

C. Lehane[1], D. Daly[1], C. Lynch[1], N. Power[1], B. Linnane[1]

[1]Paediatric CF Unit, Department of Paediatrics, University Hospital Limerick, Limerick

People with cystic fibrosis (CF) are susceptible to salt depletion. This risk is especially prominent during infancy. To avoid this potentially life-threatening complication, some experts recommend routine supplementation with oral sodium chloride [1]. Some studies suggest that salt depletion in CF may lead to impaired growth [2].

We retrospectively assessed the use of oral salt supplementation in infants who were detected through CF newborn screening, which has been included in the heel prick test since July 2011. Recommending oral salt supplementation has been standard practice in our unit since 2013.

Thirteen (68 %) of the 19 subjects were male. All but one had a sweat chloride concentration greater than 60 mmol/L. All but one had a DF508 mutation and 47 % had two DF508 mutations. Oral salt supplementation was not recommended to the newborn with a non-definite diagnosis of CF.

Parameter (Total with data available)	3 weeks (n=11)	3 months (n=13)	6 months (n=11)	12 month (n=7)
Using salt supplementation, n (%)	11 (100)	12(92.3)	11 (100)	6 (85.7)
Urine sodium >20 mmol/L, n (%)	1 (9.09)	4 (30.77)	5 (45.45)	2 (40)

During the year of treatment 69 % achieved a urine sodium concentration >20 mmol/L on at least one occasion. Consideration should be given to the development of international salt supplementation guidelines in infants with CF.

Word Count = 212 (including table)

Please consider the abstract for oral or poster presentation prize.

The abstract is suitable for publication—it has not been published elsewhere.

References

1. Borowitz D, Robinson KA, Rosenfeld M, Davis SD, Sabadosa KA, Spear SL, Michel SH, Parad RB, White TB, Farrell PM, Marshall BC, Accurso FJ (2009) Cystic fibrosis foundation evidence-based guidelines for management of infants with cystic fibrosis. J Pediatr 155:S73–93.
2. Coates AJ, Crofton PM, Marshall T (2009) Evaluation of salt supplementation in Cf infants. J Cyst Fibros 8:382–5.

6.2 Use of Group Education for Delivery of Sublingual Grass Immunotherapy in Children with Asthma; A Patient Satisfaction and Safety Pilot Study

D. Butler[1], L. McCarthy[1], D. Mullane[1], M. Ní Chróinín[1]

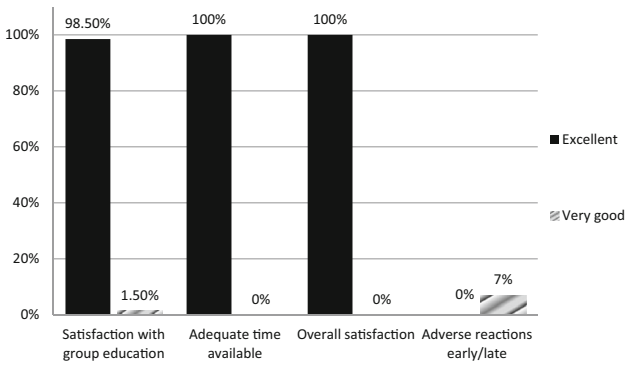
[1]Dept of Paediatrics, Cork University Hospital, Cork

Aims: Asthmatic patients are no strangers to group education [2], but there is little evidence of its use for sublingual immunotherapy. First doses are advised to be administered in hospital [1]; this introduces staffing and time constraints around commencing patients in time for the grass pollen season. Therefore, this project aims to assess if utilising group sessions are an efficient, safe and satisfactory means of ensuring patient education.

Methods: Three morning Physician-led group education sessions (size 4–5 patients) were organised. Patients were contacted and consented by phone beforehand. Patients were selected based on moderate-severe asthma and positive skin prick testing to grass pollen. Sessions involved group education using verbal communication and patient information leaflets, followed by individual examinations, assessments of safety for treatment and 30 min observation for adverse reactions. During observation, patients completed a satisfaction survey using a Likert scale.

Results: Total participants were thirteen N = 13), age range 8–15 y.o. Survey results and adverse outcomes were as follows:

Figure 1. Satisfaction and reactions



Conclusion: Group education appears satisfactory to patients and is a safe means for delivery of sublingual immunotherapy. This may assist the efficient delivery of services given resource limitations. The service is planned to continue as asthma nurse-led and compared to allergy nurse-led services.

References:

1. Cano-Garcinuño A, Díaz-Vázquez C, Carvajal-Urueña I, Praena-Crespo M, Gatti-Viñoly A, García-Guerra I (2007) Group education on asthma for children and caregivers: a randomized, controlled trial addressing effects on morbidity and quality of life. J Investig Allergol Clin Immunol 17(4):216–26.
2. Pham-Thi N, de Blic J, Scheinmann P (2006) Sublinguual immunotheraphy in the treatment of children. Allergy 61(s81):20–3.

6.3 Children with Isolated Swallowing Difficulties—A Review of Presentation, Treatment and Outcomes

James Trayer[1], Carol Gilmore[2], Sara Dallape[2], Des Cox[1]

[1]Paediatric Respiratory Department, OLCHC; [2]Speech and Language Department, OLCHC)

Aspiration is a common cause of respiratory symptoms in children. We examined the presentation, radiological findings, treatment and outcomes of children with isolated dysphagia.

A retrospective chart review was performed of children presenting with respiratory symptoms who were referred for videofluoroscopy under speech and language therapy.

We identified 17 children with an isolated swallowing disorder. The most common respiratory symptoms were recurrent respiratory illnesses (82 %) followed by wheeze (70 %). Failure to thrive was seen in 41 %. On videofluoroscopy, all showed aspiration or penetration. CXR abnormalities were noted in 53 % of patients, 66 % of these resolved. CT thorax was performed in 29 % of patients, within this group 20 % showed bronchiectasis. Nasogastric feeding was required in 47 % of patients, of whom 75 % were referred for gastrostomy. Prophylactic azithromycin and thickened fluids were prescribed for 24 %, while 29 % were treated with thickened fluids alone. Currently, 76 % of patients have unresolved symptoms and/or abnormal videofluoroscopy, 24 % are asymptomatic with a normal videofluoroscopy.

There is a population of otherwise normal children who have dysphagia leading to significant respiratory morbidity. There is often a delay in diagnosis. An isolated dysphagia should be included in the differential diagnosis of children presenting with recurrent, otherwise unexplained respiratory symptoms.

6.4 The Role of Human Rhinovirus Infections in Young Children with Cystic Fibrosis

J. O'Rourke[1,2], D. Waldron[3], S. Coughlan[3], P. Mc Nally[1,2,4], C. De Gascun[3], D. Cox[1,2]

[1]The National Children's Research Centre, OLCHC, Dublin 12; [2]Respiratory Department, Our Lady's Children's Hospital Crumlin, Dublin 12; [3]NVRL, University College Dublin, Belfield, Dublin 4; [4]Department of Paediatrics, Royal College of Surgeons in Ireland

Introduction: Bacterial infections are major drivers of recurrent respiratory illnesses leading to early lung disease in children with cystic fibrosis (CF). Human rhinovirus (HRV) is an important virus in children with chronic respiratory conditions such as asthma, however little is known about its role in CF.
Aim: To examine the role and prevalence of different HRV species in young children with CF.
Methods: We designed a pilot study to assess the feasibility of collecting clinical data and nasal swabs on patients at home and in the hospital setting. Parents filled out symptom diaries and collected nasal swabs when their children were symptomatic and asymptomatic. A novel HRV typing PCR assay was used to determine the HRV species present.
Results: We recruited 10 preschool CF patients and 55 nasal swabs were collected over a six month period. Of the 55 swabs successfully typed for HRV species, 37 (%) "symptomatic" and 29 (%) "asymptomatic" nasal swabs were HRV positive. No specific HRV species was particularly prevalent in this study.
Conclusion: This is the first study to pilot a HRV typing assay and demonstrate HRV prevalence in Irish children with CF. Results show that home collection of nasal swabs and their analysis is feasible.

6.5 The Association Between Smoking Tobacco and Parental Monitoring

K. Taylor, S. Keogan, L. Clancy

TobaccoFree Research Institute (TFRI), Dublin, Ireland

Smoking is usually initiated during adolescence, when parenting may have an influence over behaviour. This study investigated the relationship between smoking and the perception of parental monitoring to see if this was associated with lower levels of smoking in adolescents.

A nationally-representative survey of 14–16 years old students was conducted (n = 2000). Respondents were asked whether their parents know where they spend Saturday nights and their responses were explored in relation to smoking using multinomial logistic regression, controlling for a number of factors.

12.7 % (n = 252) were current smokers and a further 20.1 % (n = 399) smoked less than monthly. Smoking was significantly associated with lower parental monitoring. Respondents whose parents knew only sometimes or less often where they spend Saturday nights were eleven times more likely to be current smokers [OR (95 % CI) = 11.08 (7.62–16.11)] and four times more likely to smoke less than monthly [OR = 4.01 (2.85–5.64)] when controlling for social class and gender. When controlling for absenteeism, family relationships and peer smoking, the effect of parental monitoring remained statistically significant.

These data suggest that the parental role in influencing young people not to smoke extends further than the matter of parental smoking alone and could be another worthwhile intervention to help achieve a tobacco free Ireland.

6.6 Asthma Friendly School Award—A New Way of Engaging Schools, Students and Families in Asthma Management Education

P. Kenny, M. Dunne

Asthma Society of Ireland, 42-43, Amiens Street, Dublin 1

A need to support schools, teachers, parents and students in relation to asthma was identified. There is little incentive for schools to help support students with asthma.

In 2015 we developed and piloted an 'Asthma Friendly School Award' for the primary school setting. Three levels: bronze, silver and gold. To achieve the Award—submit a portfolio and complete certain 'tasks'.

Some expected benefits/outcomes:

- Improved asthma awareness/management
- Increased confidence/quality of life for students
- Increased awareness among school staff—how to manage an asthma attack
- Reduced absenteeism due to uncontrolled asthma

To date

- 18 schools have engaged in the campaign
- 5630 students are involved in the campaign
- 6 schools have received a starter pack in 2016

Comments from students:

- "I learned about the 5 step rule to approach an Asthma attack"
- "I learned what can trigger asthma"
- "I learned that you should keep your inhaler with you at all times to keep your asthma under control"
- "I learned that asthma can be serious so you need to keep it under control, but if under control you will lead an active happy life".

The Asthma Friendly Schools project will be available for further rollout in both primary and secondary schools in the coming academic year.

6.7 Managing Acute Bronchiolitis: Are We in Line with Current NICE Guidelines

T. McGrath, R. Drew, S. Kelleher

Department of General Paediatrics, Temple Street Children's University Hospital, Dublin

Bronchiolitis is a common respiratory tract infection in young infants that frequently results in hospital admission. The updated NICE guideline for bronchiolitis management does not recommend the routine use of antibiotics, hypertonic saline, bronchodilators and corticosteroids. The local management of acute bronchiolitis was studied to determine if it was in line with evidence based treatment guidelines.

A retrospective audit of patients, admitted to hospital between 1st November and 31st March 2016, was carried out using the NICE Clinical Audit tool for bronchiolitis management.

1052 patients presented to the emergency department with a diagnosis of acute bronchiolitis, 223 of whom were admitted. The average length of stay was four days. 78 percent of patients were treated with hypertonic saline while 23 percent were treated with nebulised bronchodilators. Incidentally a total of 6 patients received antibiotics, primarily based on chest x-ray changes and in the absence of documented fever.

The management of acute bronchiolitis was largely consistent with the existing NICE guideline. There were significant non-compliances identified in three key areas including use of hypertonic saline, bronchodilators and antibiotics. Strategies to improve compliance include restricted availability of hypertonic saline on wards along with regular education, followed by a re-audit in one year.

6.8 Detection of Human Neutrophil Elastase (NE) by ProteaseTag active NE Immumoassay in Paediatric Cystic Fibrosis Bronchoalveolar Lavage (BAL) Samples

Jenny O'Rourke[1,2], Lorraine Martin[3], Kelly Moffitt[3], Paul McNally[1,2,4]

[1]The National Children's Research Centre, OLCHC, Dublin 12; [2]Respiratory Department, Our Lady's Children's Hospital Crumlin, Dublin 12; [3]School of Pharmacy, Queens University, Belfast; [4]Department of Paediatrics, Royal College of Surgeons in Ireland

Free NE in BAL is a risk factor for bronchiectasis in preschool children with CF. The current flourogenic assays available to detect NE are time consuming, operator dependent and hampered by methodologic vagaries. The ProteaseTag active NE Immumoassay allows accurate and repeatable measurements specifically of NE, and has been shown to perform superiorly to standard methodologies as a diagnostic test for free NE in BAL.

Our goal was to clinically validate the optimized ProteaseTag active NE Immumoassay for use in paediatric CF bronchoalveolar lavage (BAL) samples. We designed a pilot study to assess the feasibility of running the assay on BAL samples collected as part of the annual surveillance programme in OLCHC within 24 h of collection.

To date we have run 22 individual clinical samples in batches of up to four and have successfully measured NE levels in all within 24 h, with results were available prior to both culture and cytology results. The cost of the test is volume dependent but should allow multisite batching of frozen samples.

This is the first study to utilize and validate the ProteaseTag active NE Immumoassay in paediatric BAL samples from CF patients within a clinical setting. It is feasible to incorporate this test into a clinical lab setting.

6.9 Investigation of the Relationship Between Low Vitamin A in People with Cystic Fibrosis, and the Presence or Degree of Liver Disease Over Time

S. Fingold, B. Linnane, D. Daly

Cystic Fibrosis Unit, University Hospital Limerick (UHL), Dooradoyle, Limerick

Cystic fibrosis (CF) is an autosomal-recessive illness that affects the lungs and digestive system. CF associated liver disease (CFALD) develops in 10–30 % of patients, usually before adolescence [1]. Serum vitamin A levels were examined in 63 paediatric CF patients in this retrospective, cohort study: children without CFALD, indeterminate CFALD, and determinate CFALD (based on the national center for CFALD, Our Lady's Children's Hospital, Crumlin, designation of liver status). For patients without CFALD, the average Vitamin A level was 354.1 mcg/unit. For patients with indeterminate CFALD, 320.3 mcg/unit. For determinate CFALD, 186.3 mcg/unit (normal range: 248–453 mcg/unit).

Patients with determinate CFALD have 47 % lower levels of Vitamin A than patients without, and patients with indeterminate CFALD have 10 % lower levels than patients without. There is a significant difference between the median vitamin A levels of those with determinate CFALD and those without (median of 188.5 vs. 330.0 mcg/unit, $p = 0.002$). There is no significant difference between those with indeterminate CFALD compared to patients without (median of 339.5 vs. 330.0 mcg/unit, $p = 0.80$). Vitamin A deficiency is believed to be related to poor lung function and clinical status. These findings may have implications in earlier identification of patients at risk of CFALD and guide decisions in monitoring and supplementing Vitamin A.

Reference:

1. Hermann U, Dockter U, Lammert F (2010) Cystic fibrosis-associated liver disease. Best Pract Res Clin Gastroenterol 24:585–592.

7. Irish Thoracic Society Oral Sesson II

Friday 18th November 2016

Chairs J. Rendall, Belfast City Hospital, Belfast
R. Morgan, Beaumont Hospital, Dublin

7.1 Randomised Trial of Analgesia in VATS Surgery: Local Anaesthetic Delivery by wound Infiltration Catheter Compared with Topical Trans-Dermal Patch Delivery

N. Abbas, D. G. Healy

St Vincent's University Hospital and the University College Dublin

7.2 Long Term Functional Outcomes Post Critical Care Discharge

N. Keohane[1], J. Dowds[1], Dr. Julie Broderick[2], Dr. Martin-Leoches[3]

Physiotherapy Department, St James's Hospital Dublin; [2]Trinity College Dublin; [3]St. James's Hospital Dublin

Patients discharged from critical care can show marked dysfunction that can be present for a substantial time after their discharge from hospital (Corner et al., 2013, Devine et al., 2016).The aim of this study was to determine the long term functional outcomes of patients following critical care discharge.

All general critical care patients in St. James's hospital Dublin were included if they had a critical care stay of greater than 3 days. Forty-five patients consented to the study. Physical function was measured using the Chelsea critical care physical assessment tool (CPAx) within 48 h of critical care discharge to the ward (T1). At 6 months (T2) all participants were contacted for follow-up testing, and 11 (24 %) attended. CPAx. Results were analysed using SPSS and the wilcoxcon signed rank test, $P < 0.05$ inferred significance.

A significant increase occurred in CPAx scores at T2 versus T1 ($p = 0.005$).Significant relationship was found between 6MWT actual and normative values for age and gender at T2 ($p = 0.003$). A significant relationship was found between the physical health component of the SF-36 (T2) and the CPAx at T1 ($p = 0.032$).

The study population was a general critical care population and was not limited to those who required mechanical ventilation. Using a measure of physical function such as CPAx during critical care may be able to identify future deficits. This study is the first to examine recovery of physical function in a heterogeneous critical care population.

7.3 The Influence of Patient Age on the Incidence of Acute Cellular Rejection in Lung Transplant Recipients in Ireland

S. Cullivan, O. A. Omar, L. Khorsheed, S. Winward, I. Lawlie, P. Riddell, D. McSharry, J. J. Egan, O. J. O'Connell

National Heart and Lung Transplant Unit, Mater Misericordiae University Hospital, Dublin

Acute allograft rejection is a significant issue after Lung Transplantation and is predictive of future lung function decline. The diagnosis of acute cellular rejection by transbronchial biopsies carries potentially significant risks and morbidity, particularly for aging transplant patients. The aim of this study is to assess if age influences the incidence of acute cellular rejection detected by transbronchial biopsies within the National Lung Transplant Centre.

Method: Data regarding patient gender, age, transplant indication, and TBBx results at 3, 6 and 12 months post transplantation was collected from local records and the hospital electronic database, from February 2005 to December 2015. Patients who did not undergo scheduled bronchoscopy or had inadequate sampling were excluded. ANOVA testing was performed to assess the influence of age on acute cellular rejection.

Results: 189 (121 M;68 F) patients were included in this study [CF n = 78 (41 %); IPF/NSIP n = 66 (35 %); COPD n = 23 (12 %); alpha 1 n = 14 (8 %), other n = 8 (4 %)]. Age range 15–72. At 3 months 52 % patients (n = 69) had A0 rejection, 34 % patients (n = 46) had A1 rejection, 13 % patients (n = 17) had A2 rejection, 1 % patients (n = 1) had A3 rejection. At 6 months 59 % patients (n = 75) had A0 rejection, 29 % patients (n = 36) had A1 rejection, 11 % patients (n = 14) had A2 rejection and 1 % patients (n = 1) had A3 rejection. At 12 months 63 % patients (n = 76) had A0 rejection, 30 % patients (n = 36) had A1 rejection, 5 % patients (n = 6) had A2 rejection, 2 % patients (n = 3) had A3 rejection. Subsequent analysis demonstrated that individuals $\geq$60 years had higher rates of acute cellular rejection on TBBx. There was no statistical significance between group means as determined by one way ANOVA analysis.

Conclusion: Routine surveillance TBBx remains an important modality in the early identification of acute cellular rejection in lung allograft recipients and this study did not find any association between patient age and severity of acute cellular rejection.

7.4 Severity of Sleep Disordered Breathing Independently Predicts Metabolic Dysfunction in a Large Population of Severely Obese Subjects: The ESADA Study

Sophie J. Crinion[1], Silke Ryan[1], Ludger Grote[2], Jan Hedner[2], Walter McNicholas[1], Brian D Kent[3]

[1]St Vincent's University Hospital, Dublin, Ireland; [2]Sahlgrenska University Hospital, Gothenburg, Sweden; [3]Guy's & St Thomas' Hospitals, London, United Kingdom

7.5 Smokers' alveolar Macrophages Demonstrate Impaired Glycolytic Reprogramming in Response to *Mycobacterium tuberculosis* Infection

Laura E. Gleeson[1,2], Frederick J. Sheedy[2], Joseph Keane[1,2]

[1]Department of Respiratory Medicine, St James's Hospital, Dublin 8; [2]Department of Clinical Medicine, Trinity Translational Medicine Institute, TCD, Dublin 8

Smoking is a major risk factor driving the global TB epidemic. We have reported impaired pro-inflammatory cytokine response following Mtb infection in smokers' alveolar macrophages (AM) compared to never-smokers' AM [1]. We have also shown that macrophage glycolytic reprogramming is required for production of pro-inflammatory IL-1β and for early clearance of Mtb [2]. However, the impact of smoking history on infection-induced glycolytic reprogramming in human AM has not been investigated.

Human AM were isolated from bronchoalveolar lavage from smokers (n = 6) and never smokers (n = 7). Baseline and post-Mtb infection metabolic profile was interrogated by extracellular flux

analyses and lactate measurement. Glycolytic enzyme expression was measured by real-time qPCR. Statistical analyses were performed using standard statistical software (Prism 5.0). Significance level was set at $p < 0.05$.

Unstimulated AM from smokers and never-smokers demonstrated no significant differences in lactate production, extracellular acidification rate (ECAR) or oxygen consumption rate (OCR). Following treatment with the mitochondrial uncoupling agent FCCP, smokers' AM demonstrated a reduced spare respiratory capacity (SRC). Following stimulation with TLR-4 agonist LPS or infection with Mtb, smokers' AM had attenuated lactate production compared to never-smokers' AM, and attenuated induction of genes involved in the glycolytic pathway, including *HK1*.

Despite similar baseline metabolic profile to never-smokers, smokers' AM have reduced metabolic reserves that limit ability to facilitate increased metabolic demands of infection. Smokers' AM demonstrate attenuated glycolytic reprogramming following Mtb infection, which may contribute to increased TB susceptibility observed in these patients.

References:

1. O'Leary SM, Coleman MM, Chew WM, Morrow C, McLaughlin AM, Gleeson LE, O'Sullivan MP, Keane J (2014) Cigarette smoking impairs human pulmonary immunity to Mycobacterium tuberculosis. Am J Respir Crit Care Med 190:1430–1436.
2. Gleeson LE, Sheedy FJ, Palsson-McDermott EM, Triglia D, O'Leary SM, O'Sullivan MP, O'Neill LA, Keane J (2016) Cutting edge: Mycobacterium tuberculosis induces aerobic glycolysis in human alveolar macrophages that is required for control of intracellular bacillary replication. J Immunol 196:2444–2449.

7.6 Trypsin-Like Protease Activity Predicts Disease Severity and Patient Mortality in Adults with Cystic Fibrosis

J. A. Reihill[1], K.L. Moffitt[1], A. M. Jones[3], J. S. Elborn[2], S. L. Martin[1]

[1]School of Pharmacy; [2]Centre for Experimental Medicine, Queen's University Belfast, N Ireland, UK, [3]Manchester Adult Cystic Fibrosis Centre, Manchester, UK

The objective was to determine whether trypsin-like (TL) proteases, known activators of the epithelial sodium channel (ENaC), relate to inflammation and patient survival in cystic fibrosis (CF). Neutrophil elastase (NE) was employed as a comparator.

Protease activities (peptide-based substrate assays) and inflammatory biomarkers (IL-8 and TNF-α) (ELISA) were measured in a retrospective observational study using CF sputum sol from training (n=30) and validation (n=33) adult patient cohorts. Lung function (FEV1) was assessed by spirometry. Mortality data was retrospectively obtained and time until transplantation/death (months) used for survival analysis.

TL-protease activity inversely correlated with FEV1 however, no relationship with inflammatory biomarkers was observed. Individuals with high TL-protease activity demonstrated reduced survival with a significant mortality hazard (HR 1.03, 95 % CI 1.01–1.05; p = 0.009) (multivariate Cox regression analysis; adjusted for age and BMI). In contrast, NE correlated with inflammatory biomarkers but not lung function nor patient survival. Findings were supported by the validation cohort.

TL-protease activity, but not NE, is associated with reduced lung function and poorer patient survival, reinforcing previous studies linking TL-protease activity and CF airways dehydration. This study highlights the potential of tryptic activity as a novel biomarker and/or therapeutic target which may warrant consideration when modelling CF patient outcomes.

7.7 Ivacaftor Does Not Produce a Significant Change in Anti-*Pseudomonas aeruginosa* Antibodies

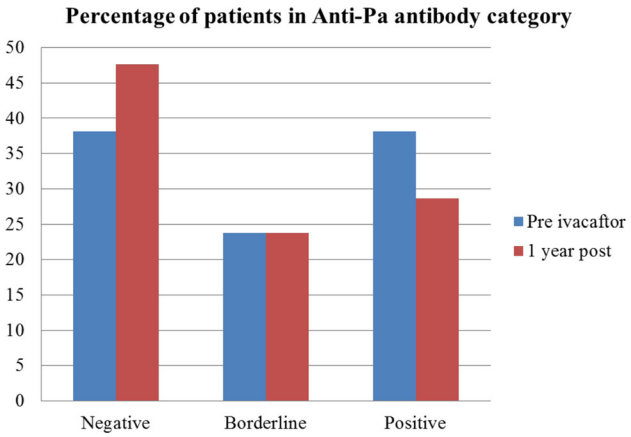
A. Collins[1], N. J. Ronan[2,3], Y. McCarthy[2,3], M. Daly[2,3], C. Shortt[2,3], M. McCarthy[2,3], C. Fleming[2,3], D. M. Murphy[2,3], B. J. Plant[2,3]

[1]Medical School, University College Cork, College Road, Cork; [2]Cork CF Centre, Cork University Hospital, University College Cork; [3]HRB Clinical Research Facility, University College Cork

Background: Ivacaftor is the first CFTR potentiator to become available for treating patients with CF with gating mutations. Emerging work has suggested a reduction in Pseudomonas aeruginosa (Pa) in sputum culture after treatment with ivacaftor. Recently blood anti-Pseudomonas aeruginosa antibodies have been suggested to be more sensitive and specific than respiratory culture for evaluating Pa status.

Methods: Anti-*Pa* Abs titers were measured by ELISA (Mediagnost) in blood from 21 patients with CF with the G551D mutation before commencing ivacaftor and after 1 year of treatment. Clinical data for the cohort was obtained and Pa status as defined by Leeds Criteria based on standard hospital culture data was also compared to antibody status.

Results: Significant improvements in lung function and pulmonary exacerbation frequency were observed post-ivacaftor. There was no significant change in Pa status based on anti-Pa ab ($p = 0.105$) or in antibody titres (protease ($p = 0.79$), exotoxin-A ($p = 0.87$), elastase ($p = 0.59$)) post-ivacaftor.



Conclusion: We report no significant change in anti-Pa antibody titres or category after ivacaftor in a clinically responsive cohort. Further work is required to fully evaluate the impact of ivacaftor on *Pseudomonas aeruginosa* in patients with CF.

7.8 The Role of Fibrocyte Derived Exosomes in the Development of Idiopathic Pulmonary Fibrosis

J. Harford[1], G. Cooke[1,2], R. Kane[1,2], M. P. Keane[2,3]

[1]UCD School of Medicine and Medical Sciences, University College Dublin, Belfield, Dublin 4, Ireland; [2]UCD Conway Institute of Biomolecular and Biomedical Research, Belfield, Dublin 4, Ireland; [3]Department of Respiratory Medicine, St. Vincent's University Hospital, Elm Park, Merrion Road, Dublin 4

Idiopathic Pulmonary Fibrosis (IPF) is a devastating disease characterised by progressive interstitial fibrosis of unknown aetiology. Initial injury leads to aberrant activation of epithelial cells, creating a profibrotic environment with accumulation of fibroblasts and myofibroblasts. Potential sources of myofibroblasts include transitioned epithelial cells and fibrocytes [1]. Circulating levels of fibrocytes in serum also correlate with disease severity and prognosis [2].

The aim of this project was to extract and compare the exosomes from TGF-β1 stimulated and unstimulated fibrocytes, and to investigate the effects of these exosomes on A549 epithelial cells.

Exosomes were isolated, using ultracentrifugation, from the supernatant of fibrocytes cultured for 24 h with/without TGF-β1. These exosomes were quantified and characterised by western blotting for known exosome markers. A549 epithelial cells were treated with 10 μg/mL of exosomes for 48 h. A549 cell lysates were then analysed for markers of epithelial-mesenchymal transition (EMT) by western blotting.

We show that both sets of fibrocyte derived exosomes downregulated E-cadherin and ZO-1, with concomitant upregulation of N-cadherin, indicative of early EMT. These changes suggest that fibrocyte exosomes have the potential to induce EMT in the lung parenchyma, and therefore suggests a role for fibrocyte exosome signalling in activating abnormal tissue repair and subsequent fibrosis.

References:

1. Kage H, Borok Z (2012) EMT and interstitial lung disease: a mysterious relationship. Curr Opin Pulm Med 18(5):517–23.
2. Strieter RM, Keeley EC, Hughes MA, Burdick MD, Mehrad B (2009) The role of circulating mesenchymal progenitor cells (fibrocytes) in the pathogenesis of pulmonary fibrosis. J Leukoc Biol 86(5):1111–8.

7.9 Ivacaftor Therapy Reduces the Inflammatory Burden in Patients with Cystic Fibrosis by Indirectly Modulating ADAM-17 Activity

M. M. White[1], R. Flannery[2], P. Hawkins[1], N. G. McElvaney[1], E. P. Reeves[1]

[1]Respiratory Research Division, Dept of Medicine, Royal College of Surgeons in Ireland, Education and Research Centre, Beaumont Hospital, Dublin 9, Ireland; [2]Colaiste Dhulaigh College of Further Education, Dublin 17, Ireland

Cystic fibrosis (CF) is characterised by sustained neutrophil dominated infiltration. The plasma membrane metalloproteinase ADAM-17 cleaves membrane interleukin-6 receptor (mIL-6r) to a soluble form (sIL-6r). Complexes of sIL-6r/IL-6 in circulation induce inflammation. The aim of this study was to investigate the effect of ivacaftor therapy on the activity of ADAM-17 in neutrophils of patients with CF (PWCF).

Blood neutrophils and plasma were isolated from healthy controls (HC) and PWCF homozygous for the *ΔF508* mutation or heterozygous for the *G551D* mutation post ivacaftor therapy. ELISA quantified plasma levels of IL-6 and sIL-6r. ADAM-17 activity was determined fluorometrically. Flow cytometry investigated the levels of mIL-6r. Ethical approval was obtained from Beaumont Hospital Ethics Committee. Student's *t*-test was used to determine significance.

Neutrophils isolated from PWCF demonstrated increased ADAM-17 activity ($n = 4$, $p = 0.0006$), and decreased mIL-6r ($n = 3$, $p = 0.0004$). Elevated levels of IL-6 ($n = 6$, $p = 0.04$), sIL-6r ($n = 6$, $p = 0.01$), a complex of IL-6/sIL-6r ($n = 6$, $p = 0.03$) were found in the plasma of PWCF. Neutrophils isolated from patients receiving ivacaftor therapy had reduced ADAM-17 activity ($n = 3$, $p = 0.004$) and increased mIL-6r ($n = 5$, $p = 0.03$). Furthermore, ivacaftor therapy decreased plasma levels of IL-6 ($n = 6$, $p = 0.02$) and sIL-6r ($n = 6$, $p = 0.04$). The mechanism leading to increased ADAM-17 activity in CF was explored and shown related to reduced plasma membrane cholesterol content ($n = 8$, $p = 0.007$), which increases upon ivacaftor therapy ($n = 4$, $p = 0.02$)

Our novel findings demonstrate that reduced plasma membrane cholesterol in CF neutrophil membranes increases ADAM-17 activity and circulating levels of IL-6 bound to sIL-6r, further augmenting inflammation. In conclusion this study identifies an auxiliary benefit of ivacaftor therapy resulting in reduced inflammation in CF.

This study was funded by SFI, grant number 11/RFP/BMT/3094

Irish Thoracic Society Poster Review and Discussion

Saturday 19th November 2016

8. COPD II

Chairs S. Foley, University Hospital Waterford
R. O'Donnell, St James's Hospital, Dublin

8.1 Characterisation of a Novel Symptom of Chronic Obstructive Pulmonary Disease: Bendopnoea

M. J. McDonnell, N. Duignan, T. Matthews, B. Walsh, R. M. Rutherford

Dept of Respiratory Medicine, Galway University Hospitals

Significant breathlessness on bending forward (bendopnoea) is often reported by COPD patients and may be the sentinel symptom of their COPD.

We conducted a prospective observational study to examine the prevalence and potential mechanisms of bendopnoea in COPD patients undergoing pulmonary rehabilitation. Demographic, clinical and functional data were obtained. Bendopnoea was assessed by measuring the severity of shortness of breath on bending forward at the waist for up to 30 s. BORG score, oxygen saturations and blood pressure measurements were obtained before and after this manoeuvre and time to return to baseline was recorded.

Of 41 patients assessed, 23 (56 %) patients had objective bendopnoea. Significant associations with comorbidities ($p = 0.01$), reduced lung function (lower FEV1 % and DLCO %, $p = 0.01$ and <0.001 respectively) and poorer QoL ($p = 0.03$) were noted with a significant trend towards an increased waist-to-hip ratio ($p = 0.08$). There were no associations with age, BMI, respiratory symptoms, exacerbation frequency, MRCD score, HADS score, exercise capacity or baseline oxygen saturation.

The mechanism of bendopnoea in COPD has yet to be determined but poor baseline airways disease and possibly emphysema, as judged by lower DLCO, appear to be important mechanisms, with the presence of bendopnoea perhaps a signal of disease progression in these patients.

8.2 Duplicating Inhaler Prescription: the Impact on Patients and the Hospital

N. Nyambe, S. Shelley, R. Kennedy, P. Davis, C. Gleeson, M. Baily-Scanlan, L. Dolan

Respiratory Assessment Unit, St James Hospital, Dublin 8

Current practice in St. James's Hospital dictates patients are re-prescribed their existing inhalers upon admission. This can impact on the continuity of inhaled medication and there is cost attached to the ordering of devices each time the patient comes into hospital.

The aim of the project was to establish whether duplicate inhaler prescription has an impact upon patient treatment and the cost implication to the hospital. The survey was descriptive drawing a convenient sample of 100 patients from acute wards using a face-to-face researcher administered check list and data was analysed on Excel.

Results reveal that nineteen patients received their inhalers more than two days following admission. Five of those who had more than one admission during the period of the project were ordered new inhalers on each admission. Thirty-eight patients were using their inhalers from home saving the hospital €3,071.59 while new devices were ordered for fifty-two patients at the cost of €4,364.51 to the hospital.

At present patients seem to get mixed messages whether to use their inhalers from home or not. A clear policy to guide current practice and establish a safe, practical and cost effective way to ensure uninterrupted inhaler therapy should be explored.

8.3 A Needs Assessment of Pulmonary Rehabilitation Services in the Republic of Ireland

N. Petty-Saphon[1], M. O'Callaghan[2], M. O'Connor[3], C. Mullaney[1]

[1]Public Health Department, HSE South East, Kilkenny; [2]Department of Physiotherapy, St Lukes Hospital, Kilkenny, [3]Public Health Department, HSE East, Dublin

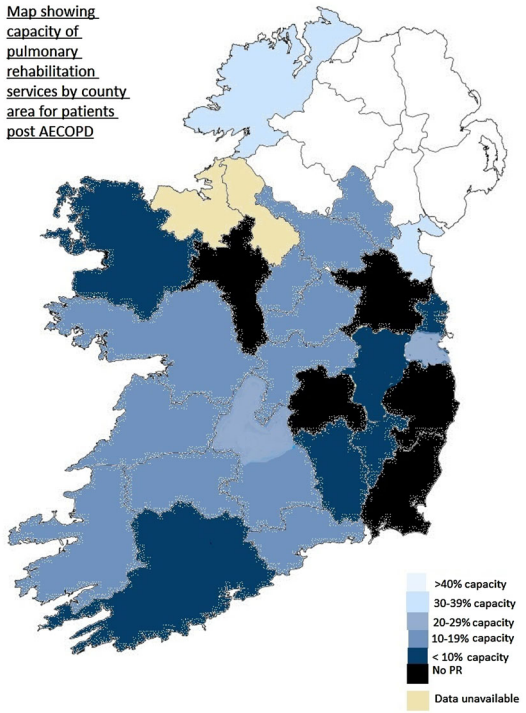
Pulmonary rehabilitation (PR) is an essential component in the management of COPD and can improve exercise capacity, quality of life and reduce hospitalisations [1]. The study was a needs assessment that aimed to map and quantify the supply of PR in Ireland compared to its need.

The study was performed in three parts. A mapping exercise was performed to identify all PR sites in Ireland. An audit tool was developed and distributed to all PR centres in Ireland to identify provision, structure and capacity of PR. Need was estimated using figures from the Hospital Inpatient Enquiry (HIPE) system concerning patient admissions with an acute exacerbation of COPD (AECOPD). Capacity and supply was compared to need at national, geographical and hospital level.

There were 16,147 patient episodes, representing 11,080 patients with a principal diagnosis of COPD in 2014. There was a national capacity to provide PR to 1,211 patients per annum; 11 % of the required need for patients following an AECOPD only. Regional discrepancies were apparent, with five counties with no PR service, illustrated in Figure 1.

This study found there was inadequate supply of PR to meet need. Referrals to PR were significantly lower than need and dedicated staffing was minimal.

Figure 2: Map of percentage need met by capacity for PR for patients following an AECOPD



References:
1. McCarthy B CD, Devane D, Murphy K, Murphy E, Lacasse Y (2015) Pulmonary rehabilitation for chronic obstructive pulmonary disease. Cochrane Database Syst Rev (2. Art. No.: CD003793).

8.4 Psychological Distress in Irish Patients with Chronic Obstructive Pulmonary Disease (COPD)

N. Philips[1], B. Bowen[2], M. T. Henry[2], J. Keane[1], P. J. Dunne[1]

[1]TB Immunology, Clinical Medicine, Institute of Molecular Medicine, Trinity College Dublin, Dublin 8, Ireland; [2]Dept. of Respiratory Medicine, Cork University Hospital, Wilton, Cork, Ireland

Chronic obstructive pulmonary disease (COPD) represents a major disease burden with significant comorbidities, including anxiety and depression. Our aim was to investigate the prevalence of anxiety and/or depression in a cross section of Irish COPD patients.

406 outpatients, with a COPD diagnosis (FEV_1: FVC <70 %) were recruited from Cork University Hospital and St. James' Hospital, Dublin. Two validated questionnaires, Hospital Anxiety and Detection Scale (HADS) and Spielberger State Trait Anxiety Inventory (STAI), were used to assess psychological distress. Cut off points for clinical levels of anxiety and depression were ≥11 (HADS subscales) and ≥40 (STAI).

Irish COPD patients experienced higher incidents of anxiety (24 %) and depression (16 %) when compared with age-matched healthy controls (13 % and 0 % respectively). There was a significant difference in the percentage of female COPD patients suffering anxiety ($P = 0.002$) and depression ($P = 0.04$) when compared with male counterparts. Female COPD patients aged 30–60, scored significantly higher for anxiety ($P < 0.01$) and depression ($P < 0.01$) when compared with older female patients (<61 years).

This study reports elevated psychological distress levels in Irish COPD patients compared with healthy controls, with younger female COPD patients particularly at risk of developing clinical anxiety.

8.5 Implementing Respiratory Integrated Care: The Future for COPD Diagnosis and Management?

P. Davis[1], T. J. Mc Donnell[2]

[1]Respiratory Integrated Care, Dun Laoghaire Health Centre, York Rd., Dun Laoghaire; [2]Department of Respiratory Medicine, St. Michael's Hospital, Dun Laoghaire

Ireland has the highest rate of admissions for COPD in the Organisation for Economic Co-operation and Development (OECD) countries [1]. Part of the explanation for this may reside in lack of resources for diagnosis and management in the community. An integrated model of care, 80 % primary care and 20 % secondary, commenced in April providing the service of an integrated respiratory Clinical Nurse Specialist (CNSp).

Caseload comprised of patients with Asthma and COPD. Challenges and successes were documented in a diary. Patient outcomes recorded on excel.

To date 15 patients were reviewed by the CNSp, 7 Asthma and 8 COPD, 6 had GP diagnosis confirmed, 2 had new diagnosis of Asthma and 2 COPD, 2 had alternative diagnosis and 3 were unable to perform Spirometry for varying reasons. All patients received health advice to support the self management of their condition including inhaler technique and emergency management plans. Preliminary feedback from G.Ps and patients has been very positive. Challenges identified were difficulty with electronic communication between primary and secondary care and lack of overall IT set-up/planning for the programme.

Respiratory integrated care (RIC) provides accurate diagnosis and management in primary care. More collaboration and communication is required to streamline this service further.

Reference:
1. National Healthcare Quality Reporting System (2016) Second annual report 2016. Department of Health.

8.6 Do Nurse Led Clinics Meet the Expectations of Patients with Respiratory Problems?

P. O'Toole, M. Ward, A. Deegan, T. J Mc Donnell

Respiratory Nursing Service and Dept. of Respiratory Medicine, St. Michael's Hospital, Dun Laoghaire, Co. Dublin

Patients referred by their GP with a suspected respiratory problem have a long wait for a specialist respiratory review which can have a detrimental effect on morbidity and mortality [1]. In 2013 we developed a nurse led respiratory clinic for patients with new respiratory problems to help reduce this wait.

A respiratory consultant screens all referrals for suitability. The assessment includes history taking, examination and education by the nurse. In one visit, the patient will have investigations such as spirometry with reversibility, alpha 1 antitrypsin testing, BNP, oxygen assessment (and ABG if appropriate), walking test, CXR and ECG. Subsequently, the nurse discusses findings with a respiratory consultant and develops a plan of care.

We carried out a patient satisfaction survey by telephone on the patient's (13) experience attending this clinic. We asked patients to

rate their care on a scale and we asked about satisfaction with medical care, and preferences for seeing a doctor or a nurse.

Results show that all patients surveyed felt that the medical care they received in the clinic was very good. 100 % of patients expressed that their medical needs were met by seeing a nurse rather than a doctor.

We conclude that a nurse led clinic is associated with high levels of patient satisfaction.

Reference:

1. Davies R (1999) Waiting lists for healthcare: a necessary evil? Can Med J 160 (10) 1469–70.

8.7 Improving Inhaler Prescribing Through the 'Inhaler Hub Initiative'

N. Byrne[1], D. Langan[2], H. Mulryan[3]

Galway University Hospital (GUH)

The purpose of this audit is to improve health care professionals (HCPS) knowledge in the prescribing of inhaled medications. To do this we developed a poster to aid prescribing called the 'Inhaler Hub'. This poster was made available in the respiratory out patients and the medical/surgical wards. We envision that the poster will further develop into an interactive website.

An audit of prescription errors was carried out on the medical/surgical wards of GUH in April 2016. The main areas of error identified referred to under/over prescribing of inhaled medication, poor device choice and poor education provided to patients.

In July 2016 an audit of the Respiratory/Infectious Diseases teams was carried out pre and post education provided by the Respiratory Clinical Nurse Specialists. In total 36 participants completed surveys. We identified that 13.8 % were able to identify all the devices currently available. 30.5 % were confident in prescribing without an additional resource (MIMS/BNF).

The audit showed significant deficits in knowledge that are impacting on the prescribing of inhaler therapies. The optimisation of the learning tools available may be key to improving HCPS prescribing skills. In the changing world of medicine online resources are easy to access, always available and easily updated.

8.8 Prevalence of Self-reported Respiratory Symptoms in a Sample of Irish Dairy Farmers

Noone Rosarii[1], Hogan Victoria[1], Hayes James[2], Coggins Ann Marie[3]

[1]School of Health Sciences, National University of Ireland, Galway; [2]Royal College of Surgeons Ireland Hospital Group, Cavan & Monaghan Hospitals, Ireland; [3]School of Physics, National University of Ireland, Galway

Exposure to a range of risk factors such as dusts, endotoxins, VOCs present on farms can contribute to respiratory symptoms which can ultimately lead to chronic respiratory ill health. Therefore, the aim of this study was to assess the prevalence of self-reported respiratory symptoms in a sample of Irish dairy farmers.

A cross sectional study was conducted, where data was gathered by distributing a self-reported respiratory questionnaire to farmers at a number dairy farming events in Ireland. Statistical analysis examined the relationships between farmer age, feeding systems and working hours with respiratory symptoms. A total of 126 Irish dairy farmers participated in the study. The sample was 91 % male with an average age of 48. Upper-airway symptoms accounted for the most prevalent respiratory problem. Although rates of respiratory disease were found to be low, the prevalence of independent respiratory symptoms such as cough and wheeze were reported by many farmers.

Overall, it was concluded that dairy farmers may be at risk of respiratory problems, however, additional research is required to fully examine this risk in this hard to reach population.

8.9 BTS Emergency Oxygen Audit and Quality Improvement Project

A. Foley, D. Soutar, M. Bailey, J. Hegarty, C. Grant, T. Howe, A. Shamboul, T. McManus

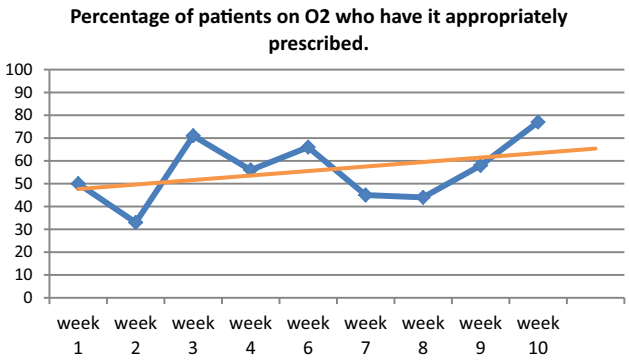
Department of Respiratory Medicine, South West Acute Hospital, Enniskillen, Co. Fermanagh, BT74 6DN

The aim of the audit was to increase the percentage of patients correctly prescribed oxygen with the aim of decreasing morbidity and mortality.

Oxygen is a drug and should be prescribed with an appropriate target saturation range. Oxygen should be signed for on the drug chart (delivery order) at each drug round.

Data was collected over a ten week period between September and November 2015. We recorded oxygen prescription; data collection was facilitated using the British Thoracic Society Audit tool. The prospective weekly auditing of the medicine prescription and administration records was combined with ward teaching sessions delivered to all inpatient hospital wards. Teaching sessions were delivered to medical and nursing staff and included a presentation and practical sessions on oxygen prescription and interface devices.

Over the 10 week period of data collection the percentage prescription rate of oxygen increased from 50 to 77 %.



Following the audit period and ward based teaching oxygen prescription rates rose to 77 %, above the national average of 52.7 %. This is important in reducing morbidity and mortality associated with poor oxygen prescribing. Focused teaching sessions delivered at ward level facilitated improved oxygen prescribing.

8.10 An Audit of Influenza Vaccine Uptake in a Respiratory Outpatients Clinic

A. Rossiter, N. R. O'Morain, C. Varghese, S. Lane

Department of Respiratory Medicine, Tallaght Hospital, Dublin 24

Influenza is an acute viral respiratory illness that causes significant morbidity and mortality [1]. We performed an audit of patients attending a Respiratory outpatient clinic to assess influenza vaccination uptake rate and barriers to vaccination.

All patients attending the clinic over a 2 weeks period in March 2016 were invited to participate in the study, which involved a questionnaire.

132 patients were invited to participate in the audit. 76 patients (58 %) with a confirmed chronic respiratory disease were identified. Of these, 53 % (n = 40) were female and 40 % (n = 30) were >65 years old. 54 % (n = 41) received the seasonal vaccine, with the majority (80 %) given the vaccine by their GP. The most common reason for not getting vaccinated was that the patient 'forgot' (41 %), was wary of 'side effects' (12 %), or was 'unable to find the time' (12 %).

Despite increased awareness surrounding vaccination guidelines, only 54 % of patients with a chronic respiratory illness were vaccinated, well below the target of 75 % set by the European Centre for Disease Prevention and Control (ECDC)[2]. We have developed a template for appointment letters to include a prompt to both the patient and their GP to consider vaccination in patients due to attend the Respiratory outpatient clinic.

References:

1. Centre HPS (2016) Influenza surveillance in Ireland—weekly report (16th–22nd May) . Available from: http://www.hpsc.ie/A-Z/Respiratory/Influenza/SeasonalInfluenza/Surveillance/InfluenzaSurveillanceReports/20152016Season/File,15688,en.pdf.
2. European Centre for Disease Prevention and Control (ECDC). http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009H1019&from=EN.

8.11 GP Practice-Based Respiratory Pharmacist COPD Medicines Optimisation Outreach Clinics: One Year On

C. Jones[1], R. Miller[1,2], R. Sharkey[1], A. Friel[1], D. Clifford[1], C. Darcy[1], B. Moore[1]

[1]Western Health & Social Care Trust, Altnagelvin Area Hospital, Londonderry; 2. School of Pharmacy & Pharmaceutical Sciences, Ulster University, Coleraine.

In line with 'Transforming Your Care' [1] and the Global Initiative for Chronic Obstructive Lung Disease (GOLD) strategies [2], this project brought trust pharmacist-led medicines optimisation clinics to COPD patients.

Process mapping informed the decision to base clinics in GP surgeries where the pharmacist determined: medication adherence and appropriateness; whether antibiotic prescribing was guideline-informed; and prescribed appropriate COPD medications making onward referrals as necessary. Thirty-day telephone follow-up involved reassessment of adherence, symptoms and medication appropriateness. COPD exacerbations, antibiotic prescribing and unplanned hospital admissions were recorded over 12 months; data were analysed using SPSS Version 22.

Results for a patient cohort seen over four months (n = 360) demonstrated: statistically significant improvements in COPD medication appropriateness and adherence (Wilcoxon Signed Rank Test, $p < 0.001$, n = 360); improvement in COPD symptoms (MRC Breathlessness and CAT score); and improved guideline-informed antibiotic prescribing (12 months post review). Projected annual drug cost savings were £235 k. Sixty-eight percent of patients had experienced ≥1 COPD exacerbations over the year prior to clinic attendance, reducing to 50 % during the 12 months post-intervention. Non-elective COPD-related hospital admissions also decreased (9.2 versus 5.3 %).

Specialist hospital pharmacist COPD clinics in primary care resulted in safe and cost-effective medication use with improved patient outcomes 12 months post review.

References:

1. Compton J (2011) Transforming Your Care. A Review of Health and Social Care in Northern Ireland. Department of Health, Social Services and Public Safety Northern Ireland. Available at http://www.transformingyourcare.hscni.net/wp-content/uploads/2012/10/Transforming-Your-Care-Review-of-HSC-in-NI.pdf. Accessed 130716.
2. Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global strategy for the diagnosis, management and prevention of Chronic Obstructive Pulmonary Disease. Updated 2016. Available at: http://goldcopd.org/global-strategy-diagnosis-management-prevention-copd-2016/. Accessed 130716.

8.12 Impact of the Western Health and Social Care Trust (WHSCT) Community Respiratory Team

G. Porter[1], P. Devine[2], D. Clifford[1], M. Mc Closkey[1], M. G. Kelly[1], T. Mc Manus[1], A. Shamboul[1], D. Comer[1], P. Mc Shane[1], B. Mc Grath[2], K. Mc Guigan[3], R.A. Sharkey[1]

[1]Dept. of Respiratory Medicine, WHSCT; [2]Primacy Care and Older Peoples Directorate, MDEC building, Altnagelvin Hospital, Derry, BT47 6SB; [3]NorthWest Research, Cashelmore, Derry, BT48 0RU

A community respiratory team (CRT) was established in June 2015 across the WHSCT with the purpose of operating at the interfaces between the acute hospitals, the community service and primary care teams and the aim of managing patients closer to home i.e. in line with the principles of Transforming Your Care (TYC).

We reviewed the CRT database over the 7 months from July 2015–January 2016. 464 patients, mean age of 71.1 years (20–94 years), were managed by the CRT during the 7 months. Diagnosis—COPD 318 (68.5 %), bronchiectasis 39 (8.4 %) asthma 31 (6.6 %), ILD 29 (6.3 %), pneumonia 10 (2.2 %), other conditions 37 (8 %). 15 (3.2 %) patients were readmitted within 30 days of hospital discharge. 112 patients reviewed by CRT resulted in prevention of hospital/GP input. Smoking cessation advice given to 121 patients. Of 384 potential patients, 116 were referred to pulmonary rehabilitation, 52 patients 'not applicable' and 216 refusing or declining the service. 259 (56 %) patients have been issued with self-management plans.

This review has highlighted the positive impact of a community respiratory team—both specifically in the management of the respiratory condition and holistically to improve quality of life of respiratory patients.

Irish Thoracic Society Poster Review and Discussions

Saturday 19th November 2016

9. COPD Basic Science

Chairs E. Kelly, St Vincent's University Hospital, Dublin
M. Sheehy, Midland Regional Hospital, Mullingar

9.1 Smoking and the Prevalence of Alpha-1 Antitrypsin Deficiency (AATD) associated CT findings: A phenotype by environment effect?

A. N. Franciosi[1], T. P. Carroll[2], M. Molloy[2], L. Fee[2], C. O'Connor[2], N. G. McElvaney[1]

[1]Respiratory Research Division, Department of Medicine, Royal College of Surgeons in Ireland, Education and Research Centre, Beaumont Hospital, Dublin 9; [2]Alpha One Foundation, RCSI Education & Research Centre, Beaumont Hospital, Dublin 9

Alpha-1 Antitrypsin Deficiency (AATD) is characterised by quantitative and qualitative deficiency of circulating AAT, predisposing to lung and liver damage. Stratifying risk by phenotype is an area of interest.

We retrospectively reviewed CT reports of 146 Alpha-1 AATD patients in the National Alpha-1 Registry. Reporting of Emphysema and Bronchiectasis was documented. Prevalence was then compared between MZ ($n = 26$), SZ ($n = 35$) and ZZ ($n = 85$) patients by Fisher Exact Probability Test. Stratification by age (<50 or >50 years old) and smoking history (Never vs >20 pack year history) was compared.

Emphysema and/or Bronchiectasis was reported in 46 % of MZ, 57 % of SZ, and 80 % of ZZ CT scans.

Smokers over $50^{y/o}$ had a higher prevalence of CT abnormality than never-smokers over $50^{y/o}$ (100 % SZ/96.9 % ZZ vs 53 % SZ/79.4 % ZZ respectively).

The relative risk of abnormal CT findings in smokers vs non-smokers was found to be higher in SZ vs MZ individuals [RR 2.04 ($p = 0.0219$; CI 1.26–3.33) vs RR 1.27 ($p = 0.688$; CI 0.6394–2.533)].

These findings suggest a phenotype-by-environment effect which needs clarification to aid in accurately risk stratifying alpha-1 antitrypsin deficiency.

9.2 An Investigation into the Link Between Alpha-1 Antitrypsin Deficiency and the Anti-CCP Autoimmune Response: Increased Release of PAD2 and PAD4 from Neutrophil Primary Granules

D. J. L. Hunt, D. A. Cardiff, E. P. Reeves, N. G. McElvaney

Respiratory Research Division, Department of Medicine, Royal College of Surgeons in Ireland, Education and Research Centre, Beaumont Hospital, Dublin 9, Ireland

Alpha-1 antitrypsin (AAT) deficiency (AATD) is a rare hereditary condition in Ireland. Previously published results from this laboratory have shown a link between AATD and increased titres of IgG class autoantibodies against lactoferrin [1]. This project aims to investigate whether carriers of a defective alpha-1 allele are at a higher risk of anti-cyclic citrullinated protein (anti-CCP)-related autoimmune conditions. Specifically, we aim to determine whether neutrophils have a role in the activation of peptidyl arginine deiminase (PAD) 2 and PAD4, enzymes which contribute to the initiation of the anti-CCP autoimmune response.

Subcellular localisation of PAD2 and PAD4 was performed by isolating circulating neutrophils from healthy donors and fractioning subcellular components by ultracentrifugation. Neutrophil degranulation assays were performed with freshly harvested circulating neutrophils isolated from AATD patients and healthy donors. Primary degranulation was stimulated using TNFα and fMLP.

PAD2 and PAD4 were localised to the primary granules of neutrophils by subcellular fraction and Western blotting ($n = 3$ technical experiments). Upon stimulation with TNFα and fMLP, PAD2 and PAD4 release from neutrophil primary granules was observed ($n = 3$ technical experiments), and preliminary results show increased release of both PAD2 and PAD4 from neutrophils of AATD individuals.

The results of this study have demonstrated that both PAD2 and PAD4 are contained within the neutrophil primary granules. Upon stimulation, PAD2 and PAD4 are released into the extracellular space, with increased release observed in heterozygous and homozygous AATD individuals. These results indicate that AATD individuals may be at a greater risk of developing anti-CCP autoimmune conditions such as rheumatoid arthritis and idiopathic interstitial lung disease.

Reference:

1. Bergin DA et al (2014) The circulating proteinase inhibitor alpha-1 antitrypsin regulates neutrophil degranulation and autoimmunity. Sci Transl Med 6(217):217ra1.

9.3 Investigating the Role of Alpha-1 Antitrypsin in the Regulation of Complement Activation

L. Fee[1], M. E. O'Brien[2], T. Carroll[1], M. Molloy[1], C. O'Connor[1], E. Reeves[2], N. G. McElvaney[2]

[1]Alpha One Foundation; [2]Department of Medicine, RCSI Education & Research Centre, Beaumont Hospital

Alpha-1 antitrypsin deficiency (AATD) is characterised by low circulating levels of alpha-1 antitrypsin (AAT), a 52 kDa serine protease inhibitor and is associated with the development of neutrophil driven chronic obstructive pulmonary disease (COPD). Unpublished data has identified complement C3 as a new binding partner to AAT. The aim of this study is to evaluate the relevance of this binding event in AATD.

2000 samples were received as part of the National AATD Targeted Programme from 29 hospitals around the country from August 15–16. To assess if dysregulated C3 activation occurs in AATD, C3d levels were measured in plasma of ZZ individuals and healthy (MM) controls by ELISA. C3d levels were also measured on neutrophil membranes isolated from MZ, ZZ and healthy control (MM) individuals using FACS analysis. HL-60 cells, a neutrophil like cell line were treated with increasing concentrations of C3d and supernatants analysed for IL-8 by ELISA. Statistical analyses was performed by Student t test.

The Irish National AATD Targeted Detection Programme identified 27 homozygous (ZZ) and 302 heterozygous (MZ) AATD individuals in 12 months. C3d, a cleavage product of C3 produced during complement activation was significantly increased in ZZ-AATD individuals ($n = 25$) compared to MM controls ($n = 7$) ($p < 0.0001$). C3d was also significantly increased on neutrophil membranes isolated from MZ individuals ($n = 8$) compared to MM

controls (n = 11) (p = 0.0351). C3d treatment of HL-60 cells resulted in increased production of IL-8 (n = 2) (p = 0.0326 at 5 μg/ml).

Future work will examine the effect of complement activation and C3d on neutrophil signalling and function in AATD and explore the relevance of this in the pathogenesis of AATD and COPD.

9.4 Alveolar Macrophages Express the Bone Morphogenetic Protein Antagonist Gremlin-1

L. Mthunzi, M. Kubica, U. Knaus, P. McLoughlin

University College Dublin, School of Medicine, Conway Institute, Belfield, Dublin 4, Ireland

9.5 Peripheral Eosinophil Count Does Not Predict Readmission on a COPD Outreach Programme

L. Thong, M. O'Driscoll, C. Casey, M. Kennedy, B. J. Plant, M. T. Henry, D. M. Murphy

Department of Respiratory Medicine, Cork University Hospital

Recent studies suggest role for eosinophil count as a marker of severity in patients with exacerbations of COPD. We aimed to see if eosinophil count influenced subsequent readmission in patients, accepted onto a COPD outreach programme.

We examined 97 patients with data stratified and subsequently analysed in 3 different categories; no readmission, readmission within 30 days and readmission after 30 days. Eosinophil count above 0.4 IU/L was taken as the initial upper limit of normal for peripheral eosinophils.

21/91 patients were eosinophilic at presentation. Of the 97 patients, 53 had no readmission (within what time period), 23 were readmitted within 30 days and 21 readmitted after 30 days. The mean eosinophil counts in the 3 different categories were 0. 212 IU/L, 0.226 IU/L, and 0.261 IU/L respectively, with no significant difference between groups. Of the eosinophilic patients, 10 (47.6 %) were readmitted compared to 44.7 % of the non-eosinophilic group of patients

In conclusion, eosinophil count does not appear to predict treatment failure and subsequent readmission in patients with an exacerbation of COPD managed by a COPD outreach team.

9.6 To Understand the Abundance of Hydrogen Voltage-Gated Channel 1 (HVCN1) on Neutrophils of Alpha-One Antitrypsin Deficient Patients

P. Hawkins, N. Browne, M. M. White, E. P. Reeves, N. G. McElvaney

Respiratory Research Division, Department of Medicine, Royal College of Surgeons of Ireland, Education and Research Centre, Beaumont Hospital, Dublin 9

Alpha-1 antitrypsin (AAT) is a protease inhibitor mainly produced in the liver. Alpha-1 antitrypsin deficiency (ATTD) is a genetic condition that predisposes to liver disease and emphysema. The most common mutation resulting in severe deficiency is the ZZ phenotype. HVCN1 is a transmembrane proton channel found on the cell and phagocyte membrane of neutrophils. It plays a role in regulating pH across these membranes and in sustaining activity of NADPH oxidase [1]. HVCN1 is also necessary for the production of reactive oxygen species and regulation of neutrophil degranulation [2]. Preliminary data from the laboratory of Professor McElvaney has shown increased release of neutrophil elastase form ZZ neutrophils. We hypothesize that HVCN1 will be reduced in neutrophils of AATD patients. Subsequently we would hope to study the effect of low levels of HVCN1 on the ZZ neutrophil.

Study approval was obtained from Beaumont Hospital Ethics Committee. Clinically stable ZZ-AATD individuals and healthy control individuals (MM) will be recruited for the study. We hope to recruit approximately thirty individuals. Neutrophils will be purified from blood of subjects. Membrane HVCN1 will be assessed by flow cytometry using HCVN1 primary antibody followed by a secondary FITC-labelled antibody, post fixation of cells with 4 % (w/v) paraformaldehyde. Western blot analysis of whole cell lysates will also be used.

Preliminary data shows that there is a trend towards reduced levels of HVCN1 in whole cell lysates of ZZ individuals when compared to healthy controls (MM) by Western blot analysis. Flow cytometry of fixed neutrophils has also shown a trend (p = 0.0573) of lower levels of HVCN1 in ZZ patient samples (n = 3).

Larger numbers of patients are needed to fully elucidate the quantity of HVCN1 in ZZ AATD neutrophils compared to healthy controls (MM). We know that the contents of primary granules play a major role in the destruction of the alveolar matrix in patients with AATD. Given the effects HVCN1 has on neutrophil primary granule release further studies of the role of HVCN1 in AATD is clearly warranted.

References:

1. Petheo et al (2010) Molecular and functional characterization of Hv1 proton channel in human granulocytes. PLos One doi: 10.1371/journal.pone.0014081.
2. Okochi et al (2016) The voltage-gated proton channel Hv1/VSOP inhibits neutrophil granule release. J Leukoc Biol. January 2016.

9.7 Pulmonary Epithelial Cells are a Source of Gremlin1 in the Lung

S. Devlin, M. Pickering, K. Rochfort, P. McLoughlin

School of Medicine, Conway Institute of Biomolecular & Biomedical Research, UCD, Belfield, Dublin 4

This project is funded by SFI.

9.8 The National Alpha-1 Antitrypsin Deficiency Targeted Detection Programme

L. Fee[1], T. P. Carroll[1], C. O'Connor[1], M. Molloy[1], P. O'Brien[2], E. Pentony[2], I. Ferrarotti[3], S. Ottaviani[3], M. Luisetti[3], W. Tormey[2], N. G. McElvaney[1]

[1]Alpha One Foundation, RCSI Education & Research Centre, Beaumont Hospital, Dublin 9; [2]Department of Biochemistry, Beaumont Hospital, Dublin 9; [3]Department of Biochemistry and Clinical Genetics, University of Pavia, Italy

AAT deficiency (AATD) is a hereditary disorder caused by mutations in the SERPINA1 gene, classically presenting with COPD and/or liver disease. The most common harmful mutation is Z (Glu342Lys), but over 100 other harmful mutations exist. AATD is under-diagnosed despite ATS/ERS guidelines advocating screening all COPD, poorly-controlled asthma, and cryptogenic liver disease patients, as well as first degree relatives of known AATD patients.

16,500 individuals have been screened to date following ATS/ERS guidelines in the national targeted detection programme. AAT phenotyping is performed by isoelectric focusing and AAT levels are

determined by immune turbidimetry. Sequencing of the SERPINA1 gene is performed to identify rare mutations.

We have identified 290 ZZ, 240 SZ, 80 SS, 2344 MZ, 1605 MS, and over 260 individuals with rare phenotypes (e.g. IZ, FZ, IS, Null, M_{malton}). A number of novel SERPINA1 mutations have been identified.

Our results illustrate the high prevalence of AATD in Ireland and the success of a targeted approach. We advocate that all COPD patients should be tested for AATD as per ATS/ERS and WHO guidelines. The advantages of a diagnosis of AATD include specific treatments such as augmentation therapy, increased lung and liver surveillance, family screening, smoking cessation, and the consideration of occupational and environmental exposures.

9.9 Rare Alpha-1 Antitrypsin Mutations in the Irish Population

T. P. Carroll[1], L. Fee[1], C. O'Connor[1], M. Molloy[1], P. O'Brien[2], E. Pentony[2], I. Ferrarotti[3], S. Ottaviani[3], W. Tormey[2], M. Luisetti[3], N. G. McElvaney[1]

[1]Alpha One Foundation, RCSI Education & Research Centre, Beaumont Hospital, Dublin 9; [2]Department of Biochemistry, Beaumont Hospital, Dublin 9; [3]Department of Biochemistry and Clinical Genetics, University of Pavia, Italy

AAT deficiency (AATD) is caused by mutations in the SERPINA1 gene, classically presenting with chronic obstructive pulmonary disease (COPD) and liver disease. The most common disease-causing mutation is Z (Glu342Lys), but at least 100 other harmful mutations have been described. AATD is under-diagnosed despite ATS/ERS guidelines advocating the screening of all COPD, refractory asthma, and cryptogenic liver disease cases, as well as relatives of AATD individuals.

16,500 individuals were screened following ATS/ERS guidelines as part of a national AATD targeted detection programme. AAT quantification is by turbidimetry and AAT phenotyping is by isoelectric focusing. Suspected rare mutations are identified by DNA sequencing.

We identified a large number of rare AAT mutations including I, F, null (Q0), M_{malton}, $M_{wurzburg}$, and $Z_{bristol}$. The I mutation (Arg39-Cys) is most common with 134 cases identified, while 61 cases of the F mutation (Arg223Cys) were detected. These two mutations account for 85 % of all rare mutations detected. In addition, 7 novel mutations were identified, including the novel null mutations $Q0_{dublin}$ and $Q0_{cork}$. A rare intronic null mutation, $Q0_{porto}$ was also discovered.

Rare mutations were detected in 1.5 % of individuals screened. Our findings underline the need for a comprehensive diagnostic work up of low AAT levels including phenotyping, genotyping and if necessary, DNA sequencing.

9.10 A Tale of Two Serpins

T. P. Carroll[1*], T. K. Deak[2*], K. Molloy[1], I. Ferrarotti[3], N. G. McElvaney[1]

[1]Alpha One Foundation, RCSI Smurfit Building, Beaumont Hospital, Dublin 9, Ireland; [2]Department of Medicine, University of Debrecen, Debrecen, Hungary; [3]Department of Biochemistry and Clinical Genetics, University of Pavia, Italy

*Both authors contributed equally.

Alpha-1 antitrypsin (AAT) and alpha-1 antichymotrypsin (ACT) are the two most abundant serine proteinase inhibitors (serpins) in human plasma (Kalsheker, et al., 2002). A genetic deficiency of AAT is associated with a predisposition to develop chronic obstructive pulmonary disease (COPD), particularly for cigarette smokers (Crystal, 1990). AAT deficiency is now recognised as the only proven genetic risk factor for COPD and targeted detection programmes to identify at risk individuals are recommended by World Health Organisation guidelines. More recently, genetic deficiency of ACT has also been suggested as a possible cause of COPD (Poller et al., 1993). However, ACT is rarely investigated in the clinical setting.

Previously, we carried out a family based study to determine the risk of COPD in individuals heterozygous for the Z allele of SERPINA1 (Molloy et al., 2014). During this study, DNA was collected for the exploration of additional genetic risk factors. Using this unique cohort, we searched for two SERPINA3 mutations, Bochum (Leu55Pro, rs1800463) and Bonn (Pro229Ala, rs17473).

Two heterozygotes for Bonn rs17473 mutation were identified. The affected individuals were related and also heterozygous for the SERPINA1 Z allele. One individual had severe COPD and the other mild COPD. The Bochum rs1800463 mutation was not detected.

To our knowledge this is only the second report of the rare Bonn SERPINA3 mutation. This mutation is known to cause a serum deficiency of ACT. The observed clinical manifestations herein are difficult to prove given the co-existence of AAT deficiency. However, ACT is a potent inhibitor of the serine protease cathepsin G and partial ACT deficiency has been linked to risk for lung and liver disease (Poller et al., 1993, Yoon et al., 2002).

9.11 The Alpha-1 Antritrypsin Deficient Neutrophil: a Proteomic Analysis of the Cell Membrane

T. McEnery, D. Hunt, M. White, P. Meleady, E. P. Reeves, N. G. McElvaney

Respiratory Research Division, Royal College of Surgeons in Ireland Education and Research Centre, Beaumont Hospital, Dublin 9

Alpha-1 antitrypsin (AAT) deficiency (AATD) is the 3rd most common lethal genetic condition among Caucasians. It results in early onset emphysema and liver disease and represents the 4th commonest indication for lung transplant. AAT is an important anti-protease and the primary mechanism for lung disease in AATD is via unopposed action of neutrophil elastase. Treatment with weekly infusion of pooled human AAT has been shown to slow the progression of emphysema. Increasing evidence points to AAT as a key regulator of neutrophil activation and function. Our project seeks to elucidate the effect of AAT therapy on the circulating neutrophil. Our aim is to present the first proteomic analysis of the neutrophil cell membrane in AATD, both pre- and post-augmentation therapy, as compared to healthy controls.

Neutrophils were isolated from healthy controls and AATD patients with COPD pre- and post-augmentation therapy ($n = 6$ per group). A pure cell membrane fraction was prepared by sucrose density ultracentrifugation, and purity was confirmed by Western Blot employing the membrane marker Na^+/K^+ATPase. Proteomic analysis using Liquid Chromatography Mass Spectrometry is being employed to quantify changes in neutrophil cell membrane protein expression between the above groups.

We will identify specific proteins of interest for further investigation as biomarkers and to better understand the critical interaction between AAT and the neutrophil.

9.12 Bronchial Anastomotic Complication in Alpha1-Antitrypsin Deficiency

J. Kleinerova, A. Pozza, L. Khorsheed, S. Winward, I. Lawrie, K. Redmond, D. Eaton, D. Healy, L. Nölke, D. McSharry, J. Egan, O. O'Connoll

National Lung Transplant Centre, Mater Misericordiae University Hospital, Dublin 7

We conducted a retrospective analysis in our centre to compare the post-transplantation course of patients with alpha1-antitrypsin deficiency (AATD) and non-alpha1-antitrypsin emphysema (NAAT). Furthermore, we were interested in post-transplant airway complications.

Data collection include demographic and functional baseline of recipients, and survival data. Bronchial anastomotic complication were analysed as primary outcome.

Between January 2005 and May 2016, total number of 163 patients has been transplanted. 34 had a pre-transplant diagnosis of emphysema with distribution of 12 (35.3 %) with AATD and 22 (64.7 %) with NAAT. There was a male preponderance of 75 % in AATD group. Population with AATD was younger compare to NAAT (mean age 53.5 $\pm$ 7.9 vs 60 $\pm$ 4.6, p ‹ 0.01). There was no statistical difference in FEV1 between AAT and NAAT group either pre and post-transplant. Groups were followed up until August 2016 with median 3.3 years (IQR 7.5) in AATD and 2.4 years (IQR 2.4) in NAAT. 3 patients died in AATD and 7 in NAAT group. There was no difference in survival between AATD and NAAT group (p value = 0.27). However bronchial complication occurred only in 4 AATD (versus 0 NAAT, p value = 0.01), at a median of 4 months post-transplant, 2 patients died.

The findings indicate that AATD patients may have higher risk for developing anastomotic airway complication.

9.13 Real Life Treatment Benefit of Intravenous Augmentation Therapy for Severe Alpha-1 Antitrypsin Deficiency

M. Molloy, C. O'Connor, L. Fee, T. P. Carroll, N. G. McElvaney

Alpha One Foundation, RCSI Education & Research Centre, Beaumont Hospital, Dublin 9

The potential reimbursement of augmentation therapy in Ireland has created the need to establish the impact of treatment on alpha-1 antitrypsin deficiency (AATD).

Questionnaires were distributed to 160 individuals with AATD. One questionnaire was distributed to 133 individuals (24 of 36 eligible for treatment responded) who are not treated with augmentation therapy to obtain their experience living with AATD and the areas of disease management that are important to them. A separate questionnaire was distributed to 27 individuals (23 of 27 responded) on augmentation therapy to determine their perception of treatment on their condition.

In terms of treatment outcomes, non-treatment group respondents reported slowing of the progression of emphysema (91.7 %), improved symptoms (79.2 %), fewer chest infections (91.7 %) and reduced hospitalisations (83.3 %) as very important to them. The majority of treatment group respondents reported slowing of the progression of emphysema (73.9 %) and improvement in their overall symptoms (78.3 %) since commencing therapy. Crucially, treatment group respondents reported a reduction in the incidence of annual chest infections and hospitalisations from an average of 4.1 to 1.4 (65.9 %) and 1.1–0.48 (56.4 %) respectively.

Our patient reported data conveys the significant real-life impact of AATD. While the RAPID clinical trial[1] conclusively demonstrated that augmentation therapy slows the progression of emphysema, the data here highlights additional benefits including a reduction in the frequency of exacerbations and associated hospitalisations and an increased quality of life.

Reference:

1. Chapman KR, Burdon JG, Piitulainen E, Sandhaus RA, Seersholm N, Stocks JM, Stoel BC, Huang L, Yao Z, Edelman JM, McElvaney NG (2015) Intravenous augmentation treatment and lung density in severe α1 antitrypsin deficiency (RAPID): a randomised, double-blind, placebo-controlled trial. Lancet 386(9991):360–368. Available from: doi:10.1016/S0140-6736(15)60860-1.

Irish Thoracic Society Poster Review and Discussion

Saturday 19th November 2016

10. Interstitial Lung Disease (ILD) and Vascular

Chairs E. Moloney, Tallaght Hospital, Dublin
K. O'Reilly, Mater Misericordiae University Hospital, Dublin

10.1 Diagnostic Yield and Safety of Bronchoscopic Lung Cryobiopsy (BLC) in Diffuse Parenchymal Lung Disease—A Review of All Cases Performed at a Large Tertiary Hospital

A. M. O'Mahony[1], K. Olden[1], A. Chelliah[2], M. P. Kennedy[1], L. Burke[2], N. Ronan[1], M. T. Henry[1]

[1]Department of Respiratory Medicine, Cork University Hospital, Cork, Ireland; [2]Department of Pathology, Cork University Hospital, Cork, Ireland

Background: To assess the safety profile and the impact of bronchoscopic lung cryobiopsy (BLC) on diagnostic confidence in the MDT diagnosis of diffuse parenchymal lung disease. BLC is a novel technique which improves diagnostic yield by providing larger biopsies with more alveolated lung and less artefact [1].
Methods: A retrospective review of all BLCs performed in a large tertiary institute over a three-year period (2014–2016 inclusive) was performed. Tissue size, adequacy, complication rate and diagnostic yield were recorded.
Results: Ninety procedures were performed on 75 patients. 246 cryobiopsies (2.73 biopsies/case) were obtained, the majority from the RLL (60.6 %) with a mean biopsy widest diameter of 6.1 mm (range 3–22 mm). Alveolated tissue was present in 96.7 % of biopsies.
Diagnosis based against MDT gold standard was confirmed using BLC in 84 % of cases; [IPF (47.1 %), HP (19.1 %), EP/COP (8.8 %), sarcoid (7.4 %), vasculitis (5.9 %), NSIP (4.4 %), other (7.4 %)]. The addition of histological information changed the clinic-radiological diagnosis in 13.3 %.

Pneumothorax occurred in 16.7 % (15/90) patients undergoing BLC. Three (3.3 %) required chest drain insertion. Moderate bleeding occurred (Grade 2) in 16.7 % (15/90). 7 patients (7.8 %) required admission for complications, with a mean length of stay of 1.3 days.
Discussion/Conclusion: Bronchoscopic lung cryobiopsies now compares favorably to surgical lung biopsy (SLB) in aiding diagnosis of diffuse parenchymal lung disease, with our results showing it is safe and reliable.
References:

1. Tomassetti S, Wells AU, Costabel U et al (2016) Bronchoscopic Lung Cryobiopsy increases diagnostic confidence in the multidisciplinary diagnosis of Idiopathic Pulmonary fibrosis. Am J Respir Crit Care Med 193(7):745–52.

10.2 Fitness for Airtravel in Idiopathic Pulmonary Fibrosis Using Normobaric Hypoxia Challenge (HCT) and 6 min Walk Tests (6MWT)

A. Flannery, T. Cahill, D. Langan, A. O'Regan

Respiratory Department, Galway University Hospital, Co. Galway

Background: The effect of airtravel on oxygenation in idiopathic pulmonary fibrosis (IPF) is unclear. It is hypothesized that despite relatively normal resting oxygenation that HCT will be required rather than 6MWT due to relatively unique effects of exercise on oxygenation in IPF compared to other lung diseases.
Methods: We developed a normobaric HCT (15 % O2 for 20 min under continuous monitoring with ABG at end of testing). Patients with IPF expressing a wish to travel and saturations greater than 92 % were enrolled to undergo 6MWT and HCT.
Results: We present data on the first 4 cases (of ten). All had IPF diagnosed by MDT and met criteria. There was a good correlation between 6MWT and HCT (see table). One patient met criteria for oxygen during airtravel. In this case despite normal DLCO there was desaturation on 6MWT. Another patient with low DLCO had preserved oxygenation during both 6MWT and HCT.
Conclusion: Our results suggest that IPF can be complicated by significant deoxygenation during simulated airtravel despite what is considered safe oxygenation at rest in other lung disease. It is possible that 6MWT will identify those requiring testing and further patients have been enrolled to clarify recommendations.

Age	Rest O2	FVC	DLCO	6MWT O2*	HCT O2*	PaO2*
73	95%	1.62 (73%)	1.24 (87%)	83%	81%	8.17 (91% @1min)
64	96%	3.59 (80%)	1.01 (76%)	86%	96%	9.7 (95%)
52	97%	2.56 (64%)	0.72 (49%)	91%	93%	9.15 (94%)
80	96%	2.84 (69%)	1.09 (91%)	82%	91%	7.67 (90%)

10.3 Idiopathic Pulmonary Fibrosis Nurse Led Clinic

L. Fox, C. Buckley, P. Hallahan, O. Lee, L. McLeod, C. Sheridan, K. M. A O'Reilly

Department of Respiratory Medicine, Mater Misericordiae University Hospital, Dublin

We conducted a retrospective audit of the last 30 patients commenced on oral antifibrotic (OAF) therapy for IPF. The audits main focus was on OAF selection and adherence, patient education and finally clinic attendance and telephone calls.

The IPF nurse led clinic (NLC) was established 18 months ago. It is scheduled for every alternate Wednesday with a capacity for 6 patients. The IPF NLC provides support and education for patients, their families and/or carers about their diagnosis, treatments and symptom management.

The audit showed patients are educated by the nurse on initiation of treatment and have follow up scheduled at 1, 3, 6, 12 and 18 months.

Of the 30 patients reviewed, respiratory nurses received 69 phone calls from 21 patients. These calls dealt with general enquiries ($n = 12$) and management of treatment side effects ($n = 9$). Fatigue and nausea were the dominant complaints with 5 patients needing additional NLC appointments. Seven patients treatment was discontinued due to ongoing weight loss ($n = 1$), poor adherence ($n = 1$), nausea ($n = 2$), death ($n = 2$) and lung transplant ($n = 1$). In total for these 30 patients the NLC conducted 91 clinic based reviews and 69 telephone consultations and is a valuable resource for patients and carers.

10.4 A Case Series of Sarcoidosis Secondary to Anti-TNF Alpha Therapy

Malcolm Herron[1], Laura Gleeson[1], Terrance Farrell[2], Anne-Marie McLaughlin[1], Joseph Keane[1]

[1]Department of Respiratory Medicine, St James's Hospital, Dublin 8, Ireland; [2]Department of Radiology, St James's Hospital, Dublin 8, Ireland

This case series was carried out in St James's Hospital, Dublin 8, Ireland.

Corresponding author: Malcolm Herron, MB BCh BAO MRCPI, literature search, data collection, manuscript preparation and review of manuscript. herronm@tcd.i.e.

Laura Gleeson, MB BCh BAO, literature search, manuscript preparation and data collection.

Terrance Farrell, MB BCh BAO, manuscript preparation and data collection.

Anne-Marie McLaughlin, MD, review of manuscript.

Joseph Keane, MD, review of manuscript.

Conflict of interest statement: The authors declare that no financial or other potential conflicts of interest exist.

Tumour necrosis factor alpha (TNF-α) inhibitors have had a huge impact on the treatment of inflammatory arthritis, inflammatory bowel disease and psoriasis. There has also been interest in the use of TNF-α inhibitors in the treatment of refractory sarcoidosis. Paradoxically sarcoidosis in response to TNF-α inhibitors is increasingly recognised with 37 cases reported in the literature to date.

This report describes a series of 4 pulmonary cases and a single extra-pulmonary case of sarcoidosis that developed on TNF-α inhibitors, and their associated disease characteristics. We describe the new histological diagnosis of sarcoidosis, and exclusion of mycobacterial infection, in a case of crohn's disease, two cases of ankylosing spondylitis and two cases of rheumatoid arthritis, all while on anti-TNF alpha inhibitors.

All of these patients had advanced sarcoidosis at diagnosis requiring discontinuation of anti-TNF alpha therapy, high dose steroids and intensive care unit admission in one instance.

Simultaneous occurrence of rheumatoid arthritis and sarcoidosis is rare, with only four case reports in patients not on anti-TNF alpha inhibitors. Although sarcoidosis is a rare side effect of anti-TNF alpha therapy it is increasingly recognised in the literature.

10.5 Every Breath You Take—Lung Fibrosis Breathlessness Survey

N. Cassidy[1], P. Grehan[2], I. Byrne[2], O. J. O'Connell[2], J. J. Egan[2]

[1]The Irish Lung Fibrosis Association; [2]The National Lung Transplant Unit, Mater Misericordiae University Hospital, Dublin

Breathlessness is a common and debilitating feature of interstitial lung disease (ILD). The Irish Lung Fibrosis Association developed a 5-point Lickert-scale questionnaire to identify the self-reported impact of dyspnoea, and the practical non-pharmacological interventions used by patients to relieve breathlessness.

41 patients responded (26 M:15F); median age of 64 years, and a median time from diagnosis of 4 years. 80.5 % (n = 33) of respondents had IPF, 48.8 % (n = 20) took anti-fibrotic medication, 56.1 % (n = 23) were oxygen-dependent, and 58.5 % (n = 24) engaged in home-exercise.

Activities that caused dyspnoea often/always included exercising (63 %, n = 26), climbing stairs (61 %, n = 25) and walking short distances (59 %, n = 24). The most frequent physical and psychological effects of dyspnoea reported often/always were fatigue (56 %, n = 23), stress (37 %, n = 15) and self-consciousness (29 %, n = 12). 27 % (n = 11) indicated that dyspnoea caused no change with how they felt, possibly reflecting acceptance or good control of dyspnoea.

The most common solutions used often/always by patients to self-manage dyspnoea were cessation of physical exertion (71 %, n = 29), breathing techniques (66 %, n = 27), reassuring themselves they would be okay (58 %, n = 24) and adopting positions-of-ease (37 %, n = 15).

Healthcare professionals should be aware of the significant physical and emotional burden of dyspnoea in ILD patients and the self-management strategies used to manage symptoms.

10.6 The Impact Of Pirfenidone on Chest CT and Lung Histopathology in Patients with Idiopathic Pulmonary Fibrosis

N. J. Ronan[1,2], K. A. Khan[1], Y. McCarthy[1,2], A. Cavazza[3], A. Chelliah[3], H. Jawad[3], D. Dahly[2], F. Moloney[4], K. O'Regan[4], L. Burke[3], B. J. Plant[1,2], M. T. Henry[1,2]

[1]Respiratory Department, Cork University Hospital, Wilton, Cork; [2]HRB Clinical Research Facility, University College Cork, Cork; [3]Pathology Department, Cork University Hospital, Wilton, Cork; [4]Radiology Department, Cork University Hospital, Wilton, Cork

Idiopathic pulmonary fibrosis (IPF) is a progressive fibro-proliferative lung disease which results in destruction of lung architecture.

13 patients with IPF diagnosed on consensus at a regional MDT consented to PFT's, cryoprobe assisted transbronchial lung biopsy and chest CT at baseline and after 6 months of pirfenidone treatment. Lung biopsy samples were stained for Ki-67 (marker of cell proliferation), caspase 3 (marker of apoptosis) and TGF-β (cell growth and extracellular matrix production) and reviewed by two lung histopathologists. Chest CT's were scored by two chest radiologists blinded to the treatment status of the patient.

Diagnostic concordance between two separate histopathologists was consistent with IPF in all thirteen patients; with lower lobe samples providing the greatest diagnostic utility. TGF-β was expressed in 5 patient's pre-treatment and 3 post. Caspase-3 was expressed in 7 patients' pre-treatment and 6 post. There was no significant change in Ki-67 or caspase-3 expression post pirfenidone. There was no association between caspase-3 expression and FVC response ($p = 1.0$) or TGF-β expression and FVC response ($p = 1.0$). There was no significant change in chest CT score after pirfenidone (Table 1).

These findings may reflect a stabilisation/slowing of disease progression and the complex mechanisms underlying the development of IPF.

Table 1. CT Score Element	Baseline	6 months post
Global Disease Score (%)	48.5 (15.9)	48.8 (16.9) *p= 0.85*
Ground glass opacification (%)	16.9 (19.6)	15.38 (16.5) *p=0.3*
Fine reticulation	25.7 (12.6)	26.5 (12.5) *p=0.3*
Coarse reticulation	31.2 (16)	31.5 (13.6) *p=0.8*
Honey combing	24.2 (18.6)	25.4 (16.6) *p=0.5*
Consolidation	1.9 (6.9)	1.9 (6.9)
Emphysema	2 (1.5)	2 (1.4) *p=0.3*
Traction Bronchiectasis	8.15 (3.5)	8.4 (3.6) *p=0.2*

10.7 Significance of Pleural Effusion and Role in Prognostication After Acute Pulmonary Embolism

A. Sahadevan, F. Ali, M. Kooblall, J. Faul, L. Cormican

Connolly Respiratory Department, Connolly Hospital, Dublin

Pleural effusions are common radiographic findings after pulmonary embolism (PE). Sudden increase in right ventricular (RV) pressure theoretically causes RV dysfunction and increased parietal pleural venous pressure leading to effusions. Our aim was to understand significance of pleural effusions after PE. We analysed 50 admissions with PE between August 2014 and August 2015. Median length of stay (LOS) was 7.5 days. 36 % of patients with PE had pleural effusions noted on CTPA (16 % with bilateral effusions). Pleural effusions did not correlate with RV dysfunction noted on CTPA ($R^2 = 0$) or using echocardiography ($R^2 = 0.03$).

Presence of an effusion after PE was associated with a significantly increased LOS than patients without an effusion, $t\ (47) = -.2.48$, $p = 0.017$. This represented a large-sized effect on LOS, $d = 0.92$. Effusions had no significant association with increased mortality in 1 year after a PE, $p = 0.656$. Our data supports the consideration of PE during investigations of an unexplained pleural effusion. Effusions appear to aid prognostication after PE (increased LOS) but exact etiology remains to be clarified. Lack of correlation with non-invasive markers of RV dysfunction supports alternative mechanisms including increased pulmonary interstitial fluid after acute ischemia distal to PE or due to an inflammatory cytokine response.

10.8 Renal Impairment related to Computed Tomography Pulmonary Angiogram (CTPA) in Elderly Patients

A. J. AlSulami, D. Murphy, M. T. Henry, B. Plant, M. P. Kennedy

Department of Respiratory Medicine, Cork University Hospital, Cork, Ireland

There is limited published data regarding contrast induce nephropathy related to CTPA in elderly patients. We performed a retrospective chart review of 100 patients age 75 and above undergoing CTPA in 2015.

Contrast-induced nephropathy (CIN) was defined as an elevation of serum creatinine (Scr) of more than 25 % or $\geq$0.5 mg/dl (44 μmol/l) from baseline within 48 h [1]. We excluded all patients with end-stage renal disease on hemodialysis.

Of the 100 patients undergoing CTPA, 21 were positive for PE. 35 % developed acute kidney injury after the CTPA (25 % of had normal kidney function pre contrast injection and 10 % had AKI on top of CRF). 22/25 patients whose developed AKI with pre contrast normal renal function were age >80. One developed a major GI bleed with IVC placement required.

In conclusion, in a retrospective cohort of 100 sequential CT angiography studies in elderly patients, over a third developed acute kidney injury with a positive rate for PE of 21 %.

References:

1. Goldenberg I, Matetzky S (2005) Nephropathy induced by contrast media: Pathogenesis, risk factors and preventive strategies. CMAJ 172:1461–71.

None of the authors have any actual or potential conflict of interest in the subject matter of this study.

10.9 Geographical Distribution of Hereditary Haemorrhagic Telangiectasia in Ireland

C. B. Ni Ealaithe[1], L. J. Chawke[1], M. Murphy[2], A. P. Brady[2], T. M. O'Connor[1,2]

[1]Department of Respiratory Medicine, Mercy University Hospital, Grenville Place, Cork City, Co. Cork; [2]National Hereditary Haemorrhagic Telangiectasia Centre, Mercy University Hospital, Grenville Place, Cork City, Co. Cork

Hereditary haemorrhagic telangiectasia (HHT) is an autosomal dominant multi-system, vascular dysplasia characterized by arteriovenous malformations. It has a prevalence of 1:5000 to 1:8000 in Western Europe. The National HHT Centre was established in MUH, Cork in 2003 and, to date, has assessed 413 patients with suspected HHT. After 13 years of diagnosing and treating cases, we sought to explore the geographic distribution of cases in the Republic.

Using the National HHT Centre's database, all definite and possible cases of HHT were identified by Curaçao criteria. Cases were inputted into mapping software to create a visual representation of cases in Ireland.

The end result was two maps—one with possible and definite cases marked separately, and another displaying the confirmed genetics. 241 patients were mapped—208 definite cases and 33 possible cases. Five were excluded because of incomplete data. A further five (all children) were excluded on the basis of equivocal diagnostic results related to age.

There were several nonurban clusters of cases, including Donegal, Tipperary and Wexford. Clusters also occurred, as expected, in urban areas i.e. Cork, Galway and Dublin. Cases in Dublin appear to underrepresented. However, this may relate to patients being diagnosed and managed in local hospitals.

Distribution of definite and possible HHT cases in Ireland

10.10 Catheter-Directed Thrombolysis in Acute Submassive Pulmonary Embolism; A Case Series

Patrick T. Duggan[1], Pradeep Govender[2], Edward D. Moloney[1]

[1]Department of Respiratory Medicine, Tallaght Hospital, Dublin, Ireland; [2]Department of Radiology, Tallaght Hospital, Dublin, Ireland

Current international guidelines recommend that most patients with pulmonary embolism (PE) should be treated with anticoagulation alone, in the absence of haemodynamic instability [1]. Catheter-directed thrombolysis is not recommended for routine use in "submassive" PE. Recent published evidence, however, has suggested that there may be a role for this treatment modality in reversing right heart strain in submassive PE, without incurring the increased risk of major bleeding encountered with systemic thrombolysis [2]. Due to the local expertise available in Tallaght hospital, we have recently been performing catheter-directed thrombolysis and thrombectomy, or "pharmacomechanical" thrombolysis on select patients with large pulmonary emboli.

We reviewed the charts, radiology, and pre and post treatment imaging of all 4 patients with submassive PE who underwent pharmacomechanical thrombolysis in Tallaght hospital between July and November 2015. Outcomes of right ventricular response to treatment, death, development of haemodynamic instability and major and minor bleeding were assessed.

All patients had a significant improvement in the degree of right ventricular dilatation post treatment. All patients survived to discharge without development of haemodynamic instability. There were no incidents of major or minor bleeding post treatment.

This case series supports recently published evidence that catheter-directed thrombolysis is a safe and effective treatment for submassive PE, and should be considered as an alternative to anticoagulation alone in these high-risk patients.

References:

1. Kearon K, Elie AA, Ornelas J et al (2016) Antithrombotic therapy for VTE disease: CHEST guideline and expert panel report. CHEST 149(2):315–352. doi:10.1016/j.chest.2015.11.026.
2. Piazza G, Hohlfelder B, Jaff MR, et al (2015) A prospective, single-arm, multicenter trial of ultrasound-facilitated, catheter-directed, low-dose fibrinolysis for acute massive and submassive pulmonary embolism. The SEATTLE II Study. JACC Cardiovasc Interv 8(10):1382–92. doi: 10.1016/j.jcin.2015.04.020.

10.11 Correlation Between Echocardiography and Right Heart Catheterisation in the Diagnosis and Grading of Pulmonary Hypertension

R. Ó. Lionáird[1,2], A. Anwar[1], D. Vaughan[1], C. O'Donovan[2], R. J. Curtin[2], D. M. Murphy[1]

[1]The Dept of Respiratory Medicine, Cork University Hospital; [2]The Dept of Cardiology, Cork University Hospital.

Pulmonary hypertension (PH) is defined as mPAP $\geq$25 mmHg. We aimed to compare echo and right heart catheterisation (RHC) in patients with possible PH. Studies suggest a correlation of 70–80 % in this clinical context [1].

215 RHCs were performed in CUH in the last 5 years. 112 of these 215 had a corresponding echo in the preceding 100 days. RVSP was chosen as a reproducible echocardiographic indicator of PH and we used it to measure concordance of echo with RHC for diagnosis and grading of PH. A US grading system was used that was in line with ESC guidelines [2].

Of the 67 echos indicating PH, 61 were confirmed on RHC. Severity of PH was graded the same in only 22 of these 61. 84 of the total 112 had PH on RHC. 27.38 % of these had pre-capillary PH. Of the 84 with PH, 23 had normal RVSP, giving echo a sensitivity of 72.61 %. 20 of the 84 had an elevated PCWP without heart failure.

Our calculated sensitivity of echo, albeit subject to selection bias, for PH in CUH is similar to international figures. In our cohort the presence of PH on echo appears to strongly predict detection on RHC.

References:

1. Lafitte S1, Pillois X, Reant P, Picard F, Arsac F, Dijos M, Coste P, Dos Santos P, Roudaut R (2013) Estimation of pulmonary pressures and diagnosis of pulmonary hypertension by Doppler echocardiography: a retrospective comparison of routine echocardiography and invasive hemodynamics. J Am Soc Echocardiogr 26(5):457–63. doi: 10.1016/j.echo.2013.02.002. Epub 2013 Mar 16.
2. N. Galie, M.M. Hoeper, M. Humbert et al (2009) Guidelines for the diagnosis and treatment of pulmonary hypertension: The Task Force for the Diagnosis and Treatment of Pulmonary Hypertension of the European Society of Cardiology (ESC) and the European Respiratory Society (ERS), endorsed by the International Society of Heart and Lung Transplantation (ISHLT) Eur Heart J 30:2493–2537N.

10.12 From Oral Selexipag to Parenteral Treprostinil; A Two Week Transition Protocol

Sarah Devlin, Caitriona Minnock, Diane Moran, Brian McCullagh, Sean Gaine

National Pulmonary Hypertension Unit, Mater Misericordiae University Hospital, Dublin, Ireland

Selexipag is a new EMEA-approved, orally available, selective non-prostanoid prostacyclin receptor agonist for use in pulmonary arterial hypertension (PAH). No guidelines currently exist for transitioning patients from selexipag to parenteral prostanoids when patients are no longer achieving recommended therapeutic targets. We describe a successful approach to this transition in two patients with IPAH.

The two patients were participating in the GRIPHON trial and were receiving maximum dose selexipag (1600ug BID) but despite initial improvement had experienced a deterioration in symptoms (Patient 1 initially increased her pre-selexipag 6 min walk distance of 92–320 m). A comprehensive medical chart review documented the pre-transition status of each patient and the periodic up-titration of treprostinil with down-titration of selexipag.

Vital signs remained stable in both patients during the transition. Graphs 1 and 2 convey morning doses of selexipag (200ug higher than the "step-down" evening dose) in each patient as well as the 'step-up' approach of treprostinil. Prostacyclin side effects were well tolerated in both patients.

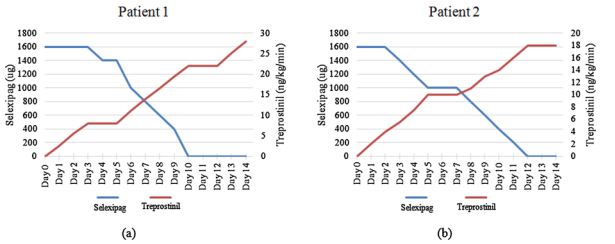


Fig.1. 14 day transition from oral selexipag to subcutaneous treprostinil: (a) Stabilisation of treprostinil dosing on day 3-5 and 10-12, inclusive, corresponded to weekends when titration was held. This also accounts for constant selexipag dose on day 4-5, inclusive. **(b)** The initially decrease in selexipag dosing (occurring on day 3) corresponded to prostanoid-related side effects, including intermittent headache, facial flushing and blurred vision, all of which subsided in later days. Failure to either increased titration of treprostinil or decreased titration of selexipag from day 5-7 corresponded to a weekend.

Irish Thoracic Society Poster Review and Discussion

Saturday 19th November 2016

11. Tuberculosis, Other Infections and Sleep Disorders

Chairs AM McLaughlin, St James's Hospital, Dublin
L. Cormican, Connolly Hospital, Dublin

11.1 The Impact of Altered Glycosylation on the Anti-Inflammatory Properties of Alpha-1 Antitrypsin

D. M. Dunlea, O. J. McElvaney, N. Lacey, M. M. White, C. McCarthy, P. Hawkins, E. P. Reeves, N. G. McElvaney

Department of Medicine, Respiratory Research, RCSI, Dublin 9

Alpha-1 antitrypsin (AAT) possesses anti-inflammatory properties. Various glycoforms of AAT exist due to the addition of *N*–glycosidically linked oligosaccharides. During resolution of community acquired pneumonia, a heavily sialylated AAT (rpAAT) protein is produced compared to AAT that's formed during the acute phase (apAAT). α-2, 6-sialyltransferase (ST6GAL1) is the main enzyme responsible for the addition of sialic acids during inflammation. Our aim was to identify the anti-inflammatory properties of rpAAT and to determine the cause of sialyltransferase upregulation.

Plasma AAT and the bound mediators were purified from blood of patients with pneumonia for the duration of hospitalization ($n = 5$). Glycoforms were determined and the binding partners identified, confirmed and quantified by ELISA ($n = 5$). Neutrophil chemotaxis in response to interleukin (IL)-8 and neutrophil activating peptide (NAP-2) was measured ($n = 3$). CXCR1/CXCR2 engagement was investigated by flow cytometry ($n = 3$). RNA expression of sialyltransferases was determined by RT-PCR ($n = 3$). Statistical significance was obtained by Students *t*-test or one-way ANOVA. Ethical approval was obtained from Beaumont hospital ethics committee.

Results illustrate that rpAAT bound higher levels of IL-8 ($n = 5$, $p = 0.03$) and NAP-2 ($n = 5$, $p = 0.04$) than apAAT. rpAAT decreased neutrophil chemotaxis ($n = 3$, $p < 0.05$), reduced IL-8/CXCR1 and NAP-2/CXCR2 engagement ($n = 3$, $p < 0.05$) to a greater extent than apAAT. In primary hepatocytes ST6GAL1 and β-galactoside α-2,3-sialyltransferase 4 gene expression was significantly increased in response to oncostatin-M, IL-6 and transforming growth factor-β ($n = 3$, $p = 0.03$).

This study demonstrates an immune-regulatory role for rpAAT by binding IL-8 and NAP-2, thereby modulating CXCR-chemokine induced neutrophil migration. These results may propose rpAAT as a novel therapy for disease which is characterised by a high neutrophil burden.

Funding was provided by the Health Research Board Ireland (MRCG 2013-1).

11.2 Manipulation of Metabolism Improves Migration of Human Primary Myeloid Dendritic Cells Infected with BCG

D. Triglia, L. E. Gleeson, J. Keane, M. P. O'Sullivan

TB Immunology Group, Trinity Translational Medicine Institute, Trinity Centre for Health Sciences, St. James Hospital

Myeloid (m) DCs, a subset of specialised antigen presenting cells, are promising targets for vaccines and immunotherapies to combat infectious diseases. *Mycobacterium tuberculosis* (Mtb) kills over one million people every year worldwide and BCG, which shows inconsistent efficacy across different populations, is the only available vaccine. Investigation of the metabolic requirements of mDCs following exposure to mycobacteria could uncover strategies to improve the ability of BCG to elicit protective immunity against Mtb.

$CD1c^+$mDCs were isolated from human peripheral blood and infected with GFP-expressing BCG in vitro. Changes in cell metabolism following infection, as well as the effect of the glycolysis inhibitor 2-deoxyglucose (2-DG) on the maturation and migration of mDCs were assessed. Student's *t*-test was used to determine statistical significance in the 95 % confidence interval.

Our findings show that exposure of mDCs to BCG induces cell maturation, cytokine secretion and a metabolic switch to glycolysis. Moreover, pre-treatment with 2-DG increased chemokine-receptor-7 expression and cell migration in the mDCs which successfully phagocytosed bacilli.

These results highlight the importance of further investigation into the metabolic requirements of human mDCs following infection with BCG, as they suggest that manipulation of metabolism in these cells may improve the protection given by the BCG vaccine.

11.3 An Audit of Follow-up Imaging of High Risk Patients Post Hospitalisation with Community Acquired Pneumonia

J. Hiu, S. Foley, M. Rogan

Department of Respiratory Medicine, University Hospital Waterford, Waterford

Every patient admitted with community acquired pneumonia(CAP) should be reviewed 6 weeks after discharge. Patients with a high risk of malignancy (age >50 years old and a strong smoking history) should also have a repeat chest X-ray (CXR) in 6 weeks.

The objective was to audit compliance to BTS 2015 annotated guidelines in University Hospital Waterford for follow-ups of CAP post hospitalisation. Retrospective data were collected from the AMU from May to June 2016. We audited the percentage of patients who received repeat imaging in 6 weeks taking into account their age and smoking status.

A total of 489 patients were audited where 39 patients were admitted as CAP with consolidation on admission CXR. Out of the high risk group (age >50 years old and strong smoking history), only 14/31 patients (45 %) received follow-up imaging. 2 out of the 14 were eventually diagnosed with lung malignancy. 17/31 patients of the high risk cohort did not receive any repeat imaging. However, 4/8 of the low risk group did have repeat scans.

This audit demonstrates poor adherence to guidelines regarding post hospitalisation imaging of high risk patients with CAP. Further investigations such as bronchoscopy should be considered in this group with persisting radiological abnormalities.

Table.

	Follow-up imaging **performed**	Follow-up imaging **not performed**	Total
High risk group (Age >50 years old + smoking history)	14	17	31
Low risk group (Age <50 years old or no smoking history)	4	4	8
Total	18	21	39

References:
1. Society, British Thoracic (2009) 2015—annotated BTS guideline for the management of CAP in adults (2009). Thorax 2015: 2–3.

11.4 Recurrent TB in Ireland is Predominantly Due to Relapse and is Frequently Associated with Poor Compliance with Therapy

Laura E. Gleeson[1], Philomena Raftery[2], Margaret Fitzgibbon[2], Philomena Downes[3], Mary O'Meara[3], Thomas Rogers[2], Joseph Keane[1]

[1]Department of Respiratory Medicine, St James's Hospital, Dublin 8; [2]Irish Mycobacteria Reference Laboratory, LabMed Directorate, St James's Hospital, Dublin 8; [3]TB Team, Department of Public Health, HSE East, Dr Steevens Hospital, Dublin 8

TB recurrence is caused by relapsed infection or exogenous reinfection, and differentiation is crucial for public health planning. We sought to establish the proportion of recurrent cases attributable to relapse vs reinfection in Ireland from 1998 to 2015, and identify common characteristics between cases to inform public health policy.

Cases were identified through the Irish Mycobacteria Reference Laboratory database, defined as two culture-positive specimens greater than 12 months apart. MIRU-VNTR typing was performed on each specimen pair to classify as relapse or reinfection, and clinical records were reviewed. Of 46 cases, both specimens and clinical records were available for 37 cases.

4 cases (11 %) were due to reinfection, all occurring in foreign-born persons. 33 cases (89 %) were due to relapse with the same strain, of which 22 (67 %) were Irish-born. 2 cases (6 %) had evidence of new resistance mutations. Of 33 relapse cases, adequate compliance with therapy was documented in 12 (36 %), of which 11 (92 %) had cavitation on initial chest radiograph. Poor compliance was documented in 21 (64 %) cases, though only 3 (9 %) had been managed using DOT. Of these 21 cases, 12 (57 %) had a history of alcohol abuse.

Relapse is responsible for the majority of recurrent TB seen in Ireland, and poor compliance is a major contributor. Mandatory DOT is warranted to reduce TB recurrence in Ireland.

11.5 Resuscitation-Promoting Factor Does Not Enhance *Mycobacterium tuberculosis* Culture Yield in Culture-Negative Lymph Node Aspirates

Laura E. Gleeson[1], Philomena Raftery[2], Margaret Fitzgibbon[2], Galina Mukamolova[3], Thomas Rogers[2], Joseph Keane[1]

[1]Department of Respiratory Medicine, St James's Hospital, Dublin 8; [2]Irish Mycobacterial Reference Laboratory, Central Pathology Laboratory, St James's Hospital, Dublin 8; [3]Department of Infection, Inflammation and Immunity, University of Leicester, Leicester LE1 7RH, UK

Lymph node TB demonstrates low rates of culture positivity, the gold standard for diagnosis and the cornerstone of Mtb drug sensitivity testing. Recently, resuscitation promoting factor (Rpf) was observed to stimulate Mtb growth in a previously culture-negative mediastinal LN aspirate, suggesting that addition of Rpf to culture media may increase diagnostic sensitivity [1]. We sought to investigate the effect of Rpf on Mtb culture yield in culture-negative LN aspirates, potentially aiding in diagnostic and management challenges.

Specimens from 8 individual cases of suspected TB lymphadenitis were analysed. Work was performed in the Irish Mycobacteria Reference Laboratory Biosafety Level 3 Facility in accordance with standard protocols. All 8 specimens contained AFB at the time of initial sampling. 6 specimens had MTC DNA detected by GeneXpert™. All specimens were culture-negative up to 84 days using the BACTEC™ MGIT™ 960 system, yet 8 patients had been treated empirically for TB based on clinical suspicion and microscopy/Genexpert™ results.

Culture-negative material was retained at −20 °C and repeat culture performed in the presence of Rpf purified from H37Rv culture supernatant. Median interval time to repeat culture in the presence of Rpf was 7.5 months (range 5–14). All 8 specimens remained culture negative up to 84 days.

These data suggest that Rpf-supplemented media does not increase Mtb culture yield from culture-negative LN aspirates. Establishing a potential role in increasing yield from fresh specimens requires further investigation.

Reference:
1. O'Connor BD, Woltmann G, Patel H, Turapov O, Haldar P, Mukamolova GV (2015) Can resuscitation-promoting factors be used to improve culture rates of extra-pulmonary tuberculosis? Int J Tuberc Lung Dis 19:1556–1557.

11.6 Predictors of Hepatotoxicity Among Patients Treated with Antituberculous Medication

R. P. Cusack[1], L. Chawke[1], D. J. O'Brien[2], B. O'Connor[1], T. M. O'Connor[1]

[1]Department of Respiratory Medicine, Mercy University Hospital, Cork, Ireland; [2]Department of Microbiology, Mercy University Hospital, Cork, Ireland

Introduction: Hepatotoxicity in patients diagnosed with active tuberculosis is the commonest adverse effect of therapy. We sought to analyse trends in liver function in patients diagnosed with active tuberculosis and to determine predictors of hepatotoxicity.

Methods: We studied 275 patients with active TB treated at the Mercy University Hospital (Cork, Ireland) from 2009–2014. A retrospective review was undertaken of all patients' laboratory data and patient correspondence to determine predictors of hepatotoxicity.

Results: 170 (62 %) male and 105 (38 %) female patients with active tuberculosis with a mean age of 44 years were studied. 58 out of the 275 patients included in our study developed hepatotoxicity. 15 patients (6 %) required their medication to be stopped or altered due to hepatotoxicity.

There was a significant difference in age between patients with hepatotoxicity (52.95 years) and those that didn't develop hepatotoxicity (41.33 years) ($p = 0.000$). Irish born patients were more likely to develop hepatotoxicity ($p = 0.025$). There was no significant association between hepatotoxicity and drug abuse ($p = 0.211$), smoking ($p = 0.95$), cavitation ($p = 0.191$), disease site ($p = 0.224$), alcohol use ($p = 0.088$) or alcohol excess ($p = 0.736$).

Among patients with tuberculosis, peak AST values at week 10 (see Figure 1). In patients with very severe hepatotoxicity, AST levels peaked at week 11 (see Figure 2).

Conclusion: Our study shows hepatotoxicity as a consequence of antituberculous therapy is common. Given the late peak in AST values at week 10 in patients treated with antituberculous therapy, the authors advocate that liver function tests should be monitored regularly throughout the course of treatment.

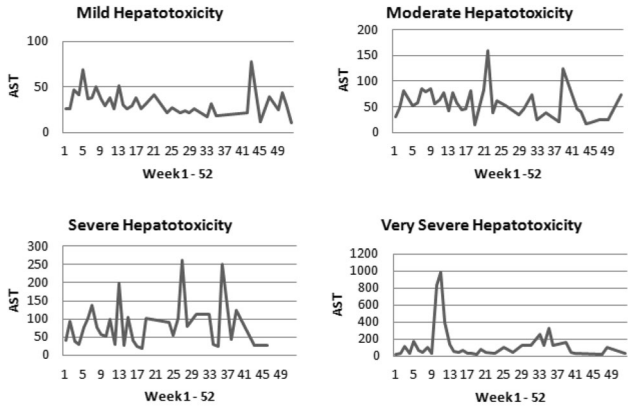


Figure 1: Mean AST levels week 1 to 52 in patients with mild, moderate, severe and very severe hepatotoxicity.
AST = aspartate aminotransferase

11.7 Cigarette Smoke Impairs Alveolar Macrophage Migration to *Mycobacterium tuberculosis*

Seónadh M. O'Leary[1], Steven Levitte[2], Lalita Ramakrishnan[2], Mary P. O'Sullivan[1], Joseph Keane[1,3]

[1]Trinity Translational Medical Institute, St James's Hospital, Dublin 8; [2]University of Cambridge, London, UK; [3]St James's Hospital, Dublin 8

Mycobacterium tuberculosis (Mtb) causes one million deaths worldwide annually and smoking is probably the single largest risk factor driving this epidemic (relative risk 1.5). We have shown that smokers' alveolar macrophages (AMs) have impaired immune responses to Mtb infection [1]. We sought to investigate the ability of AMs—non-smokers, smokers—to migrate to Mtb in vitro.

AMs were isolated from bronchial washings and migration assay was carried, adding AMs to upper chamber and Mtb or Tuberculin PPD to lower chamber. Migrated cells were counted by fluorescent microscopy.

Smokers' AMs had large vacuolar inclusions, significantly higher percentage of cells (67.75 %) with vacuolar inclusions compared to ex-smokers (8 %) and non-smokers (1.15 %). AMs migrated to Mtb and PPD, however the number of vacuolar cells in the migrated population of smokers AMs was significantly decreased (21.29 %).

Smoker's AMs have an impaired ability to migrate adequately to Mtb suggesting a possible mechanism for increased risk of tuberculosis in smokers.

Reference:

1. O'Leary SM, Coleman MM, Chew WM, Morrow C, McLaughlin AM, Gleeson LE, O'Sullivan MP, Keane J (2014) Cigarette smoking impairs human pulmonary immunity to *Mycobacterium tuberculosis*. Am. J. Respir. Crit. Care Med 190(12):1430–6. doi: 10.1164/rccm.201407-1385OC.

11.8 Feasibility of a Virtual and Specialist Nurse Led Sleep Disorder Service in a District General Hospital

D. Comer, M. McCloskey, M. Kelly, H. Phelan, C. Meehan, R. Sharkey

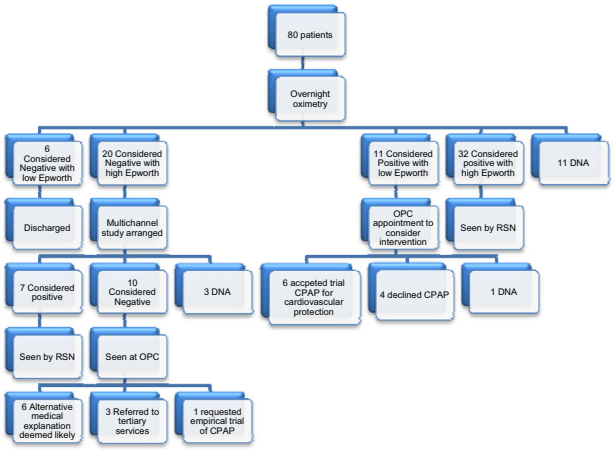
Respiratory Department, Altnagelvin Hospital, Derry/Londonderry

The burden of referrals to investigate sleep disorders has escalated considerably. In order to address this, we aimed to determine the feasibility of a nurse led virtual sleep disorder clinic, with only selected patients assessed in consultant led outpatient clinics. Sleep referrals were stratified on the basis of information contained within the primary care referral and appropriate home based sleep studies arranged. Patients were informed by post of the rationale for the test.

Respiratory nurse specialists discussed appropriate interventions with patients, and referred back to outpatient services in the event of an inadequate response to treatment. Education was almost exclusively provided by specialist nursing staff or by means of validated information by post. Satisfaction with the service was determined by questionnaire.

80 patients were included in the virtual respiratory nurse lead sleep service and pathway through the service is indicated within the figure. Feedback from the patient questionnaire was positive.

A nurse led sleep disordered breathing service reduced waiting times considerably. These findings at least suggest that developing a sleep service in this fashion is adequate to identify non-sleep breathing disorders, is fit for purpose, functions in accordance with American Association of Sleep Medicine, and is well received by patients.



11.9 Audit of the Outpatient Use of Non Invasive Ventilation in a District General Hospital

O. Nic Grianna, H. Phelan, C. Meehan, R. Sharkey, M. G. Kelly, P. Mc Shane, D. Comer, M. Mc Closkey

Respiratory Unit, Altnagelvin Area Hospital, Unit, Glenshane Road, Londonderry, N. Ireland

Domiciliary non-invasive ventilation (NIV) was first introduced in Altnagelvin Area Hospital in 2001. The aim of this study was to assess the numbers of patients on domiciliary NIV, the reasons for commencing NIV and duration of NIV therapy. Results were compared with data from a similar audit in 2009.

This was a retrospective chart audit. All patients on domiciliary NIV on the 1st of August 2016 were included. Their age, year of commencement of NIV and reason for commencement were assessed. The findings were compared to 2009.

Ninety-one patients are currently on domiciliary NIV compared with 36 in August 2009. Obesity Hypoventilation/Obstructive Sleep Apnoea Overlap (OHS/OSA) remains the most common diagnosis (39 patients). Twenty-one patients had a neuromuscular disorder including motor neurone disease, 21 patients had chronic obstructive pulmonary disease (COPD).

The numbers of patients on domiciliary NIV in this DGH has increased significantly over the past seven years. The reasons for starting NIV are similar to 2009. An increasing number of patients are

surviving longer on NIV now compared to 2009 and this audit raises questions about the need to increase support for these individuals at home. Long term planning needs to include increased physiotherapy, respiratory nurse and palliative care support.

11.10 The Reliability of AHI on CPAP Versus AHI on Limited Sleep Study

D. Fitzpatrick, E. Flood, O. Farrelly, M. Murray, A. Walsh, M. Sheehy

Midland Hospital, Mullingar

Obstructive sleep apnoea (OSA) is a risk factor for cardio vascular disease and stroke if untreated. For patients with OSA undergoing CPAP therapy these risks factors are reduced significantly. The use of CPAP has helped lower the risk of road traffic accidents (RTA). New driving licensing laws have made it paramount that OSA be controlled on treatment. There are increasing stresses on Sleep laboratory to provide evidence of controlled CPAP therapy for drivers licensing. This study was conducted to look at the reliability of the AHI indices on a CPAP device against the limited sleep study (LSS).

Subjects wore CPAP therapy while having a limited sleep study. This study involved the use of an oxygen port adaptor connecting to the CPAP mask for analysis of pressure flow. The AASM, 2012 single scoring guidelines were applied to scoring events. Two Auto CPAP algorithms were analysed.

Data was collected in Mullingar Regional Hospital, Sleep Laboratory. A total of 27 patients underwent CPAP therapy with LSS (80 % male, 20 % female). 4 patients were removed with exclusion criteria. The mean age of patients was 58 years with a mean BMI of 34 kg/m^2. Clinical analysis of AHI on CPAP versus the LSS show agreement between grading at 52 %, and 48 % disagreement. The correlation coefficient of AHI is weak ($r = 0.43$) and increasingly weaker with AI ($r = 0.22$) and HI ($r = 0.18$). The sensitivity of disease detection is 92 % and specificity of 64 %.

There is a large degree of variance between grading of AHI on CPAP and AHI on LSS. A difference in algorithm detection was discovered during the course of the study. Some CPAP models use older scoring criteria which is more sensitive to event detection. A further study to investigate equal detection responses by CPAP algorithms will help further evaluate CPAP AHI reliability.

11.11 Sleep Clinic Attended by a Respiratory Physiologist—An MDT Approach

O. Farrelly, M. Sheehy

Midland Hospital, Mullingar

Sleep Apnoea affects 2–4 % of the adult population and accounts for a significant number of patients referred to secondary care for respiratory assessment. 60–65 % % of the out-patient waiting list for respiratory services is for the investigation of sleep apnoea in the Midlands. The waiting list to access assessment is significant. Our department is constantly looking for ways to improve access for patients for sleep services and decided to trial a respiratory physiologist assessing new patients referred with possible sleep apnoea.

From Dec 2015 to mid August 2016 a Respiratory Physiologist attended the weekly Consultant led Sleep Clinic to see new patient referrals. An agreed protocol for assessment was agreed prior to commencement. All patients <50 years with no apparent co-morbidities from the GP letter were assessed. Assessment included reason for referral, anthropometric measurements, BP and SpO2 observations, pre sleep study questionnaire, Epworth sleepiness score, and a detailed history of patients' clinical background including a list of medications. Patients received education on sleep hygiene, diet, exercise, sleep apnoea and the new driving licensing regulations. Return patients on CPAP therapy had their compliance issues dealt with & all compliance data documented in eChart.

91 additional patients (63 male) with an average age of 46 were seen. 70 new patients and 21 return patients. 63 % (44) of new patients were referred for a sleep study, while 36 % (25) of these new patients had their sleep study result available for consultation. 1 % of patients refused to have a sleep study carried out. On examination of sleep study results, 44 % (11/25) were offered a trial of NCPAP. 28 % demonstrating mild sleep apnoea (7/25) opted for conservative measures including weight loss, increase exercise levels and or referral to ENT. 2 patients required further investigations including CBT and 1 patient was offered a trial of Clonazeapan for PLMS following consultant review.

An MDT approach in the sleep clinic has proved beneficial following an agreed protocol.

11.12 Comparison of Manual Versus Computer-Assisted Automated Scoring of Limited Sleep Studies Using the SomnoMedics Software

Syed Waheed Shah, Audrey Russell, Geraldine Nolan, Professor Walter Mc Nicholas, Silke Ryan

Sleep Disorders Unit St Vincent's University Hospital Dublin(SVUH), Ireland

Background: According to international guidelines analysis of limited sleep studies (PG) requires manually scoring. To expedite the scoring of PG's. Computerized algorithms for automated scoring have been developed. Aim of this ongoing study is to determine the validity of the SomnoMedics Domino$^{(TM)}$ Software (V2.6.0).
Methods: This is a retrospective analysis of supervised PG's performed in sleep laboratory on 108 consecutive patients at SVUH Dublin. Patients were 60 % male, age [mean ± SD] 52 ± 13 years, BMI 34 ± 8 kg/m^2, and apnoea/hypopnoea index (AHI) 22 ± 24/h.PG was manually scored by an senior respiratory physiologist according to ISS guidelines.
Automated analysis was retrieved from the SomnoMedics Domino$^{(TM)}$ software programme and compared to manual analysis in terms of AHI, apnoea index (AI), hypopnea Index (HI).
Results: Values retrieved by manual analysis were higher than automated data but differences were small (AHI: median difference −2.1 [interquartile range (IQR) −6.2; 0.22], HI: −3.05 [−5.6; −0.5], AI: 0.1[−0.5; 2.22], RDI 2.5 [−1.82; 9.42]. 29 pts (27 %) changed their category.8 patients were misclassified as non OSA and 6 patients as OSA by automated analysis.
Conclusion: Automated analysis of PG's using the SomnoMedics Software provides comparable results to manual scoring. Prospective evaluation is required to determine if sole automated analysis can replace manual scoring in selected patients.

Irish Thoracic Society Poster Review and Discussion

Saturday 19th November 2016

12. General Respiratory

Chairs A. O'Brien, University Hospital Limerick
M. Kelly, Altnagelvin Area Hospital, Derry

12.1 Confidence of Medical Registrars in Using Non-Invasive Ventilation During Acute Medical Call

A. Scott, C. Mcdermott, A. ORegan

Galway University Hospitals

A prior audit has shown that Non Invasive Ventilation (NIV) titration is the commonest complex procedure performed on call by medical registrars and that there is little or no training in NIV in acute hospitals in Ireland.

We distributed an online survey to assess the knowledge and training requirements of medical registrars in setting up and adjusting NIV. We used the information gathered to design a training morning covering the basic theoretical knowledge relating to NIV and hands on training with small group case based discussions with a number of different machines for each group.

Using anonymous identifiers, we repeated the Survey one week after the training day and compared the respondent's knowledge and confidence levels post training.

Prior to the training day 87 % of registrars had not received formal training in NIV. 19 % were not confident and 68 % were somewhat confident in assessing a patient requiring NIV during acute call.

It is clear that knowledge and confidence of medical registrars in relation to NIV is lacking and this will impact patient care during acute medical take. We propose that formal training programmes need to be designed and implemented throughout the country to meet this training requirement.

12.2 The Effect of Decreasing Smoking Rates on the Gender Difference in Smoking-Related Deaths in Ireland

Dr. Anne O'Farrell[1], Dr. Dave Evans[2]

[1]Health Intelligence Unit, HSE, Red Brick Building, Palmerstown, Dublin 20; [2]Department of Public Health, HSE West, Galway

Smoking prevalence in Ireland has reduced from 35 % in 1980 to 19.5 % in 2014. This is welcome news. The Healthy Ireland target is to reduce smoking prevalence to less than 5 % by 2025. This study aimed to determine if this reduction in smoking prevalence was matched with a reduction in smoking related mortality and to forecast future trends in smoking related mortality by gender.

All smoking-related mortality (using the World Health Organisation (WHO) definition were identified using the International classification of diseases (ICD-10-AM) codes. Death rates were standardized by the direct method. Smoking rates by gender were obtained from WHO and the National Tobacco Control Office. Statistical analysis including trend analysis and rate differences were carried in StatsDirect.

All smoking-related mortality reduced for males and females with the gender gap narrowing. There was a significant decrease of 3,385 (36.3 %) among males compared to a reduction of 1,638 (24.7 %) among females. This narrowing of smoking related death rates mirrors the narrowing of smoking prevalence between males and females that occurred in recent times. If this trend continues, the profile of smoking-related mortality in the next decade will be predominantly female.

To achieve targets, additional gender specific initiative are required to accelerate the current reduction in smoking prevalence and smoking-related mortality.

12.3 Going Paperless in a Respiratory Assessment Unit—A Technology Innovation in a Large Teaching Hospital

C. Gleeson, M. Baily-Scanlan, J. Brady, L. Dolan, R. Kennedy, S. Shelley, N. Nyambe

Respiratory Assessment Unit, St. James's Hospital, Dublin 8

The Respiratory Assessment Unit (RAU) is a multidisciplinary unit providing comprehensive care to persons with chronic respiratory disease including outreach, pulmonary rehabilitation, oxygen clinics and inpatient/outpatient reviews. The purpose of this project was to design, develop and implement a secure electronic patient record (EPR) for the RAU using the Cerner EPR system to replace existing paper documentation.

The project team consisted of RAU physiotherapy and nursing staff and an IT project co-ordinator. Workflows were mapped out. Clinicians consulted with the IT co-coordinator on form design and user-friendliness. Form building was undertaken by the IT co-ordinator, with frequent team collaboration.

To date, successful implementation of electronic recording has been achieved across RAU inpatient services and 90 % outpatient services. In 2016 it is anticipated that over 900 inpatient and over 2000 outpatient contacts will be recorded electronically by RAU staff. Due to budgetary constraints, no new hardware was obtained.

The project has shown that with local expertise and team working, clinicians have an important role in the design and implementation of an EPR. The final phase of the project will involve the development of forms to implement secure electronic recording of outreach services and is pending the approval of suitable hardware options.

12.4 Comparative Analysis of Ward Based Non-Invasive Ventilation (NIV) Use in Patients with Acidotic Hypercapneic Respiratory Failure (AHRF)

C. Farrell, R O'Donnell

Respiratory Department, St James Hospital, James Street, Dublin 8

This study compares the outcome in severely and mildly acidotic patients in acidotic hypercapneic respiratory failure (AHRF) on a ward based setting. BTS guidelines advise that IMV should be considered in severe AHRF i.e. pH < 7.25, particularly if this persists with optimal treatment.

This is a prospective observational study including all patients admitted to the respiratory ward using NIV in SJH in the first 6 months of 2015. In hospital mortality, 1-year mortality and average length of hospital stay are compared using a Chi square test between patients with an initial ABG pH in the categories 7.25–7.35 and 7.15–7.25.

71 patients with COPD required NIV in the first 6 months of 2015. The in-hospital mortality rate in the pH category 7.15–7.25 was 16.7 % compared to 15 .4 % in the pH category 7.25–7.35. Average length of hospital stay was 27.9 days for initial ABG pH category 7.15–7.25 compared to 26.9 days for pH category 7.25–7.35. Comparative analysis showed no statistically significant difference between pH category either for in-hospital mortality rate or average length of hospital stay.

pH Category	7.15 – 7.25 (n = 18)		7.25 – 7.35 (n = 39)		p-value
	N	%	N	%	
In hospital mortality (n = 71)	3	16.7	6	15.4	0.789
One year mortality (n = 71)	8	44.4	17	43.6	0.306

BTS guidelines advise IMV should be considered in severe hypercapneic acidosis (pH < 7.25). This study clearly demonstrates that patients with severe hypercapneic acidosis managed on the ward with NIV have a similar outcome in terms of in-hospital mortality, one-year mortality and length of hospital stay compared with those presenting with mild hypercapneic acidosis.

12.5 Introduction of High Flow Nasal Cannula onto a Respiratory Ward-Indications and Outcome

C. Hagan, R. Morrison, A. M. McShane, T. Craig

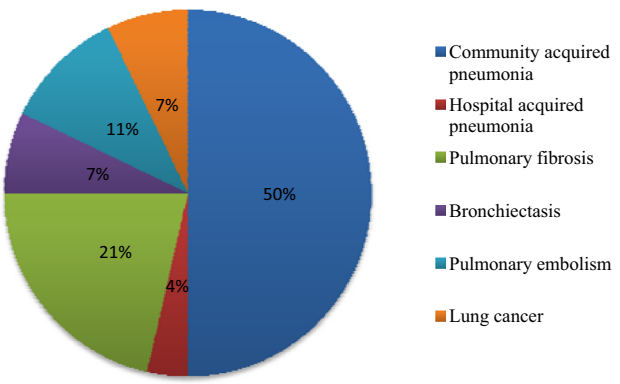
Respiratory Department, Antrim Area Hospital, Antrim, Northern Ireland

High flow nasal cannula (HFNC) is increasingly used in hypoxic respiratory failure. 2 HFNC machines were introduced onto our respiratory ward following staff education.

We performed a retrospective chart review of HFNC patients. Clinical indications, ICU/hospital length of stay and ICU/hospital survival, if applicable were recorded. Data are expressed as mean (SD) if normally distributed or median (IQR) if skewed and unpaired t test or its non-parametric equivalent were used.

Between October 2015 to July 2016, 28 patients were put on HFNC on the respiratory ward. 61 % were male (17/28) and 39 % (11/28) were female. The mean age was 69 years (SD 18). 50 % of patients needed HFNC due to community acquired pneumonia (Figure 1).

Figure 1



5/28 (18 %) patients went to ICU despite ward based HFNC. All required mechanical ventilation and 80 % of these patients survived ICU. Of those who were managed on the ward, 44 % survived. There was no difference in duration of HFNC usage between survivors and non survivors—6 days (4–7.5) vs 5 days (2–8) p = 0.35. No patients experienced any side effects from the therapy.

HFNC has a wide range of respiratory indications and in our experience is often used in patients with advanced end stage lung disease.

12.6 Prevalence and Perception of Electronic Cigarette (e-cigarette) Use in an Irish Cohort

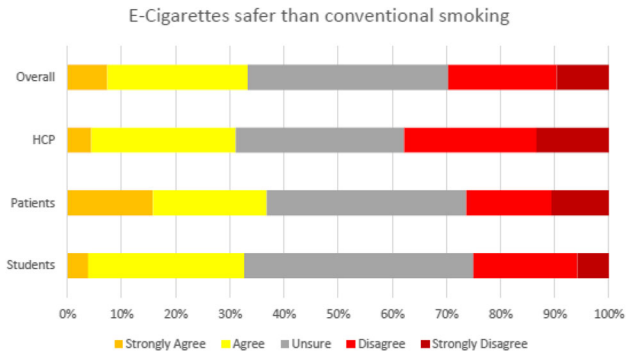
Darragh Enright, Dr. Nicola J Ronan, Ms. Bernadette Bowen, Ms. Mary Daly, Ms. Claire Fleming, Prof. Joseph A. Eustace, Dr. Desmond M. Murphy, Dr. Marcus P. Kennedy, Dr. Michael T. Henry, Prof. Barry J. Plant

[1]Medical School, University College Cork, Cork, Ireland; [2]Department of Respiratory Medicine, Cork University Hospital, Cork, Ireland and 3HRB Clinical Research Facility, University College Cork, Cork, Ireland

E-Cigarettes have grown in popularity but remain unregulated. Inadequate data exists to quantify their health effects. Thus the work aims to assess prevalence of e-cigarette use and attitudes towards safety, and advertising.

A validated questionnaire assessed prevalence and perception of e-cigarette use in 3 cohorts (n = 135); students (age 15–16 years), Respiratory patients, and healthcare professionals (HCPs).

12 % of all respondents had tried e-Cigarettes (patients 18.4 %, Students 9.6 %, HCPs 8.9 %). 4 % used them regularly—all were patients. 33 % regarded e-cigarettes as safer than conventional cigarettes; 37 % were unsure of their safety [Figure 1].



36.3 % of all respondents regarded the primary purpose of e-cigarettes to be as a means of smoking cessation. 15 % of entire group felt it was acceptable to use e-cigarettes in enclosed public spaces. 56 % wanted to learn more about e-cigarettes while 53.33 % of HCPs reported they would be uncomfortable discussing e-Cigarettes with patients.

There is variability in the perceived safety, advertising and usage of e-cigarettes with a desire for more information. Over one-third of respondents regarded them as a means of smoking cessation despite a lack of consistent data demonstrating efficacy. HCP's are uncomfortable with this topic.

12.7 Lung Transplant Activity and Waiting List Survival in Ireland

Sinéad Cremen, David Healy, Cróna Bolger, Jim Egan

Irish Lung and Heart Transplant Programme, Mater Misericordiae University Hospital, Eccles St, Dublin 7

Patients who are placed on the Transplant List want to know how long it will take to receive a transplant, how likely is it they will die while waiting for a transplant, and how long will they be on the waiting list for. This research aims to answer these questions.

This is a retrospective analysis of the Lung Transplant Program from January 2011 to June 2016. Three sets of data were gathered, which include transplants, mortality on the transplant waiting list and those removed from the waiting list for alternative reasons.

From January 2011 to June 2016, 221 new patients were listed for Lung Transplant in total. 28 of those listed died on the waiting list, giving a mortality of 12 %. 17/28 (60 %) of the deaths occurred within 3 months of listing and an additional 4/28 (14 %) occurred between three and six months. The remaining patients have either been transplanted, delisted or continue on the waiting list.

The mortality rate has also declined over the same period. This is most likely due to the increase number of transplant during this time.

12.8 A Qualitative Study Exploring Roll-Your-Own (RYO) Tobacco Product Use Among Young People Aged 18–22 Years

E. Breslin, K. Taylor, S. Keogan, L. Clancy

TobaccoFree Research Institute Ireland (TFRI), Dublin

Tobacco consumption among adults has been dropping steadily within Ireland over the past decade, from 24.7 % in 2006 to 18.6 % in 2016. However, recent research from the TFRI found a shift in the methods of tobacco consumption among young people with this group being more likely to smoke RYO tobacco products (32 %) than pre-manufactured cigarettes (28 %).

This study aims to understand why these products are increasing in popularity and where policy makers should go with regard to regulating their use.

A qualitative research strategy was used to explore the experiences, motivations, and feelings associated with users of these products. Interviews and focus groups were conducted with young people aged between 18–22 years from a range of socio-economic backgrounds.

Young people from higher socio-economic groups discussed RYO products more favourably than young people from lower socio-economic backgrounds. The price of RYO products in comparison to pre-manufactured cigarettes was the most appealing aspect for young people using the products. As price is the most powerful intervention to prevent smoking, it is very important to equalise the price of RYO and cigarettes by raising taxes on RYO tobacco products. Targeted programmes working with youth smokers, as well as the introduction and enforcement of smoke-free third level campuses are also recommended.

12.9 The use of the Chelsea Critical Care Assessment Tool (CPAx) in the Intensive Care Unit (ICU)

Mahon Rebecca, Quinn Catherine, Pelow Leigh, Egan Claire, O'Connell Julie, Ní Chearbhaill Catríona

Physiotherapy Department, Beaumont Hospital, Beaumont, Dublin 9, Ireland

Physiotherapy and early rehabilitation has shown to improve physical function in patients admitted to ICU. The Chelsea Critical Care Physical Assessment Tool (CPAx) is a validated outcome measure of physical morbidity in the critically ill population [1]. The CPAx is used to discriminate between patients with differing functional needs at discharge from ICU [2]. The objective of this study was to analyse baseline level of function pre admission, on admission and on discharge from ICU using the CPAx tool between March and August 2015.

Demographic data was collated for patients admitted to the General and Neurosurgical ICU's of Beaumont Hospital during the study period. The type of rehabilitation that patients participated in was recorded along with their initial and discharge CPAx score.

Complete data was available for 101 patients (61 male, 40 female). The average age was 55.33 years (SD 14.68). 47.5 % (n = 48) of patients engaged in active rehabilitation, 18.8 % (n = 19) with passive forms of rehabilitation and 33.7 % (n = 34) were deemed too unwell to engage with any form of rehabilitation.

Baseline Functional Status	Average CPAx Score Initial	Average CPAx Score Discharge
Independent **90.1%** (n= 91)	4.9 (SD 8.1)	9.3 (SD 10.8)
Independent with aid **4 %** (n=4)	3.3 (SD 2.9)	5.6 (SD 3.1)
Fully Dependent **4%** (n=4)	4.8 (SD 2.9)	9.0 (SD 12.0)

Table 1 functional baseline of patients v CPAx score

All groups at baseline showed improvements in their CPAx score from admission to discharge from the ICU. The biggest improvement was seen in the independent and fully dependent groups. The CPAx tool appears to be a reliable and useful tool in this population. Future research is needed to identify which components of the CPAx tool show the largest improvement.

References:

1. Corner EJ, Wood H, Englebretsen C, Thomas A, Grant RL, Nikoletou D, Soni N (2013) The Chelsea Critical Care Physical Assessment Tool (CPAx): validation of an innovative new tool to measure physical morbidity in the general adult critical care population; an observational proof-of-concept pilot study. Physiotherapy 99(1)33–41.
2. Corner Evelyn J, Soni Neil, Handy Jonathan M, Brett Stephen J (2014) Construct validity of the chelsea critical care physical assesment tool: an observational study of recovery from critical illness. Crit Care 18:R55.

12.10 Audit of Initiation and Follow-Up of Non-Invasive Ventilation for Acute Respiratory Failure in Tallaght Hospital

R. Kumar[1], P. Duggan[1], J. O'Callaghan[1], E. Moloney[1], S. Lane[1], M. Donnelly[2]

[1]Department of Respiratory Medicine, Tallaght Hospital, Dublin, Ireland; [2]Department of Anaesthesia and Intensive Care Medicine, Tallaght Hospital, Dublin, Ireland

The British Thoracic Society (BTS) have issued guidelines regarding appropriate application of non-invasive ventilation (NIV) in acute respiratory failure. These state that blood gas analysis (ABG) should be performed immediately prior to initiation of NIV, and at intervals of 1–2 and 4–6 h post initiation. They also state that a plan in the event of failure of NIV should be documented in the medical records. Aim of our audit was to determine to what degree our practice

complies with the BTS guidelines, and compared the results with data collected in 2006/2007.

We conducted a retrospective review of 50 patients on whom NIV was initiated following Emergency Response Team (ERT) calls from January to November 2015. We correlated patient records with laboratory data on the Key^{TM} Order Communication System to determine whether blood gas analysis had been performed at the appropriate intervals, and examined patient's charts to determine whether a plan in the event of failure of NIV had been documented.

49 patients (98 %) had blood gas analysis performed prior to initiation of NIV, 30 (60 %) at 1–2 h post NIV, and 32 (64 %) at 4–6 h post NIV. 19 patients (38 %) had a plan in the event of failure of NIV documented. When compared with data from 2006/2007 there was an improvement in the rate of compliance at 1–2 h post NIV (60 v 52 %) and at 4–6 h post NIV (64 v 33 %). However the rate of documentation of a plan in the event of failure of NIV had dropped (38 v 66 %).

While rates of compliance with the BTS guidelines have improved over the past 10 years, they are still less than satisfactory. Rates of documentation of a plan in the event of failure of NIV are poor, and have worsened since 2006/2007. We propose to educate the NCHD and to change our NIV prescription form to highlight the importance of complying with these guidelines, with particular emphasis on plan in the event of failure, and to re-audit our practice following implementation of these changes.

12.11 Assessing Potential for a Bed-Side Pleural Aspiration Service

S. Gubbins, C. Hickie, B. Kennedy

Acute Medical Assessment Unit, Saint James' Hospital, Dublin 8, Ireland

Corresponding author: Simon Gubbins, MB BCh BAO, gubbinsd@tcd.i.e.

Pleural effusions are a diagnostic challenge. Investigation should include biochemistry, microbiology, cytology and WCC differential [1]. Incomplete investigation may lead to repeat aspiration. Furthermore as aspiration requires ultrasound-guidance, it is often performed in radiology leading to down-skilling of NCHDs. We examined compliance with guidelines for investigation of pleural fluid as well as the proportion of aspirates being performed in radiology.

Records of the 200 most recent pleural aspirates were obtained from the microbiology and cytology laboratories. Our analysis included aspirates obtained from general medical patients admitted through ED only. A checklist, based on BTS guidelines [1], was developed to assess completeness of pleural fluid investigation. Electronic patient records were cross-referenced with our checklist.

Data was abstracted for 99 patients. 74, 91, 77 and 38 % of aspirates were sent for biochemistry, microbiology, cytology and WCC differential respectively. 15 % had a concomitant serum sample. 47 % were performed in radiology. Only 15 % of all aspirates had complete investigation as recommended by guidelines. 55 % of patients underwent a repeat procedure.

Compliance with guidelines for pleural fluid investigation is poor. A bed-side pleural aspiration service led by a respiratory physician could improve this compliance, reduce repeat procedures and expand NCHD skill-base.

Reference:

1. Investigation of a unilateral pleural effusion in adults: British Thoracic Society pleural disease guideline 2010. Thorax 2010; 65(Suppl 2): ii4–ii17.

12.12 A Review of Peri-Procedural Sedation Practices Throughout Ireland

V. Brennan, L. H. M. Moran, A. O'Regan

Respiratory Department, University College Hospital, Galway

12.13 Quality Improvement Project

The Final Duty of Care

M. P. Toal, K. M. Cullen

Department of Respiratory Medicine, Royal Victoria Hospital, Belfast, UK